NIGERIAN SOCIETY OF BIOCHEMISTRY AND MOLECULAR BIOLOGY

BOOK OF ABSTRACTS

37th ANNUAL SCIENTIFIC CONFERENCE

KATSINA 2019

THEME:

BIOCHEMISTRY & MOLECULAR BIOLOGY:
OPTIMISING THE VALUE OF LOCAL RESOURCES FOR DIRECT FOREIGN INVESTMENT AND YOUTH EMPOWERNMENT

DATE: 4th - 8th November, 2019
TIME: 10:00am Daily
VENUE: Umaru Musa Yaradua University, Katsina, Kastsina State

SUB-THEME

BIOCHEMICAL TOXICOLOGY

BT 001

TOXICOLOGICAL STUDIES OF SMOKELESS TOBACCCO (SNUFF) ON LIVER AND KIDNEY FUNCTION INDICES AND HISTOPATHOLOGY IN ALBINO RATS

Shaaya'u Shehu*, Mohammed Yabagi Yusuf and Abdulaziz Umar Kurya
Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University Sokoto,
(Corresponding author email:elmafary@yahoo.com)

Abstract
The use of smokeless tobacco (snuff) is growing rapidly. Its consumption is associated with many health problems, which makes it very important to assess its toxicity. This research was carried out to evaluate the toxicity of sub-chronic doses of administered smokeless tobacco extract in Wistar albino rats. The $LD_{50}$was found to be above 10mg/200g b.w. The animals were grouped into five groups; A,B,C,D and E, with A serving as control. Group A were administered with 1ml of DH_2O while B-E were administered with the graded doses1.52mg, 2.96mg, 4.40mg, and 5.80mg respectively through oral gavage. Variables evaluated include body weight changes, clinical and physical observations, liver and kidney pathology, and histopathology. Result of body weight change showed increase at all levels; although growth increase was mild in C and D experimental groups. The sub-chronic toxicity on renal function parameters showed significant decrease ($P<0.05$) in urea and significant increase ($P<0.05$) in creatinine levels in some of the treated groups. However, no anatomical changes in kidney histology for the test animals were observed. Liver pathology evaluation showed significant changes in liver enzymes (ALT, AST and ALP) levels, significant rise ($P<0.05$) in total protein levels, albumin and globulins concentrations in some of the treated groups as compared with the control. Degenerative histopathological change was observed in the liver for all treated animals by the onset of ballooning degeneration even as both portal and central veins appeared normal. These results suggest that smokeless tobacco may be hepathotoxic or nephrotoxic.

Keywords: Tobacco, snuff, rats, toxicology, histopathology.

BT 002

MEASUREMENT OF NATURALLY OCCURING POTTASIUM (^{40}K) IN DEEP WELLS DRINKING WATER

Ahmad Rufai Usman[1, *] and Suleiman AbubakarFada[1]
[1]Department of Physics, Faculty of Natural and Applied Sciences,
Umaru Musa Yar'adua University, Katsina.
Corresponding Author: ahmedrufai.usman@umyu.edu.ng, 08038681477

Abstract
Exposure due to radiation from natural sources is an inescapable feature of everyday life in both working and public environment but is relatively enhanced from location to location. This study aimed to measure the concentrations of naturally occurring radioactive potassium (^{40}K) in drinking water samples collected from some very deep wells. The collected samples were from six [6] different wells in Turmini district, Zinder, Niger Republic. The sampled water were prepared and analyzed for the concentrations of the ^{40}K using NaI(Tl) detector, a gamma-ray spectrometry technique. The result indicates that several samples contains the ^{40}K radionuclide concentrations in very low level. Our result compares favorably with several other works in the literature. The obtained result was also compared with the IAEA recommended guide lines for drinking water quality for radionuclides contamination and found within the acceptable limit.

Keywords: Radionuclide, Potassium, ^{40}K, Niger Republic, Water quality.

BT 003

ASSESSMENT OF PHYSICOCHEMICAL AND SELECTED HEAVY METALS IN SOIL SAMPLES FOUND AROUND UMARU MUSA YAR`ADUA UNIVERSITY, BATAGARAWA LOCAL GOVERNMENT KATSINA, KATSINA STATE, NIGERIA

***Abdulhamid Yusuf[1], Ibrahim Hamza Kankia[2], Aliyu Habibu[1], Mudassir Badamasi[3] and Alyasa`u Mi`ita Abba[4]**

[1]Department of Biology, SPRS, Umaru Musa Yar`adua University PMB 2218, Katsina.
[2]Department of Biochemistry, Umaru Musa Yar`adua University PMB 2218, Katsina
[3]Department of Biology, Umaru Musa Yar`adua University PMB 2218, Katsina
[*4]Nigerian Defence Academy, Kaduna, Nigeria.
***Corresponding Author: Abdulhamid Yusuf (abdulyusufk2@gmail.com)**

Abstract

Soils contamination by heavy metals and metalloids has become a serious environmental issue today. The present study investigates the levels of trace metals in soil samples found arounds Umaru Musa Yar`adua University, Batagarawa Local Government area, Katsina state. This paper tends to investigate the concentration of Chromium (Cr), Zinc (Zn), Lead (Pb), Iron (Fe), Nickel (Ni) and Copper (Cu) in soil samples obtained from four different cardinal point; East, West, North and South and label as A, B, C and D respectively. The soil was digested using H2SO4, HClO4 and HNO3 for 15 minutes and filtered. The Concentration was determined using Atomic Absorption Spectrophotometer Standard Method (AAS). The Concentration of the Heavy Metals content were arranged in descending order: Fe>Ni>Pb>Zn>Cu>Cr and the mean metal concentration for Fe (10.56mg/kg),Ni (9.13mg/kg), Pb (5.95mg/kg), Zn (4.64mg/kg), Cu (3.73mg/kg) and Cr (2.34mg/kg).The Results were discussed in terms of effects of the concentration of these metals on the agricultural soil under study and the concentration obtained was below the ECDG (2004), Kabata-Pendias (1995), SEPA (2000) and DPR (2011) Permissible limits of heavy metals in Agricultural land above the WHO (2010), Although it was concluded that the soil is suitable for agricultural purposes, Remediation of heavy metal contaminated soils is necessary to reduce the associated risks, leaching and liming of the soil to reduce the level of metals is recommended in the context of very high land competition for sustainable agricultural productivity to ensure land resource available for agricultural production in the study area.

Keywords: Soil; heavy metals; Agricultural; environment; physicochemical.

BT004

EFFECT OF CHRONIC EXPOSURE OF SODIUM BENZOATE, ASCORBIC ACID, AND THEIR COMBINATION ON LIVER AND KIDNEY FUNCTIONS OF ALBINO RATS

Mu'azu Abubakar Gusau*and Asmau Abdullahi Yusuf
Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University Sokoto, Nigeria
corresponding author email: magusau@udusok.edu.ng

Abstract

Ascorbic acid and Sodium benzoate are preservatives used to preserve beverages. There is suspicion that small amount of benzene may be formed from Benzoic acid in non-alcoholic beverages in the presence of Ascorbic acid. This study is designed to investigate the effects of single oral administration of combination of Sodium Benzoate and Ascorbic acid on Rats Liver and Renal functions. Twenty-four (24) adult wistar rats were divided into six groups. The body weight change was monitored, liver and kidney function tests were performed. Administration of 80 mg/Kg body weight of sodium benzoate revealed significant decrease ($P<0.05$) in the activity of Alkaline phosphatase (ALP) in the group when compared with the control group. Renal function test, revealed significant decrease ($P<0.05$) in the level of chloride ion in the serum between the control and that which receive 80mg/Kg body weight of Sodium benzoate. Bilirubin level in the group treated with 160 mg/Kg body weight of sodium benzoate increased significantly ($P<0.05$) when compared with the control group. Comparisons between other groups revealed non- significant difference ($P>0.05$) with other parameters. The study suggests that administration of Sodium benzoate, ascorbic acid and their combination from 80–160 mg/Kg body weight for 28 days does not significantly alter the Liver and Renal functions in rats.

Keywords: Ascorbic acid, Sodium benzoate, Bilirubin, and chloride ion

BT 005

FT-IR ANALYSIS OF *ASPERGILLUS* SPECIES MYCELIUM BIOMASS USED FOR THE BIOACCUMULATION OF CHROMIUM AND CADMIUM IN TANNERY EFFLUENT.

Sule, A.M[1,2]*., Abdullahi, I.O[1]., Yakubu, S.E[1]., Inuwa, B., Gero, M., Mohammed, H.A
[1]Microbiology Department, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.
[2]Environmental Technology Division, National Research Institute for Chemical Technology- Zaria
* Corresponding author email: asmaikano8319@gmail.com. GSM number: 08063981084

Abstract
Aspergillus species (*Aspergillus niger*, *Aspergillus versicolor*, *Aspergillus fumigatus* and *Aspergillus flavus*) were isolated from tannery effluent collected from a tannery industry located at Challawa industrial estate of Kano State, Nigeria. Results of the frequency and percentage occurrence of the *Aspergillus* species showed that *Aspergillus niger* had the highest frequency of occurrence of 16 which represent 17.2% of the total number of the *Aspergillus* species isolated across the sampling points while both *Aspergillus fumigatus* and *Aspergillus flavus* recorded the least frequency of occurrence of 1 (1.08%). The bioaccumulation experiment results revealed that, *Aspergillus niger* had the highest ability to bioaccumulate and uptake chromium with a mean uptake of 0.193 mg/g per unit biomass while *Aspergillus fumigatus* and *Aspergillus versicolor* recorded the least mean uptake of cadmium 0.027 mg/g per unit biomass. Analysis of variance of the *Aspergillus* species used in this study revealed that, there were significant differences (ANOVA≤ 0.05) among the quantity of heavy metals that were bioaccumulated per unit biomass and the percentage quantity of heavy metals that were removed from the tannery effluent during the bioremediation experiment. Fourier Transform -Infra red (FT-IR) spectroscopy analysis result further revealed that amines, hydroxyl, amides and carboxyl groups were the main functional groups present on the surface of the fungal cell wall and also responsible for the uptake of these heavy metals in the tannery effluent during the bioaccumulation process. Finally, the result from this study further proves the potentials of *Aspergillus* species for the treatment of heavy metals present in industrial effluent.

Keywords: Tannery effluent, Heavy metals, FT-IR, Uptake, Percentage removal efficiency.

BT 006

HEALTH RISK ASSESSMENT OF HEAVY METALS FOR CARCINOGENIC AND NON CARCINOGENIC HEAVY METALS EXPOSURE TO THE POPULATION FROM SORGHUM CULTIVATED IN KATSINA STATE, NORTH WEST NIGERIA

[*1]Yaradua AI, [2]Alhassan AJ, [1]Nasir A, [1]Matazu KI, [1]Usman A,[1]Kankia IH, [1]Muhammad I,[2]Idi A and [2]Muhammad IU
[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano,
*Correspondence Author, Email: aliyuyaradua5@gmail.com, Phone: +2348020344915

Abstract
This study was conducted to determine the heavy metals concentration in sorghum cultivated in Katsina state Nigeria. The objectives were mainly to detect the presence of heavy metals in the cultivated sorghum in the study area, compare the concentration of heavy metals in samples in relation to the permissible limits specified by WHO/FAO/USEPA Standards and to assess health risk to the consumer population. Samples of cultivated sorghum were collected in the year 2017 from the selected areas. Analysis for the concentration of these heavy metals; Cr, Cd, Fe, Ni, Mn, Pb and Zn was conducted by the use of AAS (by Atomic Absorption Spectrophotometry) method. Results from this study has shown that the mean concentration range values of Cr (0.082-0.293 ppm), Cd (0.037-0.051ppm), Fe (0.263-1.965 ppm), Pb (0.688-0.945 ppm) and Zn (1.122-1.296 ppm) in the samples were generally lower than the USEPA, WHO/FAO maximum permissive limits. The results have indicated that the estimated daily intake (EDI) of the heavy metals were lower than the tolerable daily intake limit set by the USEPA in both samples, the target hazard quotient (THQ) for the samples for both adults and children was in the decreasing order Zn>Pb>Fe>Cr>Cd and the health risk index (HRI) for all the heavy metals were <1. The adult ILCR for the heavy metal Cd with the exception of the sample from Zango which falls within the moderate risk limit (> 10^{-3}) all the other samples falls within the acceptable cancer risk level (<10^{-6} to 10^{-4}) while the ILCR for the heavy metal Pb falls within the moderate risk limit (> 10^{-3}) for adults. The ILCR for both heavy metals in children falls within the moderate risk limit, which raises a public health safety concern as to the consumption of sorghum cultivated in Katsina state.

Key words:S orghum, Heavy Metals, Katsina, Health Risk Index, Cancer Risk.

BT 007

UV SPECTROSCOPIC ASSESSMENT OF SOME BRANDS OF TIMOLOL EYE DROPS MARKETED IN ABUJA

Galadima H.I.*, Kirim R. A., Odeniran O.A., Ache, T.A

Department of Medicinal Chemistry and Quality Control, National Institute for Pharmaceutical Research and Development Idu, Abuja, Nigeria

* Corresponding Author: galadimaisa48@gmail.com Tel: 08068109818

Abstract

Glaucoma is the second leading cause of blindness after cataract. Its prevalence increases with age and more than 75 million people are affected worldwide. There has been few reports on the quality assessment of ophthalmic preparations. Timololis a propanolamine derivative, a non-selective β-blocker and a drug of first choice in management of glaucoma. This study was aimed at evaluating the percentage content and pH of some commercial brands of timolol eye drops. Seven brands of timolol eye drops were randomly purchased from some Pharmacy shops within Abuja. The pH and percentage content of the samples were estimated according to standard monograph (BP, 2016). The percentage content of the API was determined by UV-spectrophotometric method at 295 nm using specific absorbance value of 275. The result obtained showed that 85.71 % of the samples passed the assay with percentage content between 95.3 to 104.3%; while 14.29% failed with a percentage content (93.9%) which is below the monograph specifications (90.0 to 110.0%). The result of the pH test has shown that five of the samples (71.43%)passed the test with a pH range of 6.67 to 7.30; while two samples (28.57%) failed with a pH values of 7.63 and 7.73 which is above the monograph specification; BP, 2016 (6.50 to 7.50). These result obtained has shown the variation in the amount of API by different manufacturers and as such there is need for routine quality assessment of pharmaceutical products.

Keywords: Timolol eye drop, Pharmaceutical, Brands, Percentage content

BT 008

INFLUENCE OF ANTIOXIDANT VITAMINS SUPPLEMENTATION ON OXIDATIVE STRESS AND THYROID HORMONES OF WISTAR RATS WITH INDUCED THYROID DYSFUNCTION

M. H. Yeldu[1*], K. Usman[1], M.K. Dallatu[1] I. Z. Wasagu[1], U. Musa[2]and B.M. Yale[1]

[1]Department of Chemical Pathology, Usmanu Danfodiyo University, P.M.B. 2346 Sokoto, Nigeria.

[2]Department of Veterinary Pathology, Usmanu Danfodiyo University, P.M.B. 2346 Sokoto, Nigeria.

*Corresponding Author:hmyeldu@yahoo.com, Tel: +238036050479

Abstract

Oxidative stress has been implicated in the pathogenesis of thyroid dysfunction. The current study was designed with the aim of investigating the potentials of antioxidants vitamins C and E the management of these disorders. Twenty-one (21) male Wistar rats weighing 140 - 180 grams were randomly divided into three groups of 7 rats each. Euthyroid (control): received daily intraperitoneal injection of 0.9% normal saline solution; hypothyroid: received daily oral administration of 6-propyl-2-thiouracil (5 mg/100 g b.w) and hyperthyroid: received daily intraperitoneal injection of L-thyroxine (0.1 µg/g) for 30 days. Both hypo-and hyperthyroid rats were supplemented with 1 ml of vitamin C (10 mg/ml) solution administered to each rat per day through an oral gastric tube and 0.050 ml of vitamin E (10 mg/ml) administered intramuscularly to each rat per day. Control rats received daily intraperitoneal injection of 0.025 ml of 0.9% saline solution for the 21 days. At the end of the treatment, rats were fasted for 12 hours and blood samples collected under chloroform anaesthesia for the estimation of serum total triidothyronine (tT3), total tetraiodothyronine (tT4), thyroid stimulating hormone (TSH), total antioxidant status (TAS), total oxidant stress (TOS), oxidative stress index (OSI) and malondialdehyde (MDA) using standard techniques. The supplementation significantly decreased serum TSH, tT_3, TOS and OSI and there was significant decrease in serum levels of tT_4 and MDA of the hypothyroid group compared with euthyroid. The study concluded that oxidative stress was present in both hypothyroid and hyperthyroid states and that antioxidant supplementation has significantly reversed oxidative stress biomarkers.

Keywords: Antioxidants, Vitamins, Thyroid hormones, Oxidative stress

BT 009

COMPARATIVE ANALYSIS OF PHYSICOCHEMICAL PARAMETERS OF BOREHOLES (HAND PUMPS) AND SACHETS WATER IN KATSINA METROPOLIS.

M. G. Abubakar[1] and I.S. Darma[2*]
[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto
[2]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina
[*]Corresponding author; Email: Ibrahimdarma011@gmail.com Tel: 07065860065

Abstract:
Water is an essential component for survival of life on earth, the minerals it contains are of vital importance to human physiology. However, human population suffers from varied diseases due to consumption of polluted water caused by human activities thereby necessitating the need to ascertain the quality of drinking water at regular time interval. A Comparative analysis was conducted on twenty-four randomly selected water samples from twelve Boreholes (hand pumps) and twelve Sachets water brands in Katsina metropolis, Nigeria. Physico-chemical parameters and heavy metals were determined using standard analytical procedures. The results of the physicochemical analysis of Boreholes and Sachets water samples obtained showed; pH: (3.58-6.56 and 5.33-6.96); Temperature: (28-30^{0}C and 26-28^{0}C); Conductivity: (130.00-940.00 µS/cm and 67.00-290.00 µS/cm); D.O: (3.55-12.00 and 3.72-5.44); Turbidity: (<5.00-65.00 and <5.00); Total hardness: (15-429mg/l and 12.00-44.00 mg/l); Calcium hardness: (3.00-225mg/l and 7.00-40.00 mg/l); Magnesium hardness: (12.00-372mg/l and 1.00-16.00mg/l) ranges respectively. The concentration of heavy metals (mg/l) in the Borehole and Sachets water samples were found within the following range; Fe: (0.037-0.520 and 0.037-0.520); Cu: (0.091-0.91 and 0.037-0.520) and Zn: (0.036-4.500 and 0.037-0.520) Pb: (0.087-0.210 and 0.043-0.013) respectively. Accordingly; the water samples were colourless and odourless. Apart from lead that was found to be higher than the recommended limit for drinking water by World Health Organisation in some, all other results obtained were below or within the recommended limit. Although the results do not indicate adverse health effect, they provided the need for further investigations and monitoring.

Keywords: Physico-chemical parameters, Heavy metals, Katsina metropolis.

BT 010

PUBLIC HEALTH RISK OF CONSUMPTION OF SURFACE WATER IN CONTAMINATED SITE IN CAMP2 VILLAGE OF AKAMKPA LOCAL GOVERNMENT AREA OF CROSS RIVER STATE.

[1]Eteng, Ofem .E., [2]Abam, Kenyoh .I., [2]Eja, Olando .M., [2]Ekpo, Grace .I., [2]Iwara, Arikpo .I., [2]Ekam, Victor .S.,[2]Eyong, Eyong .U.
[1]Department of Biochemistry, Federal University of Agriculture, Abeokuta, Ogun State.
[2]Biochemistry Department, University of Calabar, Calabar, Cross River State.
Correspondence: ofemeffiom@gmail.com Phone number: +234(0)8063682287.

Abstract
This study was conducted to find out the causes of the changes that occurs in the physicochemical parameters of water and also heavy metals concentration in surface stream. Samples were analyzed on various heavy metals and physicochemical parameters i.e P^H , D.O, Temp, Electrical Conductivity, Total dissolved oxygen, Turbidity, and Total hardness by using standard methods and procedures while heavy metals such Ni, Cd, pb, Hg, As, were also analyzed using Atomic Absorption Spectrophotometer (AAS). Of the following physochemical parameters were determined, temperature (26.37 ± 0.35), dissolved oxygen (6.80 ± 0.80), pH (6.50 ± 0.14), electrical conductivity (515.67 ± 2.33), total hardness (16.30 ± 2.55), total suspended solids (0.42 ± 0.35) and turbidity (66.03 ± 33.89). All the physicochemical parameters analyzed fell below WHO (2010) Standards for drinking water except for temperature and total hardness which are significantly($P<0.05$) within WHO Standards (2010). Also the results of the heavy metals concentration were above permissibility limits. Hence these values were above WHO standard (0.1mg/l) and FAO/WHO standards of (0.2mg/kg) while others were within joint FAO/WHO standard limit. The results clearly indicate that the water quality in Camp2 is contaminated and the water quality is gradually declining as a results of Environmental pollutions and other anthropogenic activities around the area. Quarrying activities close to the community has lead to increasing water contamination and health related symptoms. Therefore Camp2 village require urgent measures to stop further deterioration of their surface water. Hence proper awareness is therefore needed to decrease the level of Environmental pollution within the community.

Keywords: Lead, Chromium, Mercury, Nickel, Cadmium.

BT 011

PRELIMINARY ASSESSMENT OF HEAVY METALS IN SOME SELECTED CROPS AROUND ARE AND JIBIA DAMS

*Maisallah Shu'aibuAbubakar, Mubarak Ishaq Umar, Salahuddeen Ya'u, Ibrahim Hamza Kankia
Department of Biochemistry, Umaru Musa Yar'adua University Katsina, Katsina State, Nigeria
***Corresponding Author:**asmaisallah276@gmail.com,08137993644

Abstract:
Heavy metals accumulation in soils is of concern in agricultural production due to the adverse effects on food safety and marketability, crop growth due to phyto toxicity and environmental health of soil. The preliminary assessment of Lead (Pb), Cadmium (Cd), Chromium (Cr), Zinc(Zn) and Cupper (Cu) were determined in three different samples of plants from Are and Jibia Dams of Katsina State using atomic absorption spectrophotometer. The results shown that sample consume by habitant of the study areas contain significant levels of heavy metals. The concentration of cadmium in all samples (Maize, Sweat Potato, Cassava, Wheat, Beans, Rice) were above the permissible limit of (0.02) set by WHO(0.205±0.042, 0.147±0.04, 0.147±0.04, 0.176±0.083, 0.088±0.041, 0.147±0.041)respectively. The concentration of remaining metals in most samples from both Dams were within the permissible limit set by WHO with the exception of Maize and Sweet Potato of Are Dam which found to have elevated value of Zinc (Zn)(5.123±0.290&5.943±0.290) which was above the WHO Standard respectively. This implies that samples from Jibia Dam are more safer to consume than that of Are Dam which is due to biological activities (Quarry Mining, Truck Petrol Tank Washing, Irrigation Farming, Fertilizer & Pesticide application) that take place around the Dam. The magnitude of heavy metals detection were as follows Zn>Cu>Cr>Cd>Pb in the entire sample.

Keywords: Heavy metals; crops, ARE dam, Jibia dam

BT 012

HEAVY METAL CONTENT OF COMMONLY USED DRINKING WATER IN USMANU DANFODIYO UNIVERSITY SOKOTO

Usama Aliyu[1], Muhammad Hassan Yankuzo[1], Ibrahim Hamza Kankia[1] And Tijjani Salihu Shinkafi[*,1]

[1]Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University Sokoto, PMB 2346,
[2]Department of Biochemistry, Faculty of Science, Umar Musa Yar'adua University, Katsina, Nigeria
Corresponding author email: tijjani.salihu@udusok.edu.ng

Abstract
This study analyzed five water samples commonly used by the communities of Usmanu Danfodiyo University Sokoto for the presence of Lead (Pb), Cadmium (Cd), Chromium (Cr), Iron (Fe) and Copper (Cu). The water samples (tap, well and sachet) were obtained from student's hostel, Dundaye village and university minimart. The samples were acid digested, filtered, and diluted for analysis by using Flame Atomic Absorption Spectrophotometer (FAAS). Statistical analysis carried out using inStat3 software revealed absence of lead, high concentration of Cd (0.0174 ppm), Cr (0.1195 ppm), Fe (4.169 ppm) and low concentration of Cu (0.2503 ppm) in comparison with WHO recommendation. Notably, heavy metals contamination was more pronounced in the well water from Dundaye village, which therefore pose health threat to consumers. In light of this observation regular monitoring is needed to alert consumers about the menace of heavy metals in drinking water from time to time.

Keywords: Heavy metals, Drinking water, Monitoring

BT 0013

THE ROLE OF DIMETHYL SULFOXIDEAND ALPHA LIPOIC ACID COMBINATION ON WISTAR RATS INDUCED WITH ISCHEMIC STROKE

[*1]Suleiman, Nasiru., [2]Bulama, Ibrahim., [1]Abdulkadir, Saminu.,[1]Bala, Rukaiya Suraj., [3]Ngaski Abdullahi Abubakar., [4]Jimoh, Akib Adekunle., [5]Balarabe, Salisu Abdullahi., [6]Buhari, Salisu., [7]Abbas Abdullahi Yahya., [7]Saidu, Yusuf. and [7]Bilbis, Lawal Suleman

[1]Department of Veterinary Physiology and Biochemistry, Faculty of Veterinary Medicine, Usmanu Danfodiyo University, Sokoto[2]Department of Veterinary Physiology, Pharmacology and Biochemistry, University of Maiduguri,[3] Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, [4]Department of Theriogenology and Animal Production, [5]Department of Medicine, [6]Department Veterinary Surgery and Radiology, College of Health Science[7]Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Nigeria

*Author of Correspondence: +2348030411807 E-mail: suleiman.nasiru@udusok.edu.ng

Abstract

Excessive production of reactive oxygen species (ROS) following ischemic stroke (IS) is associated with increased oxidative stress (OS).Inflammatory modulators are known to facilitate tissue damage and cell death by increasing vascular permeability during oxidative stress. This study evaluated the effect of dimethyl sulfoxide (DMSO) and Alpha Lipoic Acid (ALA) combinations in the treatment of induced ischemic stroke in Wistar rats. Twenty-eight Wistar rats were divided into four groups of 7 rats each, IS was induced using Middle Cerebral Artery Occlusion (MCAO) method. ALA and DMSO combinations at 45mg/kg and 67.5mg/kg respectively were orally administered for two (2) weeks. Endogenous antioxidant enzymes [catalase (CAT), superoxide dismutase (SOD), and glutathione peroxide (GPX)] activities, concentration of oxidative stress biomarkers [malondialdehyde (MDA)] and inflammatory biomarkers [tumournecrosis factor-α (TNF-α) and interleukin-6 (IL-6)] from blood were analyzed. Induction of IS caused a significant ($P<0.05$) decrease in the activities of endogenous antioxidant enzymes (CAT, SOD, GPX) and significant ($p<0.05$) increase in MDA and Inflammatory biomarkers (TNF-α and IL-6) levels., Treatment with ALA and DMSO combination resulted in significant ($P<0.05$) increase in the activities of antioxidant endogenous enzymes and significant ($P<0.05$) decrease in MDA concentration and inflammatory biomarkers (TNF-α and IL-6).ALA and DMSO combination ameliorated the oxidative stress effect of experimentally induced ischemic stroke in Wistar rats.

BT 014

EFFECT OF ANTIOXIDANTS SUPPLEMENTATION ON THE BLOOD PRESSURE, SUGAR AND LIPID PROFILE OF ACUTE ISCHAEMIC STROKE SUBJECTS.

[2]Isa, S.A., [1]Wali,U., [2]Saidu,Y., [2]Bilbis, L.S., [2]Sahabi, D.M and [3]Balarabe, S.A.

[1]Department of Chemical Pathology, Faculty of Medical Laboratory Science,

[2]Department of Biochemistry, [3]Department of Medicine, Usmanu Danfodiyo University, Sokoto

Correspondence author: usmanwali90@yahoo.com.

Abstract

Acute Ischaemic Stroke (AIS) is associated with elevated blood pressure and dyslipidaemia. Antioxidants are thought to be beneficial in curtailing the lipid peroxidation. In this study, antioxidant vitamins and minerals were administered orally to AIS subjects for fourteen days either singly (all vitamins/or minerals) or combined (all vitamins and minerals) at recommended dietary allowances (RDA)/or X 1.5 RDA and the effect of the supplementation on blood pressure (BP), fasting blood sugar (FBS) and lipid profile was studied. The results suggested that supplementation significantly decreased (*$P<0.05$*) BP, FBS, total cholesterol, triglyceride, LDL-cholesterol, VLDL-cholesterol, and atherogenic index. Supplementation also significantly increased (*$P<0.05$*) HDL-cholesterol. The findings suggested that antioxidants supplementation have significant effect on BP, FBS and lipid profile, therefore, might be beneficial in alleviating dyslipidaemia associated with AIS subjects.

Keywords: Acute ischaemic stroke, dyslipidaemia, blood pressure, sugar and lipid profile.

BT 015
TOXICOLOGICAL AND ANTIMALARIAL ACTIVITIES OF *Guiera senegalensis* LEAF EXTRACT

Umma Lawan[*1], Firdausi Abdulkadir Sani[1], Hafsat Abdullahi Muhammad[2], Mahmud Safiyanu[1] Nasiru Abdullahi Falgore[3]
[1]Yusuf Maitama Sule University Kano, Nigeria [2]Ahmadu Bello University Zaria, Nigeria
[3]Federal Road Safety Corps Kaduna, Nigeria
[*]lawan.umma@yahoo.com 08065531732

Abstract
*Guiera senegalensis*is used for the management of malaria in Africa and other parts of the world with little or no scientific backing. The aim of this research is to evaluate toxicological and antimalarial activity of *Guiera senegalensis* (GS) leaf extract against rodent malaria parasite *Plasmodium berghei*. The study assayed for *in vitro* antiplasmodial activity of different extracts of the plant. The most active extract was used to screen the phytochemicals, assayed the *in vivo* antimalarial effect,acute and sub-chronic toxicity. Ethylacetate extract was found to be the most active extract. The results of phytochemical screening revealed the presence of alkaloids, terpenoids, quinones, anthraquinones, flavonoids, tannins, phenols, steroids and cardiac glycosides.GS was found to be practically non-toxicin albino rats. The sub-chronic study showed some signs of toxicity on heart. The hematological results revealed insignificant changes in WBC indicating that the plant may have some effects on immune system; increases in RBC, HGB and HCT suggesting that the plant may have haemopoietic effect. There was a significant progressive reduction in parasitemia level when administered daily for four days. At the highest dose of administration (400mg/kg bw) GS produced 89.70% suppression of parasitemia which is almost similar to 96.08% shown by Combisunate 20/120. The antimalarial activity of GS may be associated with terpenoids and alkaloids identified in the plant. In conclusion, GS ethylacetate leaf extract could be relatively safe and have antiplasmodial activity. The constituents of the plant could thus be beneficial in the management of malaria as used traditionally.

BT – 016
ANTIBACTERIAL ACTIVITY OF SOME MEDICATED SOAPS ON *Staphylococcus aureus* AND *Puedomonas aeroginosa* ISOLATED FROM WOUND INFECTIONS

Sani Aliyu* and Sa'adatu Ibrahim Bello
Department of Microbiology, Umaru Musa Yar'adua University, Katsina, Katsina State Nigeria
*Corresponding author: aliyu.sani@umyu.edu.ng GSM: 08068986670.

Abstract
Wound infections result in sepsis, limb loss, long hospital stays, higher costs, and are responsible for significant human mortality and morbidity world wide. Antimicrobial activity is the method of killing bacteria or inhibits the illnesses causing microbes. The aim of this study was to determine the antibacterial activity of some medicated soaps on *Staphylococcus aureus* and *Pseudomonas aeruginosa* from wound infection. Identification of the bacterial species as by standard microbiological techniques which include colonial examination, Biochemical testing. Susceptibility testing of the soaps was determined by disk diffusion method. Ciprofloxacin was employed as positive control antibiotic. The samples were collected from 20 individuals within the age range of 18-70years. Swabs were collected and streaked into appropriate agar and incubated. Out of 20 individual sampled, 14 were infected with *Staphylococcus aureus* (46.7%) followed by *Pseudomonas aeruginosa* (40.0%) and the least was *Escherichia coli* (13.3%). This study revealed that, *Staphylococcus aureus* showed the highest zone of inhibition in both the 2 soaps that were used. The zone of inhibition was seen highest in sample B (Tetmosol) with 53.6mm and samples A (Dudu osun) 44.3mm. On the other hand *Pseudomonas aeruginosa* indicated sensitivity only on high concentration 500mg/ml both in sample A(Dudu osun) 22.0mm and sample B(Tetmosol) 17.5mm. The result showed that medicated soaps were effective against *Staphylococcus aureus* and *Pseudomonas aeruginosa* involved in wound infections. Therefore, medicated soaps could be used in cleaning the skin during the time of hurt or cut, etc. and should be used moderately by consumers to avoid irritation & resistance to pathogens.

Keywords: wound infection, zone of inhibition, staphylococcus aureus, pseudomonas aeruginosa

BT 017

EFFECT OF ADMINISTRATION OF SODIUM BENZOATE, ASCORBIC ACID OR THEIR COMBINATION IN RATS

***M. G. Abubakar, M. B. Dodo and T. S. Shinkafi**
Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University Sokoto, Nigeria
Corresponding author email: magusau@hotmail.com

Abstract
Available evidence shows that the combination of sodium benzoate with ascorbic acid may form benzene. Benzene a known carcinogen has been reported to cause anemia, severe depression of the immune system which produces generalized allergy symptoms, leukaemia, various other blood cancers, and may interfere with reproductive function. Acute oral toxicity testing was conducted to evaluate the effect of administration of sodium benzoate or ascorbic acid or their combination in rats for 14 days. Group A served as control and received distilled water while group B, C and D received ascorbic acid 80mg/kg body weight, sodium benzoate 160mg/kg body weight and sodium benzoate 320 mg/kg body weight respectively. Lastly, group E was given a combination of sodium benzoate 160 with ascorbic acid 80 mg/kg body weight and group F sodium benzoate 320 with ascorbic acid 80 mg/kg body weight. Sodium benzoate, ascorbic acid or their combinations caused an increase in the activity of liver and kidney functions as well as lipid profile parameters in rats. Combination of Sodium benzoate 160mg/kg body weight with ascorbic acid 80mg/kg body weight was found to increase the activity of alkaline Phosphate and Aspartate aminotransferase compared to control. Alanine amino transferase was found to be elevated in group administered with sodium benzoate 160mg/kg body weight. Sodium benzoate 160mg/kg body weight administration also caused a significant increase in triacylglycerol ($p<0.5$) and very low-density lipoprotein compared to control. High-density lipoprotein decreased in all the groups compared to control. Sodium benzoate 320mg/kg body weight in combination with 80mg/kg body weight similarly increased the concentration of creatinine compared to control. Single oral administration of sodium benzoate, ascorbic acid or their combinations in rats did not produce any physical or clinical sign of toxicity or mortality in the treated animals. However, an increase in the activity of liver and kidney enzymes as well as lipid profiles observed is an indication of a pathological condition.

Keywords: Ascorbic acid, sodium benzoate, benzene, acute toxicity, cancer

BT 018

QUALITATIVE AND QUANTITATIVE PHYTOCHEMICAL ANALYSIS OF MAERUA CRASSIFOLIA LEAVES USING VARIOUS SOLVENTS

***Aletan Uduak I[1]. And Kwazo Hadiza A[2].**
[1]Department of Pure and Applied Sciences, National Open University of Nigeria, Jabi, Abuja. Nigeria
[2]Department of Chemistry, Shehu Shagari College of Education, Sokoto. Nigeria
*Corresponding author E mail: ualetan@noun.edu.ng Tel: 234 8070707683

Abstract
Qualitative and quantitative phytochemical screening of different solvent extracts of *Maerua crassifolia* leaf was carried out using standard methods. Ethanol, chloroform, methanol, deionized water, acetone and petroleum ether were used as solvents. The presence of eight secondary metabolites (alkaloid, saponin, flavonoid, cardiac glycosides, tannin, phenols, anthraquinones and steroids) was tested. The results showed that four of these phytochemicals were present in all the solvent extracts (alkaloid, flavonoid, phenol, and combined anthraquinones) while, cardiac glycoside was not detected in any of the solvent extracts used. Although saponin was present in only four of the solvent extracts, it had the highest value in the quantitative analysis (120.37±0.18 mg/100g) from the aqueous extract while the highest quantity of flavonoids (38.47±0.32 mg/100g) was from the acetone extract. Percentage alkaloids ranged between (0.025±0.007mg/100g) from the methanol extract to (0.93 ± 0.03mg/100g) from the aqueous extract. Petroleum ether extracted the highest quantity of combined anthraquinone (74.61± 0.22 mg/100g). The presence of various phytochemicals has further established the previous findings that *Maerua crassifolia* leaf is a good source of the rapeutical compounds and further identifies the most appropriate solvent for the extraction of the required phytochemical. This can be extensively studied to extract the natural compounds which are beneficial to human beings and that could be commercialized for higher production thus limiting the use of synthetic drugs with side effects.

Keywords: Qualitative, Quantitative, Phytochemical analysis, *Maerua crassifolia*

BT 019

EFFECTS OF HEAVY METALS CONTAMINATION IN SOME COSMETICS AND ASSOCIATED HEALTH RISK AMONG USERS WITHIN KATSINA METROPOLIS, KATSINA STATE NORTH WESTERN NIGERIA

***Usman Lawal Usman, Saratu Abdulkadir Danhauwa and Samaila Adamu Usman**
Department of Biology, Umaru Musa Yar'adua University, Katsina State, Nigeria
*Corresponding author: usman.usman@umyu.edu.ng (+2348035166937)

Abstract
Heavy metals toxicity to humans is as a result of long term or high level exposure to pollutants common in the environment including the air, water, food and numerous consumer products such as the cosmetics and toiletries. Cosmetics are substances or products used to enhance or alter the appearance of the face or fragrance and texture of the body. In this study, ten (n=10) different cosmetics (Face powder, Eye liner, Primer, Bio clear, Carl white, Mascara, Lip gloss, Eye shadow, Foundation and Lipstick) were purchased from various shops at different locations in Katsina metropolis and their level of toxic metals were assessed (Lead, Nickel, Cobalt, Copper and Chromium) . The cosmetics were analysed for heavy metals after digestion with concentrated acids HNO3: HCl in ratio 1:3. The concentrations of the selected toxic heavy metals were determined in duplicate using a flame atomic absorption spectrophotometer. Some of the samples analysed contained a detectable amount of the metals of interest. The health risk assessment method developed by the United States Environmental Protection Agency were employed to explore the potential human health risk of heavy metals in cosmetics. The overall mean (n=10) concentration for each heavy metal was analysed and the mean result of Pb, Ni, Co, Cu and Cr were 19.46 ± 0.32mg/kg,1.42 ± 0.05mg/kg, 0.81 ± 0.09mg/kg, 11.92 ± 0.86mg/kgand 5.98 ± 0.46mg/kg respectively. It is obvious from the present study that the use of some cosmetic products exposes users to low concentrations of toxic heavy metals which could constitute potential health risk to users since it has been known that heavy metals can accumulate in the biological system over time and are known to induce skin problems or diseases such as cancer. The bioaccumulation of these harmful chemicals and metals in the body over time has been associated with cancer, reproductive and developmental disorders, contact dermatitis, hair loss, lung damage, ageing, skin disease and reaction, allergies, and damage of nails. These toxic chemicals can enter into the body by absorption through penetration from body cream, moisturizers, cleansers, eye shadow. It can also be by ingestion of the chemicals in lipstick, lip balm, lip gloss through the mouth. With increase in using cosmetics by the community the situation could worsen in the future, therefore, it is recommended that the level of toxic metals or the long term exposure with the cosmetics should be reduced to minimise the health risk.

Key words: Cosmetics, Lead, Nickel, Cobalt, Copper, Chromium, Health Risk Assessment.

BT 020

ASSESEMENTS OF HEAVY METAL RESIDUES IN SOME VEGETABLES, FRUITS AND HEALTH RISK AMONG CONSUMERS WITHIN KATSINA METROPOLIS, KATSINA STATE NORTH WESTERN NIGERIA

***Usman Lawal Usman and Rahama Bashir**
Department of Biology, Umaru Musa Yar'adua University, Katsina State, Nigeria
*Corresponding author: usman.usman@umyu.edu.ng (+2348035166937)

Abstract
Ingestion of vegetables and fruits containing heavy metals is one of the main ways in which these elements enter the human body. Once entered, heavy metals are deposited in bone and fat tissues, overlapping noble minerals. Slowly released into the body, heavy metals can cause an array of diseases. This study aimed to assess the heavy metals residues in some vegetables, fruits and health risk among consumers within Katsina metropolis. Twelve (12) different sample of vegetables and fruits (Cabbage, Lettuce, Spinach, Carrot, Pepper, Green Beans, Small Pepper, Garden Egg, Cucumber, Small Garden Egg, Guava and Tomatoes)were purchased from various irrigation farms located in Katsina metropolis

and their level of toxic metals were assessed (Cadmium, Chromium, Copper, Zinc and Lead). The vegetables and fruits samples were dried in an oven at 105°C to constant weight and then stored in desiccators. About 3.5 g of each of the dried samples was weighed into a porcelain crucible and dry-ashed in a muffle furnace by stepwise increase of the temperature up to 550°C for few hours. The ash samples then digested with a 5ml of HNO_3, evaporated near to dryness on a hot plate in fuming hood, cooled and then filtered with Whatman filter paper (number 41) and diluted up to the mark (100 ml) into a calibrated flask. The resulting solution was then analyzed using Flame Atomic Absorption Spectrophotometer. Some of the samples analysed contained a detectable amount of the metals of interest. Detected levels of the heavy metals ranged from 0.005 to 0.836mg/kg, 0.293 to 3.492mg/kg, 0.091 to 9.046mg/kg, 0.989 to 16.431mg/kg and 0.817 to 22.548mg/kg for Cadmium, Chromium, Copper, Zinc and Lead respectively. Health risks associated with the intake of these metals were evaluated in terms of estimated daily intake (EDI), and carcinogenic and non carcinogenic risks by target hazard quotient (THQ) and hazard index (HI). EDI value of cadmium was found to be below the maximum tolerable daily intake (MTDI). The THQs of all metals with the exception of cadmium were >1, suggesting health hazards risk for the population. Moreover, total THQs of Pb, Zn and Cu were greatly higher through consumption of lettuce, spinach, cabbage, garden egg and tomatoes indicating significant health risks. HI was found to be slightly >1 (1.281) for consumption of fruits; however, it was higher >1 (5.491) for vegetables consumption, suggesting more adverse health effects from vegetables consumption than fruits. The findings of this study reveal the health risks associated with the consumption of heavy metals through the intake of some selected vegetables and fruits within katsina metropolis.

Keywords: Vegetable, Fruits, Cadmium, Chromium, Copper, Zinc, Lead, Hazard Index

BT 021

AQUEOUS EXTRACT OF *Moringa oleifera* LEAF HAS HEPATOPROTECTIVE AND ANTIOXIDANT EFFECT ON CARBON TETRACHLORIDE-INDUCED TOXICITY IN MICE

Sambo Misbahu[1], Godfrey Dillys Nyeri[2], Aisami Abubakar[2], Hassan Ibrahim Garba[1]
[1]Department of Biochemistry, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
[2]Department of Biochemistry, Gombe State University, Gombe, Nigeria.
*Correspondence Author: Misbahusambo@gmail.com, 08031835607

Abstract
Many people are at constant risk of being exposed to chemical substances that cause hepatic damage - which may be linked directly or indirectly with oxidative stress. Taking(consuming) natural substances that reduces or prevent the hepatotoxic effects of these chemicals may help greatly in reducing the occurrence/prevalence of liver disease - which has a worldwide distribution and negatively affect the human health status. Therefore, this research is aimed at investigating the hepatoprotective and antioxidant effect of aqueous extract of *Moringa oleifera* leaf on carbon tetrachloride-induced toxicity in mice. The serum level of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), and albumin (ALB) were measured as markers of liver disease using standard methods, and compared among group I (Negative control), group II (Positive control), Group III (pretreated with 20mg/kg of extract), group IV (pretreated with 40mg/kg of extract) and group V (pretreated with 60mg/kg of extract). The level of Malondialdehyde (MDA) was also measured as a marker of oxidative stress using standard method, and compared among the aforementioned groups. The result of the research shows that the level of ALT, AST, ALP are significantly ($P<0.05$) lower in group III, IV and V compared to group II. Also, the level of ALB is significantly ($P<0.05$) higher in group III, IV and V compared to group II. Moreso, the level of MDA is significantly ($P<0.05$) lower in group III, IV and V compared to group II. These results suggest that the aqueous extract of *Moringa oleifera* leaf may have hepatoprotective effect against CCl_4-induced liver damage in mice. It also suggests that the extract may have antioxidant effect. Thus, the aqueous extract of *Moringa oleifera* leaf may be consumed by people at risk of exposure to chemicals that cause liver damage, and by those at risk of oxidative stress.

Key words: *Carbon tetrachloride, Liver, Malondialdehyde, Moringa oleifera, Hepatoprotective*.

BT 22

ANTIOXIDANT ACTIVITIES OF ILONEOSIDE, A PREGNANE GLYCOSIDE ISOLATED FROM *Gongronema latifolium* LEAF, AGAINST BENZENE-INDUCED OXIDATIVE STRESS IN MOUSE ERYTHROCYTE

Gyebi, G. A.[1,2] and Adebayo, J. O.[1*]

[1]Department of Biochemistry, University of Ilorin, Ilorin, Kwara State. [2]Salem University, Lokoja, Kogi State.

*Corresponding author; E-mail: topebayo2002@yahoo.com; Phone: +2347035487636

Abstract

Exposure to benzene has been linked to deleterious effects in many biological systems including blood and blood-forming organs. This toxicity is as a result of the oxidative metabolism of benzene to reactive products. This calls for urgent search for compounds that can protect against benzene-induced oxidative stress. This study was therefore carried out to evaluate the prophylactic and curative antioxidant activities of iloneoside, a pregnane glycoside isolated from the leaves of *Gongronema latifolium*, against benzene-induced oxidative stress in mouse erythrocyte. Seventy adult Swiss albino mice with an average weight of 20.0±2.0 g were divided into 2 main groups. Thirty five mice were used for the prophylactic study (Z1) while the other half (Z2) was used for curative study. Both halves (Z1 and Z2) were further subdivided into 7 groups each with 5 rats in each group. Oxidative stress was induced by intravenous injection of 0.2 mL of benzene into mice in groups B – G of Z1 and Z2 48 hourly for 14 days. Iloneoside was administered at the doses of 0.325, 0.75,1.5, and 3 mg/kg body weight to mice of groups D, E, F and G respectively of Z1 and Z2. Mice of groups A and B of Z1 and Z2 were administered 0.5% DMSO, thus serving as positive and negative controls respectively, while mice in groups C of Z1 and Z2 were administered 20 mg/kg body weight of ascorbic acid (standard antioxidant). Z1 groups were administered the compounds for 14 days before the induction of oxidative stress while Z2 groups were administered the compounds for 14 days post-induction of oxidative stress. The antioxidant potential of iloneoside was evaluated by determining the concentrations of malondialdehyde (MDA), nitrite (NO) and reduced glutathione (GSH) and activities of superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) and glutathione-S-transferase (GST) in mouse erythrocyte. The results revealed that benzene caused significant increase ($p<0.05$) in mouse erythrocyte MDA concentration but significantly reduced ($p<0.05$) concentrations of NO and GSH and the activities of SOD, CAT, GPx and GST in mouse erythrocyte compared to positive controls (not treated with benzene) for both prophylactic and curative studies. However, iloneoside was able to significantly revert ($p<0.05$) these alterations, comparing favourably with ascorbic acid for both prophylactic and curative studies. The results suggest that iloneoside possesses the ability to induce antioxidant defense system in mouse erythrocyte against oxidative stress, exhibiting both prophylactic and curative antioxidant activities.

Keywords: Iloneoside, *Gongronema latifolium*, Pregnane glycoside, antioxidant, oxidative stress.

BT 023

EFFECTS OF ARTESUNATE-PROCYANIDIN HYBRID COMPOUND ON SELECTED LIVER FUNCTIONINDICESIN MICE

[1]Tijjani, H. and [2]Adebayo, J. O.*

[1]Department of Biochemistry, Faculty of Sciences, Bauchi State University, Gadau, Nigeria.
[2]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria.

*Corresponding author; E-mail: topebayo2002@yahoo.com; Phone: +2347035487636

Abstract

Artesunate- procyanidin hybrid moleculeis a novel antimalarial compound which has been demonstrated to be active against rodent malaria parasite. However, this hybrid compound has not been evaluated for its toxicity. This study was therefore carried out to evaluate the effects of artesunate-procyanidin hybrid molecule on selected liver function indices in mice. Thirty mice were randomly divided into six groups

of five mice each (Groups A-F). Mice in group A (control) received 5% DMSO while mice in groups B, C, D, E and F received 5,10, 20, 40 and 80 mg/kg body weight of the hybrid molecule for 21 days. Artesunate-procyanidin hybrid compound at all doses administered did not cause any significant change ($p>0.05$) in the plasma levels of total protein, globulin, total and conjugated bilirubin compared to controls. However, a significant increase ($p<0.05$) was observed in albumin concentration at 5 mg/kg body weight of the hybrid molecule, with no significant alteration ($p>0.05$) at other doses compared to control. The hybrid compound at all doses did not cause any significant change ($p>0.05$) in aspartate aminotransferase, alkaline phosphatase, glutamate dehydrogenase and γ –glutamyltransferase activities in the liverand plasma compared to controls. Furthermore, there was no significant change ($p>0.05$) in plasma alanine aminotransferase (ALT) activity at all doses whereas there was significant increase ($p<0.05$) in the liver ALT activity at all doses of the hybrid molecule compared to controls. These results suggest that artesunate-procyanidin hybrid molecule may not adversely affect hepatic functionduring treatment.

Keywords: Antimalarial, Artesunate, Procyanidin, Hybrid molecule, Liver function

BT 024

ANTIOXIDANT AND TOXICOLOGICAL EVALUATION OF *AGELANTHUS DODONEIFOLIUS* LEAF AGAINST ASPIRIN AND ETHANOL INDUCED ULCERATION IN RATS.

*Mohammed B.A, Jigam A.A, Abubakar A

Department of Biochemistry, Federal University of Technology, Minna.
*Corresponding author: Mohammed Bala Alkali, kudos4kudogi@gmail.com, 08131252274

Abstract

Oxidative stress is usually related to initiating and aggravating many diseases namely gastric ulcer, duodenal ulcer and gastric cancinoma. Preparation of *Agelanthus dodoneifolius* (*A. dodoneifolius*) has been used in traditional medicine to treat ulcer with no scientific evidence. This present study therefore, investigates evaluations of *A. dodoneifolius* leaf for its possible antioxidant potential against reactive oxygen species (ROS) which is known to cause ulcer. The antiulcer activities of crude extract (800 and 1600 mg/kg bw) and the fractions (methanol, n-hexane and ethyl acetate) at 800mg/kg bw were carried out against ethanol and aspirin induced ulcer in rats. The methanol extract of *A. dodoneifolius* showed maximum DPPH radical-scavenging activities with IC_{50} values of 42.78µg/ml as compared to that of standard ascorbic acid 64.84 µg/ml. Superoxide dismutase (SOD) and catalase levels were significantly ($p<0.05$) higher compared to the control group. There was a significant ($p<0.05$) decrease in the serum Malonaldehyde (MDA) content, compared to the control group of the aspirin model, but there was no significant ($p<0.05$) difference in the MDA content of the ethanol model of ulceration. There was significant ($p<0.05$) increase in the activity of serum liver enzyme of ALP, ALT, and AST activity after the fifth week of crude extract administration of *A. dodoneifolius* leaf. There was significant ($p<0.05$) increase in urea and sodium levels with no significant ($p<0.05$) difference in potassium, creatinine, albumin and protein levels. Thus, the results may contain biologically active compounds that are relevant in the scavenging of free radicals and consequently alleviating the induced ulceration in rats.

BT 025

TOXICOLOGICAL STUDIES OF A LOCALLY CONSUMED HERBAL PREPARATION (MBX) IN RATS.

***Mohammed Audu, AdamuYusuf Kabir, Abubakar Ndaman Saidu and Mohammed Bala Alkali**

Department of Biochemistry, Federal University of Technology, Minna, Niger State
* Tel: +234 7036598693 E-mail: mohlamin4reela@gmail.com

Abstract

The shift towards medicinal plants in most communities has led to the hawking of a wide variety of herbal preparations whose safety has not been evaluated. MBx was screened for the presence of some phytochemicals using standard methods and acute oral toxicity study was carried out by administration of 10, 100, 1000, 1600, 2900 and 5000 mg/kg bodyweight of MBx to rats in the respective groups. Sub-acute toxicity study was conducted by oral administration of MBx using daily doses of 200, 400 and 600 mg/kg bodyweight to 3 groups of rats for 28 days; while rats in the control group received distilled water. MBx was found to contain flavonoids, phenols, tannins, saponins and alkaloids at a concentration of 10.42±1.13, 239.20±0.53, 97.30±2.35, 39.90±1.74 and 5.74±0.18 mg/g respectively. The LD_{50} of MBx in rats was found to be greater than 5000 mg/kg bodyweight. There was no significant difference ($p<0.05$) between the test groups administered with MBx and the control group for kidney function parameters(Na^+, K^+ and urea) and liver function parameters(alkaline phosphatase, total protein and albumin). Similarly, mean organ weight index and haematological parameters evaluated were not significantly different ($p<0.05$) from the control. However, there was significant increase ($p<0.05$) in serum alanine aminotransferase and creatinine for rats administered 600 mg/kg bodyweight of MBx. Likewise, there was significant increase ($p<0.05$) in serum aspartate aminotransferase in rats administered 200 mg/kg bodyweight of MBx. Histopathological examination revealed no necrosis of hepatic and cortical cells but improvement in cell integrity and morphology as dosage increased to 400 mg/kg through to 600 mg/kg bodyweight. The result obtained in this study indicates that the oral administration of MBx did not produce any significant toxic effect in rats.

Keywords: Herbal Preparation, MBx, Phytochemicals, Necrosis, Morphology

BT 026

AQUEOUS EXTRACT OF DATE FRUIT (*Phoenix dactylifera*) ON HEPATOCURATIVE INDUCED TOXICITY IN RATS

***Yunusa Abdulqadir[1], Sambo Misbahu[2], Muhammad Kano Atiku[3], Labaran Isah[1], Bawa Abubakar[1] and Mahmoud Dogara Abdulrahman[4]**

[1]Department of Science Laboratory Technology, Federal Polytechnic Mubi, Adamawa State.
[2]Department of Biochemistry, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
[3]Department of Biochemistry, Bayero University, Kano, Nigeria.
[4]Department of Biological Sciences, Kaduna State University, Kaduna state.
*Correspondence Author: abdulqadiry773@gmail.com, 08065451777

Abstract

Liver disease account for a reasonable percentage of medical admission in Nigeria and the synthetic drugs used for the treatment of the disease is very expensive, also reported having side effects. This nictitates researchers to search for plants based medication in order to overcome the persistent liver problem in Nigeria. The study aims to investigate the potential of aqueous extract of Date fruit on induced toxicityrats with carbon tetrachloride hepatotoxicity. Four different concentrations were administered; 0, 5, 10, 15 and kg/body weight respectively. Serum level of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline Phosphatase (ALP), total bilirubin (TB), albumin (ALB) and total protein (TP) were measured as markers of liver disease using standard method. The findings from the study revealed all the concentrations does not have any effect on the liver of the rats as compared to the control group. The extract was also found to reduce the level of ALT, AST, ALP, TP, and DB, as well as significantly increase the level of TP and ALB in treated groups with 15 and 20 kg/body. The study provides a baseline information towards the development of herbal supplement and synthetic drugs from plant origin. Further studies should be carried out using solvent extract.

Key words: Liver, Carbon tetrachloride, Date fruit, Hepatocurative Aqueous extract.

BT 027

NEPHROTOXIC TENDENCY AND GC-MS FINGERPRINTS OF THE ETHANOLIC EXTRACTS OF *CAPSICUM ANNUUM*

[*]FA Sulaiman[1], BO Yusuf[1], SA Omar[1], OS Adeyemi[2], HT Muritala[1], MJ Adisa[3], AA Olopade[1], FI Babajamu[1], AT Jimba[1], AL Babatunde[1], BA Adeniyi[1], BR Opaleye[1], RF Maimako[2], OK Bello[1]

[1]Department of Biochemistry, University of Ilorin, Ilorin, Kwara State, Nigeria.
[2]Medicinal Biochemistry, Nanomedicine and Toxicology Laboratory, Department of Biological Sciences, College of Sciences & Engineering, Landmark University, Kwara State, Nigeria.
[3]Department of Chemistry, Ibrahim Badamosi Babangida University, Lapai, Niger State, Nigeria.
[*]Tel: +23480321227200, Email: Faoziyat20022002@yahoo.com

Abstract
In the present study, we evaluated the toxicological effects of the ethanolic extracts of the *Capsicum annuum* leaves (CAL), root (CAR) and stem (CAS) in rats. Male Wistar rats divided into four groups were given 200 mg/kg body weight extracts of CAL, CAR and CAS daily for 28 days while the control group received distilled water only. Biochemical determinations were carried out to assess the effect of experimental treatments. Results showed that administration of ethanolic extracts of CAL, CAR and CAS did alter the liver function indices but not in a clear-cut manner to suggest hepatotoxicity. The CAR and CAS extracts decreased ($p<0.05$) the rat serum albumin levels compared with the control. In contrast, CAL extracts raised ($p<0.05$) the rat serum albumin level relative to the control. The plant extract administration raised rat serum bilirubin level compared with the control. Further, the extracts caused reduction ($p<0.05$) in rat serum TAG levels compared with the control. The CAL, CAR and CAS extracts did not significantly affect the rat serum creatinine level but caused significant elevation of rat serum urea compared with the control. The GC-MS of the ethanolic extract of *Capsicum annuum* revealed the presence of 9 compounds which included aditerpene phytol (25.52%) as the major component. Taken together, findings do not only support the cardio-protective potential of *C. annuum* extracts but implicate the nephrotoxic tendency of the plant extracts probably if repeatedly consumed.

Keywords: Herbs; Medicinal plants; Phyto constituents; Spices; Toxicity

BT 028

THE PHYTOCHEMICAL COMPOSITION AND EFFECTS OF ETHANOL LEAF EXTRACT OF *Vernonia amygdalina* (BITTER LEAF) ON SOME HEMATOLOGICAL PARAMETERS OFALBINO RATS

***Michael Okey Enemali, Titilayo Oluwayemisi Bamidele and Ibrahim Zakariyau**
Department of Biochemistry and Molecular Biology Nasarawa State University Keffi, Nigeria.
[*]E-mail mikenemali@nsuk.edu.ng,: Phone: 08033392429

Abstract
Bitter leaf (*Vernonia amygdalina* Delile), of the family asteraceae is a perennial shrub that is widely used locally in Nigeria for bothnutritional andtherapeutic purposes. This study was conducted to evaluate the phytochemical composition and the effect of ethanol leaf extract of the plant on some hematological parameters of albino rats. Sixteen rats were randomly divided into four groups of 4 rats each. All the groups were fed with growers mash. Group 1, 2, 3 and 4 received daily oral doses of 0, 200, 300 and 400mg/kg b.w of the extract respectively. After 14 days of treatment, the animals were sacrificed and blood was collected through ocular vein. The presence of alkaloids, tannins, phenolics, saponins, flavonoids, terpenoids, glycosides and resins were detected with saponins as the most abundant. The results also showed significant increase ($p<0.05$) in WBC (8.58±0.50), MCH (153.69±2.80), MCV (0.41±0.0) and MCHC (332.0±2.90)and non-significant ($p>0.05$) change in PCV (27.2±1.7), Hb (75.30±15.10), RBC (0.52±0.01), and PLT (142.50±1.30) at the concentration of 400mg/kg bw, when compare to control (41.0±1.8), (135.80±2.50), (1.31±0.03), (303.80±5.10), (1.47±0.40), (102.99±1.40), (0.33±0.30), (315.80±1.70) respectively. There was no significant change in all the blood components and the lipid profile of the test rats relative to control in all other groups. It was therefore concluded that the extract is rich in bioactive compounds, has immune stimulating activities but a non-significant effect on the hematopoietic process and lipid profile of the rats at the administered doses within the period of the research.

Key Words: Phytochemicals, Hematological parameters, *Vernonia amygdalina*, Lipid profile, Therapeutic.

BT 0029

GAS CHROMATOGRAPHY-MASS SPECTROMETRIC (GC-MS) ANALYSIS AND TOXICOLOG ICAL ASSESSMENT OF AQUEOUS EXTRACT OF *PHYLLANTHUS NIVOSUS* LEAF

Titilayo Omolara Johnson[1], *Ekone Uzezi Solomon[1], Carroll Domkat Luka

[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos, Nigeria,
* Corresponding Author – ekone2@yahoo.com, +2347035104216

Abstract

Phyllanthus nivosus has been constantly used in the Eastern part of Nigeria for the treatment of malaria, but there seem to be no available data regarding its bioactive components and safety profile. The aim of this research was to identify the chemical constituents and evaluate the acute and sub-acute oral toxicity of aqueous extract of Phyllanthus nivosus leaf in rats. The chemical constituents of the extract was ident ified using GCMS analysis. A single dose of extract at 2000mg/kg body weight and daily doses at 500 a nd 1000 mg/kg for 21 days, were orally administered to rats. Serum, liver and kidney samples were coll ected for hematological, biochemical and histopathological studies. GC-MS analysis showed the presen ce of twenty three compounds, some of which are: - stearic acid (20.65%), octadecanoic acid (16.65%), N- Hexadecanoic acid (17.75%), l-(+)-Ascorbic acid 2,6-dihexadecanoate (7.04%), 1,4-Benzenediol (8. 01%) and Benzofuran 2,3-dihydro-Coumaran (5.30%). In the toxicological study, no significant differen ce was observed in any of the parameters at 2000mg/kg, but significant variations in body weight, hema tological and biochemical parameters were observed in the groups treated with 500 and 1000 mg/kg extr act for 21 days. Histopathological studies also revealed slight lesion and centrilobular necrosis in the liv er and Kidney of this group of rats. Acute oral administration of Phyllanthus nivosus leaf extract showed no sign of toxicity in rats at 2000mg/kg but prolonged administration at 500 and 1000 mg/kg caused live r and kidney damage.

BT 0030

EFFECT OF ORAL EXPOSURE TO NITROCELLULOSE THINNER ON SEX HORMONES LEVELS IN MALE AND FEMALE WISTAR RATS

***Oplekwu, Rowland I., Okon, Maryann E. and Uboh, Friday E.**

Department of Biochemistry, Faculty of Basic Medical Science, University of Calabar, Nigeria.
Rowlandoplekwu@yahoo.com, 08057246650

Abstract

The effect of twenty one (21) days of oral exposure to nitrocellulose thinner (NCT) on the serum levels of sex hormones (luteinizing hormone (LH), follicle stimulating hormone (FSH), testosterone, progesterone and estradiol) in male and female Wistar rats was determined in this study. Thirty six (36) rats, were separated according to their sexes and randomly distributed into three (3) groups, with one of the groups for both sexes serving as the control group, while the other groups were the test groups. The control groups were given distilled water only, while the test groups were orally exposed to 15mg/kg and 20mg/kg body weight of NCT, respectively. From the study, it was observed that oral exposure to NCT solvent caused a significant ($p<0.05$) decrease in the serum levels of LH, FSH, testosterone, progesterone and estradiol in rats, compared to the control, in a dose dependent manner. However, the reductions in the levels of LH in female rats in the test groups were not significant ($p>0.05$) compared to rats in the control group. Histological examination of the gonads supports the results obtained. It may therefore be concluded that oral exposure to NCT causes a comparable adverse alteration in the serum sex hormones levels, and hence reproductive complications, in male and female rats.

Key words: Nitrocellulose thinner, Sex hormones and Gonads

BT 0031

PHYTOCHEMICAL SCREENING AND MUTAGENIC EFFECTS OF THE AQUEOUS EXTRACT OF *Azadirachta indica (Ajuss.)* LEAVES ON THE ROOT-TIPS OF *Capsicum frutescence (Linn.)*

WAJA, Samuel*.; MOHAMMED, M. malgwi.; T, wandiyahel and BASSEY, E. Eyo
Department of Biological Science technology Federal Polytechnic Mubi Adamawa State.
Department of Plant Science Modibbo Adama University of Technology, Yola Adamawa State.
Department of Biological science Technology Federal Polytechnic Mubi
Department of Chemical Technology Federal Polytechnic Mubi
Correspondent Address: samuelwaja@rocketmail.com **GSM: 07036168790**

Abstract
With the increased consumption of medicinal plants extract in altenative treatments and the search for new compound with biological activity, the need arose to carry out the phytochemical screening and the Mutagenic potentials of the leave extracts of *Azadiracta indicia*. The phytochemical screening of the extract of A. indica have shown the presence of flavonoids, saponins, tannins, terpenoids and phytosteroids .Mutagenic effect was evaluated *in vivo* along with the action of the well-known alkylating agent, EMS using the root-tips of *Capsicum frutescence*. Seeds of *Capsicum frutescence* were soaked in 5%, 10%, 15%, and 20% of plant extract for 72. The test concentrations were determined according to the doses which were suggested for utilization in alternative medicine i.e. 5g with its graded multiples of 2, 3, and 4 respectively. *In vivo* test showed that extracts of *A. indica* induced some chromosomal aberrations in the genome of *Capsicum frutescence*. Mutagenicity was found to increase with increased extract concentrations. The test results showed that the extracts of *Azadiracta indica* administered at 10, 15, and 20gms increased the inhibition of cell division and induced DNA damage which were detected in the forms of segmental agglutinations, polyploidy, fragmentations, chromosomes dissolutions, and stickiness. However, lower concentrations of 5g/5% were not effective suggesting that the medicinal plant *A. indica* is probably safe for consumptions at the recommended dose of 5g. However, the possible DNA damage and segmental changes seen as the concentrations increased to 20gms suggest that higher doses above the recommended 5g could be dangerous to human cells at the long run and calls for caution in the consumption of raw herbal products prepared from *A. indica.* Low concentration of the plant extracts and wide spacing of dosage is therefore suggested for use if *A. indica* is to be used in traditional Medicare.

Key words: polyploidy, stickiness, agglutination, phytochemical ,*Azadirachta indica*

BT 0032

TOXICOLOGICAL STUDIES OF METHANOL EXTRACT OF *Napoleona imperialis* SEEDS ON SOME BIOCHEMICAL INDICES AND ORGANS OF ALBINO RATS

Haruna, Gambo Sunday* Ogugua, Victor Nwadiogbu, Elijah, Parker Joshua

Department of Biochemistry, University of Nigeria, Nsukka
Department of Biochemistry and Molecular Biology, Nasarawa State University Keffi, Nigeria
*Corresponding author e-mail: sundaygambo5@gmail.com Phone number: +2347031964307

Abstract
The present study aimed at evaluating the *in vivo* toxic effect of methanol extract of *Napoleona imperialis* seeds on some Biochemical indices and organs of albino rats. The phytochemical constituents as well as the acute toxicity test of the extract were evaluated using standard methods. Twenty five experimental

rats were divided into five groups of five rats each, group one was the control. They were administered the extract orally for 28 days, on the 29th day, blood was collected and organs harvested after sacrificing the animals. The Biochemical parameters; Malondialdehyde, glutathione peroxidase, superoxide dismutase, glutathione and catalase were analyzed, sperm cells were counted, histological examination of the testis, liver and kidney was also performed, using standard methods. The results showed that methanol extract of the seeds contain some phytochemicals. The LD_{50} was 3605.55 mg/kg. The extract increased malondialdehyde concentration and catalase activity at 600 mg/kg b.w, with no significant ($p > 0.05$) difference in the activities of glutathione peroxidase and superoxide dismutase of the experimental groups. Glutathione concentrations also showed no significant ($p > 0.05$) difference when compared to control. The extract reduced caudal epididymal and testicular sperm counts non-significantly ($p > 0.05$) in experimental groups. Photomicrograph images of the liver, kidney and testis showed no histological changes in the organs. In conclusion, these results demonstrate that the seed extract may not be toxic to the organs at the doses administered as reflected in the parameters analyzed but may induce lipid peroxidation due to increased level of malondialdehyde.

Keywords: Biochemical indices, Effect, *Napoleona imperialis*, Toxicological studies.

BT 0033

PROTECTIVE EFFECT OF *Ficus sycamore* BERRIES METHANOL EXTRACT ON ASPIRIN INDUCED GASTRIC MUCOSAL INJURY

[1*]Nwogo Ajuka Obasi, [2]Stella Eberechukwu Obasi, [1]Chinyere Aloke and [3]Ikechuku Okorie Igwenyi

[1]Department of Medical Biochemistry, Alex Ekwueme Federal University, Ndufu-Alike, Ebonyi State

[2]Department of Science laboratory Technology, Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State

[3]Department of Biochemistry, Ebonyi State University Abakaliki, Ebonyi State, Nigeria

***Corresponding author: Dr N.A. Obasi, naobasi@yahoo.com +234(0)8037320579**

Abstract

This study investigated the anti-ulcer activities of methanol extract of *Ficus sycamore* berries (FSBE) on aspirin induced gastric mucosa injury in Albino Wistar rats using standard protocols. In Phase I, oral doses of 250, 500 and 1000 mg/kg body wt. / day of FSBE was employed at different time intervals for 3 and 7 days and then treated with 400mg/kg. body.wt suspended in (0.5% carboxy methyl cellulose) of aspirin orally. Phase II study comprised four groups. Group I, normal control did not receive any treatment, Group II received aspirin treatment only, Group III received aspirin + 1000 mg/kg body.wt/day of FSBE and Group IV received 1000 mg/kg/body wt/day of VDBE only. Acute toxicity showed no death at varying oral doses up to 5000 mg/kg body wt of VDBE. The results showed that FSBE caused a dose dependent significant ($P < 0.05$) decrease in ulcer index in aspirin induced albino wistar rats with 1000 mg/kg body.wt/day causing highest decrease in 7 days. The results showed significant increase ($P< 0.05$) of lipid peroxidase in rats with acute gastric mucosal injury and a significant decreased ($P< 0.05$) in the activities of antioxidant defense enzymes by oral gastric administration of aspirin. The decreased levels of antioxidant enzymes and increased mucosal injury were altered to near normal status upon pretreatment with VDBE when compared to the ulcer induced rats. These results indicate that FSBE exhibit anti-ulcer potential and may exert its gastro-protective effects by a free radical scavenging action.

Keywords: *Ficus sycamore*, Gastric ulcer, Aspirin, Scavenging activities, Treatment

BT 034

EFFECTS OF COMBINED AQUEOUS LEAF EXTRACTS OF SENNA SIAMEA AND EUCALYPTUS CITRIODORA ON SOME SELECTED BIOCHEMICAL PARAMETERS IN RATS

***Maigari, FU and Sani Bappa M**
Department of Biochemistry, Gombe State University
fatimamaigari@gmail.com, 07037865969

Abstract
The study aimed at determining the effects of combined aqueous leaves extract of Senna siamea and Eucalyptus citriodora on some liver and kidney parameters on healthy albino rats. The rats (weighing between 48g to 110g) were obtained and randomly grouped into five groups of five rats each. The aqueous extract of the leaves were administered orally at concentrations of 100, 200, 300, 400mg/kg body weight, for group II, II, IV and V respectively, whereas group I was not treated with the extracts and serve as the control group. The experiment lasted for fourteen days (14) after which the animals were sacrificed and the serum was obtained. The leaves were analysed for phytochemicals and the results showed the presence of alkaloid, flavonoid, saponins, steroids, tannins, cardiac glycosides in Senna siamea while that of Eucalyptus citriodora showed the presence of alkaloid, saponins, tannins, anthraquinone. Groups 100 and 200 mg/kg body weight of the extracts showed no significant increase in the serum levels of alanine transaminase and aspartate transaminase. But a significant increase was observed in the groups III and IV in the two liver indices, while all the four groups had an elevated level of enzyme alkaline phosphatase (ALP) ($P \leq 0.05$)compared to group I. Also group IV showed a significant increase in level of serum urea compared to the other test groups with low level. The levels of serum creatinine in all the groups was found to be normal. Conclusively, the combined aqueous extracts of the leaves have more effect on the liver than the kidney.

Keywords: Senna siamea, Eucalyptus citriodora, liver, kidney

BT 035

Plantago rugelii METHANOL WHOLE PLANT EXTRACT: QUANTITATIVE PHYTOCHEMICAL AND ORAL ACUTE TOXICITY SCREENING IN ALBINO RAT

[*1]Ogbiko Cyril and [2]Eboka Chukwuenweniwe Jonathan
[1]Department of Pure and Applied Chemistry, Usmanu Danfodiyo University Sokoto, Sokoto State
[2]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Benin, Benin City Edo State Nigeria
[*]Corresponding Author: E-mail: cyril.ogbiko@udusok.edu.ng; cyrilogbiko@gmail.com
Tel: +2348080398933

Abstract
Despite global increase in the use of herbal medicine, there are inadequate research evidence on their effectiveness and toxicity. *Plantago rugelii* is used as an astringent, antitoxic, antimicrobial, anti-inflammatory among others. This research determines the quantitative phytochemical screening as well as ascertains its oral safety uses in traditional medicinal practices using standard methods. 24 healthy albino rats were sorted into 4 groups with 6 animals per group. Group A (control) received 1 mL of 5% gum acacia (vehicle), groups B, C and D were treated with graded doses of 3, 6 and 9 g/kg body weight of the crude methanol extract for 14 days. After the study period, the body weight and the weight of its vital organs (heart, liver, spleen, kidney and lung) were determined. The PCV, marker enzymes (AST, ALT and ALP) as well as total protein levels were determined using the haematocrit capillary method and the use of standard kits respectively. The quantitative phytochemical screening reveals the percentage composition of 18.08, 0.38, 19.38 and 9.90 for saponin, tannin, flavonoid and alkaloid respectively. The 50% lethal dose of the extract was above 9000 mg/kg body weight. Compared to the control, there were no statistically significant differences ($p < 0.05$) in the body weight and examined organs of the treatment groups, the marker enzymes levels for all the treatment groups differed significantly ($p > 0.05$) thou were all within reference range. These results suggest that the methanol plant extract of *Plantago rugelii* are not acutely toxic in albino rats.

Keywords: Acute toxicity, Phytochemical, *Plantago rugelii*.

BT 036

PROTECTION EFFECTS OF *Annona senegalensis* AND ITS FRACTIONS AGAINST *Najanigricollis* VENOM INDUCED MORTALITY

Idris Aliyu Kankara*[1], Paulina Gayus Aminu[1], Binta Kurfi,[2]
[1]Department of Science Laboratory Technology, Federal Polytechnic KauraNamoda, Zamfara State
[2]Department of Biochemistry, Bayero University, Kano State-Nigeria
Corresponding author: aliyukankara@gmail.com 07035228026

Abstract
Snake envenomation is a serious neglected public medical issue in developing countries, this often lead to higher mortality rate. Anti-snake venom, the only authorized available drug of choice for the immediate treatment of snakebites, has many drawbacks; such as species specificity, limited effectiveness against severe pain, localized haemorrhage and myonecrosis induced by snake venom. This study aimed to investigate the protection effect of root bark of *Annona senegalensis* and its fractions against *Najanigricollis* venom induced mortality. Methanolic root bark extract of *Annona senegalensis* was fractionated based on preparative TLC with Chloroform: Methanol (9:1). The antioxidant potential of fractions was determined using DPPH assay. Protection of venom induced mortality was assayed in albino rats using pre-treatment and pre incubation protocols. The result of preparative TLC revealed the presence of eleven bands. Fractions III, VI and VIII were found to have the highest antioxidant potential. Intravenous injection of LD99 (10mg/kg) of *Najanigricollis* venom to albino rats produces 100% death of the rats in control group. Oral administration of crude extractat 200mg/kg and 300mg/kg for seven days (pre-treatment) to albino rats gave 100% protection to the rats from death. Fraction VIII has the highest significant ($p<0.05$) effect against *Najanigricollis* venom induced mortality compared to fraction III and VI. Anti- snake venom was found much effective ($p<0.05$) as compared with the fractions of the plant, showing 100% survivals of all rats compared to root bark extract of *Annona senegalensis*. The results highlight the anti-snake venom potential of *Annnona senegalensis*

Key words; *Annona senegalensis*, *Najanigricollis*, Mortality

BT 037

INSECTICIDAL PROPERTIES OF AQUEOUS EXTRACTS OF *JATROPHA CURCAS* SEEDS FROM NIGERIA AND INDIA AGAINST *Callosobruchus maculatus* DURING POST HARVEST STORAGE OF COWPEA.

***[1]InekweVictory U., [2]OnyikeElewechi, [3]Bamaiyi Lucius J.,[4]Bawa Livinus Y.**

[1]NARICT Liaison Office/Basic Research Department, National Research Institute for Chemical Technology. PMB 1052, Zaria - Kaduna State, Nigeria.
[2]Department of Biochemistry, Faculty of Science, Ahmadu Bello University Zaria
[3, 4] Department of Crop Protection, Faculty of Agriculture, Ahmadu Bello University Zaria
*Corresponding Author's Phone No: +2348060841851 E-mail address: victoriousugochi@yahoo.com

Abstract
Plant-based insecticides are a better option to chemical insecticides for several reasons. In the quest to enhance food security, the insecticidal potential of aqueous extracts of *Jatropha curcas* seeds from Kaduna and Edo (Nigeria) and India at 1000ppm were evaluated (after twelve weeks of storage, having used these extracts to treat 100g of cowpea grains and infesting the grains with ten pairs of the test insects during the hot wet season of June to September, 2011 at room temperature of 24 ± 2^0C and relative humidity of 91 ± 7%). Effectiveness of the extracts in suppressing the development of the cowpea weevil, *Callosobruchus maculatus* was monitored by observing mortality, ovipositon, first and second generations which emerged from eggs laid. Azadirachtin, the insecticidal compound of the neem plant (*Azadirachta indica*) was used as a standard. Azadirachtin showed significantly higher ($P<0.05$) percentage cumulative mortality (80%) compared to extracts of *J. curcas* seeds being 50%, 35% and 60%

from Kaduna, Edo and India respectively. Suppression of oviposition was significantly ($P<0.05$) lower than the control (86 eggs), for all the extracts from various locations (range being 2-38 eggs). The F_1 generations were similarly affected with Azadirachtin, the extracts and control giving 1.0, 6-13 and 44.0 respectively; although the insecticidal effects were reduced in the F_2 generation with corresponding values of 42, 270-330 and 565. The results showed that *J. curcas* is toxic to *C.maculatus*, with potential to serve as botanical insecticide. Insecticidal potency did not depend on the geographical source of the seeds.

Keywords: Food security, Extracts, *Callosobruchus maculatus*, Insecticide, *Jatropha curcas*.

BT 038

NEPHROTOXIC EVALUATION OF ETHANOL STEM BARK EXTRACT *OF Dialium guineense* IN NORMAL WISTAR RATS

Osahon Daniel Abu[1*] and Iyere Osolase Onoagbe[1]

[1]Department of Biochemistry, Faculty of Life Sciences, University of Benin, Benin City, Nigeria.
*Corresponding author: **Email:** osahon.abu@uniben.edu; **Tel:** +2347086427636

Abstract

The kidney is one of the organs susceptible to damage by harmful substances. *Dialium guineense* is a medicinal plant that is used in parts of Africa for the treatment of various ailments. This plant contains bioactive substances such as alkaloids, tannins, saponins and phenolics. Some of these bioactive compounds may have adverse effects on the kidney. Thus assessment of renal status of Wistar rats administered ethanol extract of *Dialium guineense* may shed light on the safety of this plant. The aim of this study was to investigate the nephrotoxic effect of ethanol stem bark extract of *Dialium guineense* in normal Wistar albino rats. Thirty-five male rats were used. Graded doses of the extract ranging from 200 to 5000 mg/kg body weight b.wt were administered to the test rats daily for twenty-eight days. The control rats received distilled water. Thereafter plasma creatinine, urea, electrolytes and malondialdehyde (MDA) levels were determined. There were no significant differences in the concentrations of the measured renal parameters ($p > 0.05$), except that the concentration of MDA of rats administered 5000 mg/kg b.wt was significantly increased compared to control. These results appear to suggest that the extract may be safe at concentrations not extending 4000 mg/kg b.wt. However, further studies spanning several months may be necessary.

Keywords: Nephrotoxic effect, Dialium guineense, Rats, Electrolytes, Malondialdehyde

BT 38

CO-ADMINISTRATION OF PARACETAMOL AND AQUEOUS EXTRACT OF *Hibiscus sabdariffa* LINN AMELIORATES PARACETAMOL INDUCED NEPHROTOXICITY IN MICE

ORJI Blessing Ogechukwu[1]*, OBI Frederick Otunuya[2], MODO Emmanuel Uchechukwu[3]

[1]Department of Biochemistry and Molecular Biology, Faculty of Science, Federal University Dutsin-ma, P.M.B. 5001, Dutsin-ma, Katsina State, Nigeria.
[2]Department of Biochemistry, Faculty of Life Sciences, University of Benin, Benin City, Edo State,
[3]Department of Biochemistry, Madonna University Nigeria, Elele Campus, Rivers State, Nigeria.
*Corresponding author E-mail: blessingoorji@gmail.com, phone number: +2348022226832

Abstract

The impact of co-administration of paracetamol and aqueous extract of *Hibiscus sabdariffa* Linn calyx on nephrotoxicity prompted by paracetamol, under acute and sub-acute treatments was assessed. Four groups, each of them having 5 mice were involved in this study: control, extract-treated, paracetamol-treated and co-treatment with extract and drug. The extract and drug were given by oral route (250mg/kg and 500mg/kg respectively) to the animals. Treatment with paracetamol significantly increased ($P\leq0.05$) creatinine and urea,

and reduced bicarbonate and sodium levels when compared to the control group. Also significantly reduced (P≤0.05) were superoxide dismutase and catalase activities alongside the level of reduced glutathione, while the value of malondialdehyde was significantly increased (P≤0.05). Co-administration was seen to attenuate the changes brought about by paracetamol in the parameters studied. Assessment of histopathology of kidney segments indicated that treatment with the drug caused acute tubular necrosis and necrotizing pyelitis while co-treatment of drug with extract provided protection. Co- administration of paracetamol and extract was shown to enhance kidney function in response to toxicity caused by paracetamol in mice. The source of this amelioration may be due to the antioxidant components of the extract which have been widely reported.

Keywords: *Hibiscus sabdariffa* Linn, nephrotoxicity, paracetamol, co-administration.

BT 040

EFFECTS OF ARTESUNATE-PROCYANIDIN HYBRID COMPOUND ON SELECTED LIVER FUNCTION INDICES IN MICE

[1]Tijjani, H. and [2]Adebayo, J. O.*

[1]Department of Biochemistry, Faculty of Sciences, Bauchi State University, Gadau, Nigeria.
[2]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria.
*Corresponding author; E-mail: topebayo2002@yahoo.com; Phone: +2347035487636

Abstract

Artesunate-procyanidin hybrid molecule is a novel antimalarial compound which has been demonstrated to be active against rodent malaria parasite. However, this hybrid compound has not been evaluated for its toxicity. This study was therefore carried out to evaluate the effects of artesunate-procyanidin hybrid molecule on selected liver function indices in mice. Thirty mice were randomly divided into six groups of five mice each (Groups A-F). Mice in group A (control) received 5% DMSO while mice in groups B, C, D, E and F received 5, 10, 20, 40 and 80 mg/kg body weight of the hybrid molecule for 21 days. Artesunate-procyanidin hybrid compound at all doses administered did not cause any significant change ($p>0.05$) in the plasma levels of total protein, globulin, total and conjugated bilirubin compared to controls. However, a significant increase ($p<0.05$) was observed in albumin concentration at 5 mg/kg body weight of the hybrid molecule, with no significant alteration ($p>0.05$) at other doses compared to control. The hybrid compound at all doses did not cause any significant change ($p>0.05$) in aspartate aminotransferase, alkaline phosphatase, glutamate dehydrogenase and γ –glutamyl transferase activities in the liver and plasma compared to controls. Furthermore, there was no significant change ($p>0.05$) in plasma alanine aminotransferase (ALT) activity at all doses whereas there was significant increase ($p<0.05$) in the liver ALT activity at all doses of the hybrid molecule compared to controls. These results suggest that artesunate-procyanidin hybrid molecule may not adversely affect hepatic function during treatment.

Keywords: Antimalarial, Artesunate, Procyanidin, Hybrid molecule, Liver function

BT 041

QUANTITATIVE ANALYSIS OF SELENIUM IN STAPLE GRAINS FROM KANAM LOCAL GOVERNMENT AREA, NORTH-CENTRAL NIGERIA

Kiri H. JARYUM[*1, 2], Z.S.C. OKOYE[2] and Barbara J. STOECKER[1]

[1]Dept. of Nutritional Sciences, College of Human Science, Oklahoma State University, Stillwater, USA;
[2]Department of Biochemistry, faculty of Medical Sciences; University of Jos, P.M.B. 2084, Jos, Nigeria.
*****Corresponding author: jaryumkh@unijos.edu.ng ; jaryumkh@yahoo.com Phone: 0803 045 6424

Abstract

Despite earlier concerns for selenium toxicity, a wide variety of animal diseases has been found to respond to selenium. Selenium is, therefore, an essential trace element. Selenium is essential for human nutrition where it is a constituent of more than two dozen seleno proteins that play critical roles in reproduction, thyroid hormone metabolism, DNA synthesis, and protection from oxidative damage and infection. Selenium

concentrations in plant-based foods vary widely by geographic location. This research was aimed at determining the amount of selenium in the local foodstuffs from Kanam Local Government Area in north-central Nigeria. Staple foodstuffs were selected across all the sections of the research area. Samples were homogenized in a ceramic mortar to obtain homogeneous samples with particle size > 300µm. These were digested using a diluted oxidant mixture containing 1 ml deionised H_2O + 0.5 ml double-distilled HNO_3. Selenium content was determined using the inductively coupled-mass spectrophotometry technique. Data obtained were analysed using the student's t-test and results were presented as means and standard deviations. A probability level of $p < 0.05$ was considered statistically significant. All the foodstuffs contained quantities of selenium high enough to meet up the recommended daily allowance for all categories. Grain varied widely in their selenium content with white sorghum containing the lowest (6.16±3.97 µg/g) and red sorghum and cowpea containing the highest (14.19±7.22 µg/g and 13.05±8.79 µg/g respectively). These values suggest that a diet well balanced in other nutrients is probably also nutritionally adequate with regard to selenium, although possible effects of cooking, processing, geographical variation and biological availability remain to be investigated.

Key Words: Staple Grains, Kanam, Selenium, North-Central Nigeria

BT 042

EFFECTS OF THREE SELECTED PLANTS ON MALE FERTILITY IN WISTAR RATS

IWUOHA, B. C. [1]*, OKOYE, V. C.[2] AND EZEKWESILI-OFILI, J. O.[2]

[1]Nigerian Institute For Trypanosomiasis Research (Nitr), Asaba

[2]Department Of Applied Biochemistry, Nnamdi Azikiwe University, Awka

*Corresponding author: Email: biwuoha@yahoo.com; Phone: +2348037669569

Abstract

Numerous plants are used in traditional medicine without the knowledge of their possible effects on non-targeted physiological functions. Three selected plants, namely, *Phyllanthus amarus*, *Ipomea asarifolia* and *Azadirachta indica* were evaluated for their effects on male fertility. Seven groups of rats (n=8 per group, average weight=150g) were used for the study. Group A served as control (no treatment), while groups B and C, D and E, F and G were administered (intraperitoneally) with 50 mg/kg body weight (low dose) and 100mg/kg body weight (high dose) of *P. amarus*, *I. asarifolia* and *A. indica* respectively for 14 days. The animals were sacrificed after the 7th and 14th days of administration of extracts and blood was collected for hormonal analysis and their testes were removed for histological examination. Results indicated that those treated with *P. amarus* showed significant increase in serum testosterone levels ($p<0.05$), when compared with the other test groups and the control. The groups treated with *A. indica* and *I. asarifolia*. had reduced levels of testosterone, significantly different from the control ($p<0.05$). Histological observations showed increased spermatogenesis, in the *P. amarus* group, while *A. indica* and *I. asarifolia* disrupted the seminiferous tubule architecture and consequently the spermatogenesis process. In conclusion, whereas some plants such as *P. amarus* possess male fertility enhancing properties, others may affect male fertility adversely. Caution should therefore be applied in the choice of medicinal plants which may possess hidden deleterious effects. Alternatively, these plants may be useful in the search for the elusive male contraceptive.

Key words: male, fertility, testosterone, testes, spermatogenesis

BT 043

MOLECULAR EFFECTS OF ROOIBOS (ASPALATHUS LINEARIS) EXTRACT ON DIESEL EXHAUST PARTICLES INDUCED AORTIC TOXICITY INVOLVE NF-κB- AND NRF2-DEPENDENT PATHWAYS

Akeem Olalekan Lawal*, Dare Moses Oluyede, Lateefat Taiwo Olumegbon, Monsurat Opeyemi Adebimpe, Olamide Olusegun Awolaja

Bioinformatics and Molecular Biology Unit, Department of Biochemistry, School of Sciences, Federal University of Technology, Akure, P.M.B. 704, Akure, Ondo-State, Nigeria
*Corresponding author Tel: +2439056489869 Email: tolekan@hotmail.com

Abstract

Studies have shown that diesel exhaust particles (DEP), a typical air particulate matter, exerts its toxic effects by induction of oxidative stress and inflammation. In this study, we examined the involvement of NF-κB- and Nrf2-mediated pathways in the modulating effects of rooibos (*Aspalathus linearis*) extract (RE) on DEP-induced aortic oxidative stress and inflammation in Wistar rats. Rats were exposed to 50 mg/kg RE for 4 weeks, 0.7 mg/kg DEP for 2 weeks, or 50 mg/kg RE for 4 weeks plus 0.7 mg/kg DEP for 2 weeks. RE was given orally and DEP, subcutaneously. Rats were sacrificed 24 hrs after the last treatment and aorta tissues were removed. Malondialdehyde (MDA), conjugated dienes (CDs), Nrf2 and HO-1 mRNA levels were used to assess oxidative stress. While inflammatory cytokines IL-8, TNFα, IL-1β, NF-κB, IκB, and IκKB gene expression were used as indices of inflammation. ERK1 and JNK mRNA were used to assess redox signalling. RE pre-treatment caused significant ($p<0.0001$) reduction in aortic MDA and conjugated diene levels compared with DEP exposure alone. The extract also significantly ($p<0.0001$) attenuates aortic Nrf2 and HO-1 mRNA levels induced by DEP. The presence of the extract also caused significant ($p<0.001$) reduction in the expression of pro-inflammatory gene: IL-8, TNFα, IL-1β, NF-κB, IκB, IκKB, ERK1, JNK and elevation in anti-inflammatory IL-10 mRNA level compared to DEP exposure alone. Taken together, rooibos has the potential to protect against diesel exhaust particle induced aortic oxidative stress and inflammation, and thus may serves as an alternate therapy for air pollution induced aortic damage

Keywords: diesel exhaust particles; rooibos; oxidative stress; inflammation; aorta

BT 044

A COMPARATIVE EVALUATION OF THE HEAVY METALS CONTENT OF MILLET CULTIVATED IN KATSINA STATE, NORTH WEST NIGERIA

[*1]Yaradua AI, [2]Alhassan AJ, [1]Nasir A, [1]Matazu KI, [1]Usman A, [1]Kankia IH, [1]Muhammad I, [2]Idi A and [2]Muhammad IU

[1]Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano , Kano, Nigeria
*Correspondence Author Email: aliyuyaradua5@gmail.com Phone: +2348020344915

Abstract

This study was conducted to determine the heavy metals concentration in millet cultivated in Katsina state Nigeria. The objectives were mainly to detect the presence of heavy metals in the cultivated millet in the study area, compare the concentration of heavy metals in samples in relation to the permissible limits specified by WHO/FAO/USEPA Standards. Samples of cultivated millet were collected in the year 2017 from the selected area. Analysis for the concentration of these heavy metals; Cr, Cd, Fe, Ni, Mn, Pb and Zn was conducted by the use of AAS (by Atomic Absorption Spectrophotometry) method. Results from this study has shown that the mean concentration range values of Cr (0.138-0.160 ppm), Cd (0.042-0.059 ppm), Fe (0.264-0.798 ppm), Mn (0.295-0.438 ppm), Pb (0.609-1.100 ppm) and Zn (0.940-1.229 ppm) in the samples were generally lower than the USEPA, WHO/FAO maximum permissive limits. The results have indicated that the estimated daily intake (EDI) of the heavy metals were lower than the tolerable daily intake limit set by the USEPA in both samples, the target hazard quotient (THQ) for the samples was in the decreasing order Mn>Zn>Pb>Fe>Cr>Cd and the health risk index (HRI) for all the heavy metals were <1. The ILCR for the heavy metal Cd for all millet samples and the heavy metal Pb for Birchi millet sample that falls within the acceptable cancer risk level ($<10^{-6}$ to 10^{-4}), ILCR for the heavy metal Pb in the studied cultivated millet samples fall within the moderate risk limit ($> 10^{-3}$) , which raises a public health safety concern.

Key words: Millet, Heavy Metals, Katsina, Health Risk Index, Cancer Risk.

BT 045

HEAVY METALS AND PHYSICO-CHEMICAL PARAMETERS EVALUATION OF SOME NIGERIAN PRODUCED EDIBLE OILS SOLD IN KATSINA METROPOLIS KATSINA STATE, NIGERIA

[*1]Yaradua AI, [2]Alhassan AJ, [1]Abdulmajid S, [1]Nasir A, [1]Matazu KI, [1]Usman A, [2]Idi A, [2]Muhammad IU and [1]Suleiman ZA

[1]Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano, Kano, Nigeria
[3]National Agency for Food and Drug Administration and Control (NAFDAC), Katsina, Nigeria
*Correspondence Author Email: aliyuyaradua5@gmail.com Phone: +2348020344915

Abstract

This study was conducted to determine the heavy metal concentration and Physico-chemical properties of some Nigerian produced edible oils (Cottonseed oil, Groundnut oil, Palm oil, Palm kernel oil) sold in Katsina metropolis, Katsina state Nigeria. The objectives were mainly to evaluate the concentration of heavy metals and Physico-chemical parameters in the selected edible oils in the study area, compare these in relation to the permissible limits specified by WHO/NAFDAC/SON Standards. Samples of edible oils were collected in the year 2017 from the selected area. Analysis for the concentration of these heavy metals; Cr, Cd, Fe, Ni, Mn, Pb and Zn was conducted by the use of AAS (by Atomic Absorption Spectrophotometry) method. Physico-chemical properties were determined using standard methods. Results from this study has shown that the mean heavy metals concentration range values in the samples were generally lower than the USEPA, WHO/FAO/NFDAC/SON maximum permissive limits. The results have indicated that the estimated daily intake (EDI) of the heavy metals were lower than the tolerable daily intake limit set by the USEPA in both samples, the target hazard quotient (THQ) for the samples was in the decreasing order Fe>Zn>Mn>Cd>Cr>Pb and the health risk index (HRI) for all the heavy metals were <1. The ILCR for the heavy metals Pb and Cd for all the oil samples falls within the acceptable cancer risk level ($<10^{-6}$ to 10^{-4}). The result of the Physico-chemical parameters has revealed that with the exception of Groundnut oil for Free Fatty Acid (FFA), the FFA and unsaponifiable matter of the samples were higher than the NAFDAC/SON recommended values. With the exception of Palm oil for % impurities, Cottonseed and Palm oils for saponification values and Groundnut oil for peroxide values, the peroxide, saponification values, impurities and moistures values of the samples falls within acceptable regulatory limits.

Key words: Edible Oil, Heavy Metals, Katsina, Health Risk Index, Cancer Risk.

BT 046

ANTISNAKE VENOM EFFICACY OF *Securidaca longepedunculata* ETHANOL STEM-BARK EXTRACT ON ENVENOMED ALBINO RATS

Ibrahim Sani*, Fatima Bello, Abubakar Abdulhamid

Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Nigeria
**Corresponding Author's E-mail: isani76@gmail.com, Phone No.: +2348037731851*

Abstract

Securidaca longepedunculata is widely used in northern part of Nigeria for the treatment of snakebite. Due to high cost of hospital treatment and unavailability of antivenins in the rural areas, snakebite victims rely on plant remedies for alternative. This study was aimed to investigate the antisnake venom potential

of ethanolic stem-bark extract of *Securidaca longepedunculata* against venom of spitting cobra *(Naja nigricollis)* on albino rats. Experimental animals were grouped in to six (6); normal control, venom control, venom and extract (150 mg/kg b.w.), venom and extract (300 mg/kg b.w.), extract control and Venom and conventional antivenin. Preliminary phytochemical screening was conducted using standard methods. The LD_{50} of the venom was estimated as 0.355 mg/kg b.w. in another separate experiment. The antisnake venom activity of the extract presented significant increased (P<0.05) in the mean survival time of 2.10 ± 0.82 h and 10.56 ± 1.04 h for the extract dose of 150 and 300 mg/kg b.w. respectively when compared with the group that received only venom with mean survival time of 0.82 ± 0.03 h. The result of the phytochemical screening indicated the presence of saponins, tannins, glycosides, phenol and steroids. The presence of these secondary metabolites in the plant extract may be responsible for its antisnake venom activity. Based on these findings, it was established that *Securidaca longepedunculata* stem-bark extract has antisnake venom activity and can serve as lead in isolating the active principle for affordable and readily available antivenom.

Keywords: *Naja nigricolis*, *Securidaca longepedunculata,* Antivenom, Efficacy, Albino rats

BT 047

BIOCHEMICAL ANALYSIS OF ACETAMINOPHEN-INDUCED OXIDATIVE STRESS IN *Drosophilla melanogaster*

***Lawrence Chukwubuikem Nkwocha[1], Nonye Cecilia Okafor[2], Titilayo Omolara Johnson[1]**

[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos, Nigeria.
[2]National Veterinary Research Institute, Vom, Nigeria
* Corresponding Author – lawrencechukwubuikem@gmail.com, +2348100250974

Abstract

The study of acetaminophen toxicity has been limited to conventional models like rats and mice which are expensive and require ethical approval. Very few studies have been carried out using cheaper and easy to use scientific models like *Drosophilla melanogaster.* The aim of this project was to investigate the effects of various doses of acetaminophen on some parameters of oxidative stress in *Drosophilla melanogaster*. *D. melanogaster* (both genders) of 1 to 3 days old were exposed to different concentrations of acetaminophen (0.5mg/g-20mg/g) in the diet for seven days. Percentage survival of flies was estimated daily. Flies treated with 5 and 10mg/g diet of acetaminophen for four days were used for Negative geotaxis and biochemical assays. The results showed that acetaminophen induced toxicity at a dosage of 5mg/g diet in *D. melanogaster* on day four and the mechanism of toxicity is suspected to be highly associated with oxidative stress as evidenced by the alterations observed in the biochemical parameters. Glutathione peroxidase activity, Catalase activity and lipid peroxidation (MDA) increased from 6.32 ± 0.615 to 11.47± 0.531 µmole/min/mg protein, 87.33± 13.717 to 133.28± 5.610 µmole H_2O_2/min/mg protein and 0.25±0.027 to 0.55±0.042 mmol/mg protein respectively. SOD activity and Reduced Glutathione levels reduced from 20.00±0.444 to 16.41±0.558 µmole SOD/min/mg protein and 3.75±0.144 to 2.91± 0.083µg/ml respectively. It is therefore suggested that exposure of *D. melanogaster* to 5mg/g diet of acetaminophen for four days could establish a fly model of acetaminophen-induced oxidative stress which could be useful in drug screening, discovery and formulation.

BT 048

PREVENTION OF ENVIRONMENTAL POLLUTION USING BIOPESTICIDES FOR PEST MANAGEMENT- A CRITICAL REVIEW.

Collins E. Oguh[1*], Ubani C. Samuel[1], Osuji C. Akudo [1], Nkwocha C. Chibueze[1], Musa A. Dickson[2]

[1]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
[2]Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria
*Corresponding author: collinsoguh@gmail.com; +2347036017476

Abstract

People believed that harmful chemical pesticides are the only true way to get rid of pests in the environment. Environmental pollution such as soil, water and air pollution has occurred from the use of synthetic pesticides and it takes years and sometimes decades for some of these chemicals to degrade. Synthetic pesticides affect soil microorganisms and increase heavy metals in the soil which is then transferred to plant, and when consumed by humans accumulate in the food chain, since they are not biodegradable. Studies have shown that some plants contain components that are toxic to insects called biopesticides or natural pesticides. Biopesticides are pesticides that are made by organisms usually for their own defence, or are derived from a natural source such as plant, animal, bacteria, and certain minerals, used to control pest naturally with less effect. Examples of these biopesticides are rotenone (*Derris sp*.), carboxin, fluroacetate, nicotine, neem (*Azadiracta indica*), pyrethrins and *Bacillus thuringiensis* (BT). Biopesticides usually target specific sites in the insect such as nervous system, resulting into knock-down, lack of coordination, paralysis and death. Many of the modern pesticides used today, persist in soil for years and compound the store of toxins in our soil, air and water. Toxic build-up of these chemicals have been shown to cause damage in the body and minimize health. Biopesticides are generally highly bio-degradable, they become inactive within hours or a few days and they are also ecofriendly. Pyrethrins, azadiractin, sabadilla, and ryania can easily be broken down by stomach acids in mammals, so toxicity to humans and animals is very low.

Keywords: Biopesticides, Ecofriendly, Biodegradable, Pollution, Pest management

BT 049

BIOPESTICIDES: A REVIEW OF THEIR APPLICATION FOR PEST CONTROL IN NIGERIA

Nafisatu Kabir[1*], Salihu Ibrahim Ismail[1] and Bilkisu Aliyu Usman[2]

[1] Department of Biochemistry, Federal University Dutse, Jigawa State- Nigeria
[2] Department of Biological Sciences, Federal University Dutse, Jigawa State-Nigeria
Corresponding author's email: kabirnafisa0@yahoo.com

Abstract

The role of pesticides in the agricultural sector of the Nigerian economy cannot be overemphasized. Insect pest have caused significant damages to agricultural products both in field and storehouses. This paper reviews the relevance of applying pesticides specifically those obtained from plant sources for the control of stored food pest in Nigeria. Insect pest attack stored products, whether dry or wet, hot or cold causing serious food wastage. Treatment with synthetic pesticides, chemical fumigation and inert materials are currently used as a means of protection of stored foods. Many researchers have however, identified plant and microbial based compounds that can deter and suppress the development of insects in stored products. The use of bio-pesticides has therefore emerged as a promising alternative to chemical pesticides. The insecticidal effects of plant based pesticides are attributed to their bioactive phytoconstituents. Biopesticides perform efficaciously while providing the flexibility of minimum application restrictions, superior residue and resistance management potential as well as human and environmental safety benefits. Government agricultural agencies should encourage researchers in Nigeria and enlighten local farmers with the knowledge of how to approach insect pest without endangering their yet to be harvested crops and also the harvested ones.

Keywords: Biopesticides, stored products, Nigeria, phytoconstituents

BT 050

IMPACT ASSESSMENT ON SOME POTENTIALLY TOXIC ELEMENTS IN *Telfairia occidentalis* AND *Talinum triangulare* GROWN ON SEWAGE DUMP SITE IN UNIVERSITY OF NIGERIA, NSUKKA.

Collins E. Oguh*, Ubani C. Samuel, Osuji C. Akudo, Onwurah I.N. Emmanuel

Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
*Corresponding author: collinsoguh@gmail.com; +2347036017476

Abstract

This study was conducted to investigate the impact assessment on PTEs in vegetables *Talfairia occidentalis* (TO) and *Talinum triangulare* (TT) grown on sewage dump site in University of Nigeria Nsukka. Soil and vegetable samples were collected from farms around the dump sites (sites A) and area where there were no dump sites served as control (sites B). PTEs such as Cr, Zn, Pb, Cu and Ni were analyse using Atomic Absorption Spectrophotometry. The results shows that concentrations of PTEs analyse in soil sample from sewage dump site (SDS) ranges from 0.42 to 2.05 mg/kg and the control site (CS) ranges from 0.007 to 0.67mg/kg and there was significant difference ($p<0.05$) between SDS and CS. The concentrations of PTEs in (TO and TT) in SDS analysed were all above those obtained from the CS with significant difference ($p<0.05$) between the two sites. However, the levels of Cr, Zn, Pb, Cu, and Ni in TO and TT studied were above the levels recommended by WHO/FAO for metals in vegetables. The transfer factor (TF) of all elements are within normal range in plant except SDS for TT which is Cr(1.00) and CS for TO which is Zn(5.42). The daily intake of metal (DIM), Hazard quotient HQ and Hazard index HI values for PTEs were significantly high in the vegetables grown on sewage dump soils for both adults and children. This research shown that vegetables grown on sewage dumpsites are capable of accumulating high levels of Toxic elements from polluted soils with deleterious health effects.

Keywords: Toxic elements, Sewage, Risks assessment, *Talfairia occidentalis*, *Talinum triangulare*

BT 051

EVALUATION OF THE TOXICOLOGICAL EFFECTS OF *Senecio aureus* EXTRACT ON THE LIVER AND HEMATOLOGICAL PARAMETERS IN WISTAR ALBINO RATS

***Nadro Margaret[1] and Madu Joshua Osuigwe [2]**

[1]Department of Biochemistry, Modibbo Adama University of Technology Yola, Nigeria
[2]Department of Chemistry, American University of Nigeria Yola, Nigeria

Abstract

The use of *Senecio aureus* for therapeutic purposes is well known; however, in recent times, much concern has been raised regarding the toxicity of this plant extract used in treatment of gynecological disorders and jaundice. The sub-chronic oral toxicity of *Senecio aureus* was investigated. 16 male Wistar albino rats were divided into four groups: control and treatments (100, 300 and 500 mg/kg body weight). Each group received the graded dose of the extract by gavage daily for 28 days while control received water. The administration of the extract resulted in significantly ($p<0.05$) increased total bilirubin and cholesterol and level from 29.14±1.18mg/dl and 83.00±7.16 mg/dl in the control to 53.19±6.11mg/dl and 166.67±14.03mg/dl, respectively, at dose of 500 mg/Kg body weight. In the hematological analysis, there were no significant changes compared to the control group ($p<0.05$). The present result suggests that the prolonged use of this plant extract at high dose in the treatment of diseases could be detrimental to the liver.

Keywords: *Senecio auerus*, toxicity, jaundice, liver, haematology.

BT 052

EVALUATION OF TOXICITY OF TUMERIC AQUEOUS EXTRACT IN MICE

***Uzomba Nnamdi Iheanyi, Amaralam Eric Chinedu, Ajah Obinna and Obijuru Thaddeus Nnamdi**

Department of Microbiology/Biochemistry, Federal Polytechnic Nekede Owerri.
*Email: uzomba.nnamdi@yahoo.com. 08066611985

Abstract

Curcuma longa Linn. Commonly known as turmeric has long been used for centuries as a spice and household remedy. The present study was carried out to evaluate the toxicological property of the aqueous extract of turmeric. Acute toxicology of the extract was evaluated in Swiss albino mice by oral administration of the animals with graded doses of the extract 400mg/kg, 800mg/kg, 1200mg/kg and 3000mg/kg body weight while the control group received 3mkg of distilled water. They were observed for 48hours. The result indicated that LD_{50} of the extract is 565.69mg/kg body weight. The animals were sacrificed at the end of 48 hours; the liver was harvested for histological analysis. Histopathological examination of the liver at 400mg/kg dosage did not show any observed morphological alteration while at dosage of 800mg/kg, 1200mg/kg and 3000mg/kg body weight, liver tissue showed severe inflammation. The absence of exhibition of observable toxicity below 565.69mg/kg body weight suggests that the extract maybe safe and non-toxic only at very low doses.

BT 053

THE USE OF NATURAL BIOCIDES FOR PREVENTING BIOCORROSION DUE TO SULPHATE REDUCING BACTERIA (SRB): A REVIEW

***Fardami, A.Y.[1] and Kawo, A. H.[2]**

[1]Department of Microbiology Usmanu Danfodiyo University Sokoto Nigeria
[2]Department of Microbiology, Bayero University Kano, Kano State, Nigeria
*Corresponging Author: aminufy@gmail.com Tel: +2348068616382

Abstract

Corrosion is an electrochemical reaction between the environment and a material, generally a metal, which alters the properties of the material and impairs its function which is highly influenced by sulphate reducing bacteria. The biocorrosion mechanism and factors affecting corrosion rate in a given system are very vital for proper understanding of the complex biological and inorganic processes occurring at the surface of metallic structures. And to carry out effective new approach in the prevention and treatments of biocorrosion, traditional techniques that involve the use oxidizing (eg. chlorine) and non-oxidizing (eg. gluteraldehyde) biocides need to be understood also. Recently, the use of natural biocide from different plant materials showed significant potential with fewer side effects than the chemical biocides. Aqueous extract of garlic (*Allium sativum*) and onion (*Allium cepa*) are examples of the natural biocides that possessed biocidal activity in preventing biocorrosion. Finally, there are promising future techniques that involve the advancement of tradition means of preventing biocorrosion using molecular techniques involving the direct analysis of natural bacterial populations from their genetic material (and no culture is required) mainly through the sequence analysis of their 16S rRNA gene. The aim of this review work is to give an overview of recent advancement in the use of natural biocides for preventing biocorrosion due to sulphate reducing bacteria (SBR) and to investigate the different traditional biocides that are being used on different microorganism that cause corrosion on metal surfaces more especially in oil and gas industry.

Keywords: Biocorrosion, Biocides, Bacteria, Preventing, Advancement.

BT 054

TOXICOLOGICAL STUDIES OF METHANOL EXTRACT OF *Napoleona imperialis* SEEDS ON SOME BIOCHEMICAL INDICES AND ORGANS OF ALBINO RATS

Ogugua, Victor Nwadiogbu, Elijah, Parker Joshua and Haruna, Gambo Sunday *

Department of Biochemistry, University of Nigeria, Nsukka
* Corresponding author e-mail: sundaygambo5@gmail.com Phone number: +2347031964307

Abstract

The present study aimed at evaluating the *in vivo* toxic effect of methanol extract of *Napoleona imperialis* seeds on some Biochemical indices and organs of albino rats. The phytochemical constituents as well as the acute toxicity test of the extract were evaluated using standard methods. Twenty five experimental rats were divided into five groups of five rats each, group one was the control. They were administered the extract orally for 28 days, on the 29th day, blood was collected and organs harvested after sacrificing the animals. The Biochemical parameters; Malondialdehyde, glutathione peroxidase, superoxide dismutase, glutathione and catalase were analyzed, sperm cells were counted, histological examination of the testis, liver and kidney was also performed, using standard methods. The results showed that methanol extract of the seeds contain some phytochemicals. The LD_{50} was 3605.55 mg/kg. The extract increased malondialdehyde concentration and catalase activity at 600 mg/kg b.w, with no significant ($p > 0.05$) difference in the activities of glutathione peroxidase and superoxide dismutase of the experimental groups. Glutathione concentrations also showed no significant ($p > 0.05$) difference when compared to control. The extract reduced caudal epididymal and testicular sperm counts non-significantly ($p > 0.05$) in experimental groups. Photomicrograph images of the liver, kidney and testis showed no histological changes in the organs. In conclusion, these results demonstrate that the seed extract may not be toxic to the organs at the doses administered as reflected in the parameters analyzed but may induce lipid peroxidation due to increased level of malondialdehyde.

Keywords: Biochemical indices, Effect, *Napoleona imperialis*, Toxicological.

BT 055

ISOLATION, CHARACTERIZATION AND IDENTIFICATION OF THERMOPHILIC BACTERIA SPECIE FROM GEOTHERMAL WATER IN LAFIYA LAMURDE, ADAMAWA STATE OF NIGERIA

Hamza gawinan[1], Zailani a. Hauwa[2] , Raji, hayatu[3] Ja'afar, Nuhu Ja'afar[4]

[1]Department of Biochemistry, MAU-TECH, Yola
[2]Department of Biochemistry, MAU-TECH, Yola)
[3]Department of Natural and Environmental Science, AUN, Yola)
[4]Department of Biotechnology, MAU-TECH Yola)

Abstract

The aim of this study was to isolate and identify thermophilic bacteria specie from an indigenous hot spring located at Ruwan-zafi village in Lafiya Lamurde, Adamawa State of Nigeria. Five isolates (A, B1, B2, B3 and C) from the hot spring were isolated, characterized and identified. Preliminary studies as well as physiological and biochemical features of the isolates revealed that they are aerobic bacteria and they belong to the genus *Bacillus*. Sequencing of 16S rRNA genes of all the isolates revealed that the isolates are *Bacillus licheniformis*. Further sequencing of *Bacillus licheniformis* specific RNA polymerase beta sub-unit and DNA polymerase I genes of isolate A and isolate B2 confirmed the 16S rRNA results. One of the isolates (B2) showed clear morphological difference (yellow color, did not grow on both M.S.A and MacConkey agar), physiological difference (did not grow at temperature below 37^0C, did not tolerate salt concentration of 2% and above and tolerated only neutral pH) and some biochemical variations (M.R and Starch negative as well as weak catalase activity) compared with other isolates. Since sequencing results showed that isolate B2 belongs to *Bacillus licheniformis* species but with clear variations in some morphological, physiological and biochemical features of the isolate, isolate B2 is therefore proposed to be a new previously unknown strain of *B. licheniformis.*

BT 056

INVESTIGATION OF CADMIUM METAL IN SOIL AND EDIBLE PART OF LETTUCE COLLECTEDFROM FARMLANDS AROUND KUBANNI RIVER, SABON-GARI ZARIA, KADUNA STATE.

Yahaya, M.Y[1]*., Isah, A[2]. and Ibrahim, A.B[2]

[*1]Division for Agricultural Colleges, Ahmadu Bello University, Zaria. Kaduna State
[2]Department of Biochemistry, Ahmadu Bello University, Zaria. Kaduna State
[*]Corresponding Author: mardiyyahyakubu@yahoo.com 08034652545

Abstract

Level of cadmium was investigated in both the soil and the edible part of lettuce irrigated with Kubanni river polluted with refuse dump, used engine oil from neighbouring mechanical workshop and other sources of contaminations. The metal was analysed using atomic absorption spectrophotometer. The levels of the metal in the lettuce and soil samples obtained from the sampled areas were higher than their corresponding levels in the controlled sample. It was observed that the levels of cadmium in the soil turned out to be lower than the WHO/FAO recommended maximum limits (0.8mg/Kg). Also, the mean concentrations of Cd were higher than the WHO/FAO allowable limits of 0.30mg/Kg ranging from 0.51mg/Kg to 0.65mg/Kg. Transfer factor of the metal to the plant turned out to be above 1 in all the four farms implying a high mobility of the metal from the soil to the plant. Since the cadmium levels in the lettuce plants were below the permissible limits of WHO/FAO (0.2mg/Kg). however, if proper measures are not taken, consumption over time may constitute possible health hazards to humans (at the time of the study).

BT 056

TOXICOLOGICAL EFFECT OF AQUEOUS LEAVES EXTRACT OF *Pterocarpus mildbraedii* ON LIVER AND KIDNEY FUNCTION INDICES OF ALBINO RATS

[*]Salawu, K., Muhammad, A. A., Otene E. P., Abaa, N. and Nwede, P.

Department of Biochemistry and Forensic Science, Nigeria Police Academy, Wudil, Kano, Nigeria.
Corresponding Author's Email: kailani.salawu@yahoo.com; Phone No.: +2348065786314.

Abstract

Pterocarpus mildbraedii locally known as "Oha", is one of the commonly consumed leafy vegetables. This study was carried out to investigate the phytochemicals and toxicological effect of the aqueous leaves extract on acute, organ body weight ratio, liver and kidney function indices. The phytochemical screening was carried out using standard procedures, acute toxicity (LD_{50}) using Lorke method (1983), and the extract for sub-chronic toxicity study was administered orally to rats at doses of 100, 200 and 300 mg/kg body weight on a daily basis for 28 days. The percentage yield for the crude extract was 13.9% (w/w), while the phytochemical screening reveals the presence of alkaloids, phenolics, tannins, saponins, carotenoids, flavonoids and glycosides. For acute study (LD_{50}), there was no sign of toxicity or death at the dose of 5000 mg/kg body weight. The percentage weight gain decreases as the concentration increased ($p < 0.05$). The liver, kidney and relative organ body weight of all the treated groups shows increase when compared with the control ($p > 0.05$), while the levels of liver and kidney function biomarkers such as alanine and aspartate aminotransferases, total and direct bilirubin, total protein, urea, creatinine and the electrolytes shows difference from the control ($p < 0.05$). The results of histopathology confirmed the toxic effect of the extract on the liver and the kidney. The aqueous extract may possess mild hepato-toxic and nephrotoxic effect. Therefore, care must be taken on the consumption of this leaf when use in the treatment or management of various ailments.

Keywords: *Pterocarpus mildbraedii*, aqueous extract, oha, phytochemicals, hepatotoxicity, nephrotoxicity,

BT 058

COMPARATIVE ANALYSIS OF HEAVY METALS CONCENTRATION IN SOIL AND WATER ALONG RIVER SALANTA IN SHARADA INDUSTRIAL AREA, KANO METROPOLIS

M.S. Danjuma, Abdulkadir B. and Ahmad M.A

Department of Microbiology Umaru Musa Yar'adua University Katsina
Corresponding author: mahdidanjuma@gmail.com (+2348132478926)

Abstract

Soil and water plays an important role in the survival of living organisms and general well-being in the environment. Despite the significant important of these two segments of the environment, anthropogenic activities tends to degrade and temper with their quality and causes a significant damage to the living organisms. Heavy metals are naturally occurring in our environment in forms that are mostly not accessible directly (found in ores). Anthropogenic activities such as; industrial, agricultural, mining, and other activities contaminate soil, water, and air in the environment. Heavy metals in soil and water can easily find their way into the food chain through growing plants on and with the contaminated soil and water, and also through direct domestic use of water contaminated by effluents from industries and other form of wastes. This study aimed to compare the concentration of Pb, Cr, Cd, Cu in soil and water along River Salanta in Sharada Industrial Area of Kano metropolis. The total number of 3 samples were collected each for water and soil in triplet. The samples were pre-treated and digested using acid digestion. The metal concentrations were then determined using Atomic Absorption Spectrometer (AAS). The mean concentration (mean±SD) of the heavy metals in water were found to be; 0.23±0.13, 0.13±0.06, 0.64±0.18, and 0.09±0.07 in (mg/L) for (Pb), Cadmium (Cd), Copper (Cu), and Chromium (Cr) respectively. And for soil, the concentrations (mean±SD) were found to be; 12.32±8.23 (mg/kg), 15.00±5.00, (mg/kg) 46.97±50.07 (mg/kg), and 4.32±2.14 (mg/kg) for Lead (Pb), Cadmium (Cd), Copper (Cu), and Chromium (Cr) respectively. The concentrations were compared with WHO standard where Pb, Cr, and Cd were found to be above the permissible limit in the water. Whereas, the concentration of all the metals analyzed in soil were found to be above the permissible limit. Pearson Coefficient of correlation was used in the comparison where r - value was determined in all the cases. It was observed that, there exist a weak positive correlation between Pb and Cr in soil and water. Whereas, strong negative correlation exist between Cd and Cu in soil and water. The increase discharge of industrial waste and effluent into soil and water pose a significant risk to the populace. The results shows high concentration of all the metals excluding Cu in water that is within the permissible limit. Though, there is no direct positive relation between metals in water and soil, it may be possible that soil holds more metals on its particles and accumulate it over time. Therefore, it is recommended that strategies for managing waste and effluent of all kinds should be employed and possible prevention measures in order to reduce and prevent the occurrence of pollution in the environment should be put in place.

Keywords: Contamination, Environment, Heavy metal, Soil, Water, and Toxic.

BT 059

METALLOTHEONEIN INDUCTION IN TILAPIA SPECIE *(Oreochromis niloticus)* LIVER AS A MOLECULAR BIOMARKER OF TOXICITY OF HEAVY METALS IN KANO AND KATSINA STATES FRESHWATER BODIES, NIGERIA

***Lawal, I.** [1&2]

[1]University of Stirling, FK9 4LA, Stirling, Scotland, United Kingdom,
[2] Umaru Musa Yar'adua University, Katsina, Nigeria.

Abstract

Metal pollution may damage freshwater organisms at a cellular level and disrupt ecological balance. Metallotheonein (MT) is a low molecular weight protein that binds heavy metals in freshwater organisms and its induction is considered a molecular biomarker of heavy metal exposure in aquatic environment. In this present study conducted between June and July, 2018, in two freshwater bodies, Dan agundi lake, Kano municipal, Kano state and Daberam reservoir, Daura, Katsina state and one potentially non-contaminated (reference) site Jibia reservoir, Katsina state, sampling Tilapia fish Liver. mRNA was extracted from the liver samples using Trireagent and cDNA was synthesised using ABI synthesis kit and RT-QPCR assays were carried out using MT gene primers and Luminaris mastermix. The results showed a significant induction of MT gene in the two sites in response to metal pollution. In conclusion, this study showed a clear toxicity of heavy metals in the two sites using MT gene as a biomarker. Biomarkers of freshwater organisms such as Glutathione and Metallotheonein are often used to evaluate heavy metal contamination. The intracellular fate of both essential and non-essential metal ions depends on thiol-containing molecules such as metallothioneins (MT) that afford protection from metal toxicity and oxidative stress in numerous organisms. These properties have implicated MT to be an important factor in metal resistance in both aquatic invertebrates and vertebrates.

Keywords: Metallothioneins, mRNA, cDNA, Tilapia niloticus, Biomarker

BT 060

HEAVY METALS ANALYSIS OF SELECTED HERBAL PREPARATIONS CONSUMED IN SOKOTO METROPOLIS

***[1]Muhammad, N. B., [1]Salihu, S. and [2] Wasagu, R.S.U.**

[1]Department of Biochemistry, Sokoto State University, Sokoto, Nigeria
Department of Biochemistry Usmanu Danfodiyo University, sokoto, Nigeria.
*Corresponding Author: muhammad.nurabello@ssu.edu.ng, +234-8085864498

Abstract

The term "heavy metal" refers to a group of elements that can be toxic when consumed by humans, including Lead (Pb), Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr). There are concerns about the potential health effects of these elements or specific form of these elements, whenever they are present in products that can be ingested, such as food or dietary supplements. This current study aimed at determining the presence of heavy metals (Cadmium, Cd, Chromium, Cr, and Lead, Pb) in selected herbal preparations consumed in Sokoto metropolis. Four (4) different herbal preparations (Annajaat, Zumbur, Shafaullinnas and Zaki-Zaki) were the samples used for the study. The collected samples were analyzed using Atomic Absorption Spectrophotometer (AAS). The result obtained were expressed in Mean±SEM. The mean level of heavy metals in the preparations ranges are: Lead (0.0346-0.5Mg/l), Cadmium (0.0016-0.008Mg/l) and Chromium (0.017-0.03Mg/l). The levels of the heavy metals in the preparation exceeds the WHO permissible limit (0.01Mg/l). Statistical analysis of the result using ANOVA indicated that there is no significant different ($p>0.05$). Thus excessive or continuous consumption of these herbal preparations may cause the accumulation of these metal in the body system which may lead to various disorders.

Key words: Heavy Metals, Herbal, Metropolis

BT 061

Digitaria exilis GRAINS EXHIBIT ANTI-ANDROGENICITY VIA INTERFERENCE WITH STEROIDOGENESIS AT TESTICULAR LEVEL IN WISTAR RATS

Moses Dele ADAMS*, Shekins Osheke OKERE and Bethel Chidiebube ENWEREM

Phytopharmacology, Toxicology and Clinical Biochemistry Research Unit, Department of Biochemistry, Bingham University, Karu, Nigeria

*Corresponding author: Phone: +234 803 895 2634; E-mail: mdadams@binghamuni.edu.ng

Abstract

The acclaimed use of *Digitaria exilis* grains in the management of diabetes is validated by scientific studies without recourse to its safety or toxicity risk in the testes of male rats. This study was therefore designed to evaluate the claimed anti-androgenic potentials of the plant in male rats. Twenty male rats weighing 130-160 g were divided into four groups (A-D) of five rats each. Animals in group A (control) received 1 ml of distilled water while those in groups B-D were administered 250, 500 and 1000 mg/kg body weight of aqueous extract of *Digitaria exilis* grains respectively. Treatment was done orally once daily for 14 days after which testicular function indices were determined. The extract contains alkaloids, saponins, tannins, steroids, terpenoids and flavonoids. Compared with the control, treatment of the animals with all doses of the extract significantly ($P< 0.05$) decreased the concentration of testicular testosterone, follicle stimulating hormones, luteinizing hormones, cholesterol, protein, glycogen, sialic acid, activities of acid phosphatase, alkaline phosphatase and gamma glutamyl transferase as well as testes-body weight ratio. Testes histology revealed disruption in the pattern of seminiferous tubules and reduction in the number of spermatozoa. The study indicated that *D. exilis* grains possess anti-androgenic property by interfering with steroidogenesis at the testicular level which would adversely affect the normal functional capacity of the testes and the fertility of the animal. The presence of phytoconstituents like alkaloids, saponins, tannins, terpenoids could also contribute to the anti-androgenic/anti-fertility property of the plant.

Key words: *Digitaria exilis*; Poaceae; Anti-androgenic; Testes; Steroidogenesis.

BT 062

AMELIORATIVE EFFECTS OF ETHYLACETATE FRACTION OF *Terminalia catappa* LEAF EXTRACT ON LEAD ACETATE INDUCED HEPATO-RENAL DAMAGE IN RATS

Busari Musa Bola[1, 2], Hamzah Rabiat Unekwu[1], Muhammad Hadiza Lami[1], Kolawole Monshood Lanre[1], Mufutau Badmus Deji[1]

[1] Department of Biochemistry, Federal University of Technology, Minna, Nigeria

[2]Centre for Genetic Engineering and Biotechnology, Global Institute for Bioexploration Unit, Federal University of Technology, Minna, Nigeria

Corresponding Author: aosbmbas@gmail.com (+2348050501497)

Abstract

Lead poisoning; a multi-organs toxicant is a major public health risk, particularly in developing countries. To investigate the role of methanol fraction of *Terminalia catappa* leaf extract on lead acetate induced hepato-renal damage. Phytochemicals, *in-vitro* antioxidant activities and LD_{50} of the extract were determined using standard methods. Fifteen mature Wister albino male rats comprise of five groups of three rats per group were used for the hepato-renal damage induction. The toxicity was induced through the oral administration of 1000mg/kg body weight of lead acetate solution. After one hour of lead

administration, 100mg/kgbw and 200mg/kgbw of the extract and 0.5ml/kgbw of normal saline along with 100mg/kg of standard drug silymarin were administered to four of the groups while the fifth group was not induced. The extract showed appreciable 2, 2-diphenyl-1-picryl hydrazyl radical scavenging activities (DPPH), ferric reducing antioxidant power (FRAP) and inhibition of lipid peroxidation at high concentration of 500µg/ml. Substantial amounts of flavonoids (30.295±0.10mg/g), tannins (10.72±0.21mg/g), total phenols (65.97±0.48mg/g) with trace quantities of alkaloids (65.79±0.40µg/g) and saponins (101.45±1.65µg/g). There were also significant increase ($P<0.05$) in liver and kidney functions biomarkers enzymes such as alanine transaminase (ALT), aspartate transaminase (AST), alanine phosphatases (ALP) of the untreated toxic rats when compared with all treated groups. Likewise, the biochemical parameters such as urea, sodium, chlorine, potassium and creatinine of the untreated group showed elevated values when compared with all treated groups. Therefore, ethylacetate fraction of *T. catappa* extract possesses protective effects against lead acetate induced liver and kidney damage in rats.

BT 063
ANTI-HEPATO-NEPHROTOXICOLOGICAL EFFECT OF *Guiera senegalensis* AGAINST NUTMEG TOXICITY IN EXPERIMENTAL RATS.

Ihegboro, G.O*[1], Owolarafe, T. A[1], Afor, E.[2] and Zaharaddeen, I.k[1]

[1] Department of Biochemistry and Forensic Science, Nigeria Police Academy, Wudil, Kano, Nigeria.
[2]Depart.of Chemical Sciences, School of Science and Mathematics, Yaba College of Technology, Yaba.
Author's Email : goihegboro@yahoo.com, Mobile Numbers : +2347031149957, +2349072697344

Abstract

Myristica fragrans (also known as nutmeg) is commonly used as a spice in various dishes, as components of teas and soft drinks or mixed in milk and alcohol. The bulk of the spices contain carbohydrates, protein and minerals. It possesses phytochemicals which are responsible for the flavoring, coloring, preservative and health-promoting characteristics. The aim of the research is to investigate the ameliorating effect of *Guiera senegalensis* extract on nutmeg toxicity. The phytochemical evaluation of *G.senegalensis* extract (GsE) and *M.fragrans* extract (MfE) showed high flavonoid content that is 70.91±2.23mg/100g and 48.76±0.24mg/100g respectively while the lowest is saponin, 0.182±0.02mg/100g and 0.063±0.01mg/100g. The free radical scavenging activity using 2,2-diphenyl-1-picrylhydrazine (DPPH) assay showed that GsE exhibited better antioxidant property compared to MfE that is 53.07±0.28µg/ml (IC_{50}= 4.730±0.76µg/ml) and 37.96±2.31µg/ml (IC_{50}= 6.948±0.94µg/ml) respectively. Nutmeg group showed increase level in kidney and liver function indices but significantly decreased ($p<0.05$) in the treated groups. The lipid peroxidation adduct evaluated (MDA) in the nutmeg group was found to be high but lower in the treated groups. It can be concluded that *G. senegalensis* possesses ameliorative effect on nutmeg induced toxicity. Since high dietary and long term consumption of nutmeg has adverse effect on both kidney and liver organs respectively, I hereby recommend that its use in moderation is advisable.

Keywords : Phytochemical compounds, 2,2-diphenyl-1-picrylhydrazine (DPPH), hepato- nephrotoxicity, and Nutmeg.

BT 064

ALTERATIONS IN THE MITOTIC INDEX OF *Allium cepa* Induced By Different Extracts Of *Ziziphus mauritiana* LEAF

[1]Owolarafe* Tajudeen A,[1]Ihegboro,G.O.,[2]Wudil Muhammad A.and [2]Alhassan A. J.

[1]Department of Biochemistry and Forensic science, Toxicology and phytomedicine Research Laboratory Nigeria Police Academy Wudil, Kano.
[2]Department of Biochemistry, Bayero University Kano.
Corresponding Author: email: taowolarafe@gmail.com. Phone No: 08023376388.

Abstract

The cytotoxic and genotoxic effects of four different solvents extracts (aqueous, ethanol, ethylacetate and hexane) of *Ziziphus mauritiana leaf* (20,40, 60, 80,and 100mg/L) were evaluated using root tip cells of *Allium cepa*. In this study, root length and chromosomal aberration assays were used to determine the cytotoxicological and genotoxicological effects of these extracts. The result revealed a dose dependent decrease in root tip growth except ethanol extract of the *Z. mauritiana* leaves while the Effective Concentration (EC_{50}) obtained were 81.30, 52.01, 90.68 and 112.30 mg/l for aqueous, ethanol, Ethylacetate and hexane extracts respectively. Chromosomal aberrations such as vigrant, c-mitosis, brigded anaphase, sticky Telophase were also observed in all extract studied. Mitotic index and percentage chromosomal aberration were observed to decrease with increased concentrations of extracts. These biomarkers showed an indication that this plant sample in it different solvent extracts maybe cytotoxic and genotoxic and care must be taken in it consumption for alleviating it folklored bioactivity.

Keywords: Ziziphus mauritiana, cytotocixicity, genotoxicity, allium ceppa, chromosomal aberration

BT 065

TIME-DEPENDENT EFFECT OF A SINGLE ORAL DOSE ADMINISTRATION OF POTASSIUM BROMATE ON RENAL FUNCTION AND PARAMETERS OF OXIDATIVE STRESS IN RATS

[*1]Kanadi, M.A., [2]Wudil, M.A., [2]Alhassan, A.J., [3]Yar'adua, A.I., [3]Nasir, A.

[1]National Agency for Food and Drug Administration and Control Katsina Office
[2]Department of Biochemistry, Bayero University Kano
[3]Department of Biochemistry, Umaru Musa Yar'adua University Katsina
*08036813402, zikkanadi@yahoo.com

Abstract

The time-dependent effect of a single oral dose of $KBrO_3$ administration on kidney function and parameters of oxidative stress were determined in rats. The animals were orally administered 100mg/kg body weight of $KBrO_3$ and the effect was observed at 12hours, 24hours, 48 hours and 72hours intervals after administration. The results showed significant ($P<0.05$) steady increase in the level of serum urea, creatinine, uric acid and electrolytes studied from 12 hours to 24hours and peaked at 48 hours before returning towards normal at 72hours. Also, there was a significant ($P<0.05$) increase in the level of malondialdehyde in tissue homogenates prepared from cortex and medulla of the kidney however the activities of all antioxidant enzymes studied (catalase, superoxide dismutase, glutathione peroxidase) and GSH in the renal homogenates significantly decreases ($P<0.05$) in a steady manner from 12hour post administration to 24hours and was least at 48hours before returning towards normal at 72hours. It was concluded that administration of a single oral dose of $KBrO_3$ can impair renal function and induce oxidative stress in the kidney in a time-dependent manner and is reversible at 72hours.

Key words: Potassium bromate, renal function, oxidative stress

BT 066

OPTIMIZATION OF CHROMIUM (VI) BIOSORPTION USING CORN COB POWDER BY RESPONSE SURFACE METHODOLOGY

***[1]Edem Umiom Okon; [2]Salihu Aliyu; [2]Sallau, Abdullahi Balarabe; [3]Attah, Ojebbah Catherine; [1]Ukwuije Nnenna Olachi; [1]Idio Uduakobong; [1]Aina, Olabukola Beatrice**

*[1]National Research Institute for Chemical Technology, Zaria, Kaduna State.
[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Kaduna State.
[3]Department of Chemistry, Federal College of Education, Kano State.
*Corresponding author's address - Email: edem.umiom@narict.gov.ng

.

Abstract

The current investigation expounds the role of corn cob powder as an effective biosorbent for remediating chromium (VI), a noxious heavy metal pollutant commonly found in effluents from tanneries and relevant industries. Biosorption was affected by pH, temperature, contact time, agitation speed, initial metal concentration and biosorbent dosage. Also, due to the need to comprehend the full effect of all variables to ascertain the best possible conditions for biosorption, the aforementioned factors were considered and a total of 86 trial runs were conducted according to the Face-Centered Central Composite Design (FCCCD) of the Response Surface Methodology (RSM). Quadratic model had Maximum R^2 value (0.95) and largest F value (48.86). From the Analysis Of Variance table and R^2 value, quadratic model was predicted to be the significant model with the best fit to the produced experimental data. The parameters were obtained from the contour plots for the maximum sorption of chromium (VI) Cr (VI) pH value of 8, temperature of 100°C, contact time of 120mins, agitation speed of 150 rpm, initial Cr (VI) concentration of 60mg/L and adsorbent dose of 10g/L. Under these conditions, maximum Cr (VI) removal of 98.5% was obtained. Thus this biosorbent substantially eliminates chromium (VI) under optimized conditions, enabling its use in larger scale.

Keywords: Analysis Of Variance (ANOVA); Face-Centered Central Composite Design; Chromium (VI); Corn cob powder; Optimal.

BT 067

ROLE OF ETHNOMEDICINE IN THE DISCOVERY DESIGN AND DEVELOPMENT OF DRUGS FOR CARDIOVASCULAR DESEASES

[1] Matazu, S.S. [1] and Sani, A.[2]

[1]Department of Biochemistry, Umaru Musa Yar'adua University, P.M.B. 2218 Katsina, Nigeria
[2]Department of Biochemistry, Bayero University, P.M.B. 3011, Katsina, Nigeria

Abstract

Ethnomedicine means traditional medicine use in the olden days all over the world; it is the source of information for the synthesis of new drugs discovered from ethnomedicine, after isolation purification and characterization. The theme of this review is to summarize the evolving processes in cardiovascular drug discovery and development within a large pharmaceutical company. *Ficus glumosa* plant is a very popular and potent of ethno-medicine among the locals as different parts of the plants are widely employed in traditional medicine. In a recent article on our understanding of the evolution of coronary artery disease and myocardial infarction and its treatment, it was concluded that "the pathways of discovery, innovation and therapeutic advancement in cardiovascular science and medicine over the past two centuries have been truly remarkable." They describe the impressive decline in deaths from cardiovascular disease in relation to scientific advances between 1950, when it was approximately 450 per 100,000 of the population, to about 100 per 100,000 by 2010. Whereas many clinical advances contribute to this impressive decline, the investigators emphasize the importance of β-blocking therapy, HMG Co-A reductase inhibition as well as the introduction of novel antihypertensive agents in the context of the national high blood pressure education program. Despite these beneficial outcomes, the prevalence

of cardiovascular disease remains persistently high, partly caused by concomitant diseases such as diabetes mellitus and obesity as well as congestive heart failure. Furthermore, the impressive reduction in mortality rates for myocardial infarction made such patients to live longer, but subsequently develop heart failure, which has a worse prognosis than myocardial infarction. This role of innovative drugs is further supported by the masterly analysis by Comroe and Dripps (1976) in which they identified the major advances in cardiopulmonary medicine in the last 30 year. Of 529 key articles, 41% were judged to be essential for later clinical advances, but were not clinically oriented at the time the work was performed. The scientists responsible for these key articles sought knowledge for the sake of knowledge. However, 61.7% described basic research whose goal was clinically oriented. Of the top 10 clinical advances in this field, they identified drug treatment of hypertension, medical treatment of coronary insufficiency, and oral diuretics as being major advances. Despite these previous improvements in drug therapy, improvements in treating cardiovascular diseases such as heart failure and cardiac arrhythmias are still required.

BT 068

TESTICULAR FUNCTION INDICES OF MALE WISTAR RATS AFTER EXPOSURE TO GROUNDWATER SAMPLES AND LEACHATES FROM GBAGEDE DUMPSITE, AMOYO, KWARA STATE, NIGERIA

***Yakubu, Musa. Toyin. and Omar, Sikemi. Adejoke**

Phytopharmacology, Toxicology, Reproductive and Developmental Biochemistry Research Laboratory, Department of Biochemistry, University of Ilorin, P.M.B 1515, Ilorin, Nigeria. *Correspondence*: tomuyak@gmail.com, +2348037544437

Abstract

This study evaluated the testicular function indices of male Wistar rats after 60 days of exposure to groundwater samples and leachates from Gbagede dumpsite in Amoyo, Kwara State, Nigeria. Male rats (134.04 ± 0.66 g) were randomized into seven groups (A-G) of five rats each. Animals in group A (control) were exposed to distilled water while those in groups B, C, D, E, F and G received groundwater sample 1 (GWS1), groundwater sample 2 (GWS2), 2.5%, 5.0%, 7.5% and 10% inclusion levels of leachate samples respectively. The groundwater and leachate significantly ($P<0.05$) reduced the levels of testicular glycogen, total cholesterol, total protein, testosterone, testicular weight and volume, activities of testicular acid phosphatase, alkaline phosphatase, gamma glutamyl transferase, lactate dehydrogenase, sperm count, motility, morphology, acid phosphatase, α-glucosidase activities, serum lutenising hormone, follicle stimulating hormone and testosterone with the 10% leachate producing the most profound reduction. GWS1 and 5% leachate significantly ($P<0.05$) increased the levels of testicular zinc, copper and iron. The GWS2 increased the levels of copper and iron whereas the 2.5% leachate increased the zinc and copper levels of the testes of the male rats. The 7.5% and 10% leachate significantly decreased the concentrations of zinc and copper in the testes of the animals. The groundwater and leachates from Gbagede dumpsite have adversely affected the normal synthetic and secretory capacity of the testes of male rats with the most profound effect at 10% inclusion level of leachates. Consumption of the groundwater and leachates may hamper normal reproduction in the animals.

Keywords: Gbegede dumpsite, Groundwater, Leachate, Testicular function, Reproduction.

BT 069
EFFECT OF PRETREATMENT WITH MANGANESE AND SELENIUM ON CADMIUM-INDUCED TOXICITY TO RATS

S. G. Mafulul[1]*, E. B. Joel[1], L.A. Barde[2], C. A. Orji[1], and C.S. Edah[1]

[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos, Nigeria
[2]Department of Biochemistry, Faculty of Sciences, Plateau State University Bokkos, Nigeria
*Corresponding author; E-mail: mafsimonsg@yahoo.com,Tel: +2348036809935

Abstract

The effect of the antioxidant micronutrients manganese (Mn) and selenium (Se) on cadmium-induced oxidative tissue damage was investigated in rats pretreated with Mn and Se prior to exposure to a mild dose of Cd. Male wistar strain rats (230-250 g b.wt) were divided into four groups (A, B, C and D): Group A served as the control and rats in the four groups were maintained on normal rat diet 'Vital feed' and tap water *ad libitum* throughout the period of study. Each rat in groups C and D received once daily, an oral supplementation of aqueous solutions of Mn (3 mg $MnCl_2$/kg b.wt) and Se (3 mg SeO_2/kg b.wt) administered by means of a needle-free Syringe for 7days. Thereafter, rats in group B and C were each given one single oral dose $CdCl_2$ in aqueous solution (3 mg $CdCl_2$/kg b.wt) daily for 3 days. At the end of which cadmium, membrane lipid peroxidation and glutathione contents and activities of antioxidant enzymes catalase, superoxide dismutase, and glutathione peroxidase were determined in the liver and kidney samples obtained from treated animals. Results showed that pretreatment with Mn and Se effectively reduced Cd accumulation in the liver and kidney as well as countered Cd-induced membrane lipid peroxidation, depletion of non-enzymic antioxidant, glutathione, and induction of antioxidant enzymes catalase, superoxide dismutase, and glutathione peroxidase in the liver and kidney of rats, all of which effects are consistent with a protective effect of Mn and Se against Cd-induced oxidative tissue damage. It can be concluded that pretreatment with Mn and Se offer significant protection against Cd-induced oxidative tissue damage.

Keywords: Cadmium, manganese, selenium, lipid peroxidation, pretreatment, antioxidants.

BT 070
SUB-CHRONIC TOXICITY STUDY OF PARTITIONED FRACTIONS OF AQUEOUS AND DICHLOROMETHANE EXTRACT OF *Annona senegalensis* ROOT BARK

Ahmed M.U[1]., Arise R.O[2] and Modibbo A.A.[3]

[1]Dept. of Biochemistry, Adamawa State University, Mubi, Adamawa State.
[2]Dept. of Biochemistry, University of Ilorin, Ilorin, Kwara State.
[3]Dept of Chemical Sci. Tech, Federal Polytechnic, Mubi, Adamawa State.
Correspondence: maryamahmed566@gmail.com

Abstract

Annona senegalensis root bark is used for the treatment of several diseases which include malaria, snake bite and infectious diseases. Different phytochemicals are responsible for these activities. This study assessed the sub-chronic toxicity of the dichloromethane extract and two solvent (dichloromethane and ethylacetate) fractions from aqueous extract of Annona senegalensis root bark. 100mg, 200mg and 400mg per Kg body weight of dichloromethane extract (DR), aqueous- ethylacetate root (AER) and aqueous-dichloromethane root (ADR) fractions were administered to adult albino rats for 14 days. Physical, heamatological and biochemical parameters were assessed. The rats administered 100mg/kgbody weight AER and 400mg/kg body weight DR significantly gained weight despite the significant reduction in total feed intake when compared to the control. There was significant increase in total feed intake for ADR (438.00 ± 1.00 to 479.00 ± 2.52) but there was no significant gain in weight when compared to the control. The aqueous fractions (ADR and AER) showed hepatoxicity with a significant increase in alanine aminotransferase activity ranging from 75.33 ± 0.18 to 143.00 ± 0.20 and 54.67 ± 0.14 to 99.33 ± 0.88U/I respectively when compared to the control 36.33 ± 0.14units U/I. Serum urea concentration and superoxide dismutase activity for both fractions significantly decreased while PCV increased significantly. Serum $Na^+$and MDA concentration significantly increased in all the fractions. This indicates that all the fractions obtained and evaluated may be toxic .

Keywords: *Annona senegalensis*, toxicity, hepatotoxic, partitioned, heamatological.

BT 071

TOXICITY STUDY OF *Naja nigricollis* VENOM ON HEPATIC FUNCTION PARAMETERS IN ALBINO RATS

Ibrahim Sani*, Fatima Bello, Abubakar Abdulhamid

Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Nigeria
*Corresponding Author's E-mail: isani76@gmail.com, Phone No.: +2348037731851

Abstract

Snake venoms are known to cause different patho-physiological reactions, altering cellular and enzymatic activities in victims of snakebites. In this study, the toxic effect of Black-Necked African Spitting Cobra (*Naja nigricollis*) venom on hepatic function parameters was investigated in albino rats. Venom was injected subcutaneously into albino rats at different doses; 0.5, 1.0, 1.5, and 2.0 mg/kg body weight for group 2-5 respectively, where group 1 received only normal saline. The LD_{50} of the venom was estimated using probit analysis, while the biochemical tests for the hepatic function parameters were conducted using standard methods. The animals were observed for 14 days after venom administration for mortality and sing of toxicity. The LD_{50} was estimated to be 0.355mg/kg body weight. The results for the biochemical tests indicated that, the administration of the venom has induced significant elevation of AST, ALT, ALP, albumin, total protein and total bilirubin in all the groups of the envenomed animals compared to the normal control group. Additionally, the toxicity induced was associated with significant alternations in the hepatocellular architecture. Hence, it was concluded that *Naja nigricollis* venom is highly toxic with a low LD_{50} and its toxicity had caused significant hepatocellular injury.

Keywords: *Naja nigricollis*, Venom, Toxicity, Hepatic, LD_{50}

BT 072

PHYTOREMEDIATION OF CADMIUM- AND CHROMIUM-POLLUTED SOILS WITH *Ipomoea asarifolia*

Wasagu, R.S.U.[1], ⁎Shehu, S.[1], Saidu Y.[1], Anka S.A.[2] and Okoro J.C.[1]

[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto.
[2]Department of Biological Science, Usmanu Danfodiyo University, Sokoto.
(Correspondence email: elmafary@gmail.com)

Abstract

Remediation of soil polluted with heavy metals by conventional techniques is often hard and cost-prohibitive. Phytoremediation is an alternative method for cleaning heavy metals polluted-soil, which is both cost-effective and environment-friendly. The present study evaluated the potential of *Ipomoea asarifolia* to remediate soils polluted with Cadmium (Cd) and Chromium (Cr). The plant was grown on soils polluted with varying concentrations of Cd and Cr in polystyrene-pots and atomic absorption spectrophotometry (AAS) was used to analyse bioaccumulation of the heavy metals in the plant's roots, stems and leaves, over three harvesting phases of the study period. The results revealed that the plant accumulated a total of 272.85 mg/kg, 377.40 mg/kg and 459.48 mg/kg Cd from 307.11 ± 1.99 mg/kg, 409.22 ± 0.63 mg/kg and 511.62 ± 0.60 mg/kg of Cd-polluted soils respectively, as well as a total of 93.81 mg/kg, 118.45 mg/kg and 155.63 mg/kg Cr (VI) from 102.20 ± 0.88 mg/kg, 134.85 ± 0.87 mg/kg and 167.76 ± 3.18 mg/kg of Cr-polluted soils respectively. The Transportation Indices of Cd and Cr translocation capacities in different parts of the plant was greater than 1 (TI>1), indicating that the plant has a phytoextraction potential for both metals. The results therefore, suggest that *Ipomoea asarifolia* could be effective in phytoremediation of Cadmium- and Chromium-polluted environments.

Key words: Phytoremediation, pollution, *Ipomoea asarifolia*, Cadmium, Chromium

BT 073

TOXICOLOGICAL PROFILE OF SECURIDECA LONGEPENDUNCULATA

Sulaiman, S. Rukayyah[1,2]*, Jigam,A.Ali[2], Abubakar, Abdulkadir[2] and Salau, R. Bolakale[2]

[1]Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai, Nigeria.
[2]Department of Biochemistry, Federal University of Technology, Minna, Nigeria
*Corresponding Author E-mail:rukkysule82@gmail.com Tel:08065863683

Abstract
Securideca longepedunculata is a medicinal herb in the Savanna, used locally in the treatment of diseases. There are several reports on the pharmacological activity of this plant, but literature on sits toxicity is scarcity.The safety of a plant extract is as important as its efficacy. Twenty four Wister rat were grouped into two. The test group were administered 200mg/kgbw on alternate days while the control group were given normal saline for four weeks and blood parameters monitored on a weekly basis. Liver, kidney, heart and spleen were also harvested for histopathology. In this toxicity studies, red blood cell count and PCV continuously decreased compare to the control, while urea, creatinine and bilirubin concentrations were significantly($p<0.05$) higher than the control, indicative of damage to the red blood cells and kidney. Similarly, serum ALT and AST activities were significantly ($p<0.05$) higher compare to the control group, also indicative of liver damage and hemolysis. However, there was no significant ($p<0.05$) change in the white blood cell indices. Furthermore, histopathology has not only revealed vascular congestion, mild inflammation and renal tubule dilatation of the kidney but also leucocyte infiltration, vascular congestion and fibrosis in the liver. Thus, *S. longepedunculata* extract have adverse effect on red blood cells count, kidney and liver, although could serve as a potential target for malaria if bioassay guide fractionation is further carried out to differentiate between the toxic and the antiplasmodial agents.

BT 074

LEAD (PB) CONCENTRATIONS IN SOME SAMPLES OF GOLD MINING COMMUNITIES IN RAFI LOCAL GOVERNMENT, NIGER STATE NIGERIA

*Usman, H.B. Ndatsu, Y. Abubakar, H. and Amuzat, O.A.
Department of Biochemistry, Faculty of Natural Sciences, Ibrahim Badamasi Babangida University, P.M.B.11, Lapai, Nigeria
ubhamzat@ibbu.edu.ng, 08161211483

Abstract
The Federal Ministry of Health of Nigeria notified the World Health Organization (WHO) of a suspected Lead (Pb) poisoning outbreak in Unguwan Magiro and Kawu communities in Rafi LGA of Niger State on 15 May 2015, with a total of 48 cases including 14 deaths. This paper aims to estimate the level of Pb in food and ground water in the gold-ore mining communities of Rafi, North central of Nigeria. Samples were collected from 5 different communities in study Area, which about 12 water samples and 26 food crops samples were analyzed for Pb using Atomic Absorption Spectrophotometer (AAS). The Pb concentrations in the samples were compared with maximum contaminant levels (MCL) values of WHO to ascertain the levels of Pb in the samples. The average Pb concentration in water ranges from 0.90-1.100 mg/L; food crop range from 1.127-1.791 mg/kg and crop stem range from 1.100-1.567 mg/kg. However, the MCL set by WHO for water, food stuff and crop stem were 0.01mg/L, 0.3 mg/kg and 0.3 mg/kg, respectively. Also, about 80% of soil (top, sub,) and dust Pb concentrations which ranged as (1.012-1.295, 0.983-1.736 and 154.7-537.3 mg/kg), respectively, were found within the MCL acceptable limit (400 mg/kg) approved by WHO. The findings demonstrated that the concentration of Pb in all analyzed samples exceeded the general MCL values set by WHO. The higher concentrations of Pb observed in all samples could indicate the contamination of samples by mining activities. Therefore, all analyzed samples are thus unsafe for domestic uses.
Keywords: Lead, Mining, crop plants, water, soils

BT 075

BIOSORPTION ISOTHERMS, KINETICS AND THERMODYNAMICS OF CHROMIUM (VI) BIOSORPTION IN AQUEOUS SOLUTION USING CORN COB POWDER

*[1]Edem Umiom Okon;[3]Attah, Ojebbah Catherine;[1]Ukwuije Nnennaya Olachi; [1]Aina, Olabukola Beatrice; [1]Esew Onyeyirichi; [2]Salihu Aliyu; [2]Sallau, Abdullahi Balarabe.
*[1]National Research Institute for Chemical Technology, Zaria, Kaduna State.
[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Kaduna State.
[3]Department of Chemistry, Federal College of Education, Kano State.
*Corresponding author's address - Email: edem.umiom@narict.gov.ng

Abstract
This study was designed to assess the biosorption isotherms, kinetic, thermodynamics of Cr (VI) biosorption by corn cob under optimized conditions using six (6) selected factors; pH, temperature, contact time, agitation speed, adsorbate and adsorbent concentration. A total of 86 trial runs were conducted according to Face-Centered Central Design (FCCCD) of the Response Surface Methodology (RSM). The optimal process parameters for the maximum sorption of Cr (VI) were pH value of 8, temperature of 100°C, contact time of 120mins, agitation speed of 150 rpm, initial Cr (VI) concentration of 60mg/L and adsorbent dose of 10g/L. Langmuir model, with R^2 value 0.99 was the best compared to Freundlich and Temkin biosorption isotherms having 0.98 and 0.98 respectively. Pseudo–second order was the predominant kinetic model for the process having a R^2 value of 0.99. Gibbs free energy (ΔG°) was found to be negative at all temperatures; a negative enthalpy change (ΔH°) of -3.15kJ/mol was recorded and the system entropy change (ΔS°) was 11.13kJ/K/mol. These characteristics are indicative of spontaneity, exothermic nature, and feasibility of the process.

Keywords: *Biosorption Isotherms; Thermodynamics*

BT 076

REPRODUCTIVE RISKS ASSOCIATED WITH ORAL EXPOSURE TO ORGANOPHOSPHATE PESTICIDE, CHLORVIEW® (CHLORPYRIFOS 40% EC)

Amadi, Eustace U*., Ubani, Chike .S. and Nweze Ekene
Department of Biochemistry, University of Nigeria Nsukka
*eustace.amadi.pg00448@unn.edu.ng

Abstract
Organophosphate pesticides are a class of commonly used pest control chemicals utilized for both agricultural and house hold purposes. Chlorview® is a major brand of this pesticide commonly used in Nigeria in diverse areas of pest control. These pesticides bioaccumulate and biomagnify and eventually find their way into human body through different routes which are majorly by ingestion (through contaminated foods, water and direct ingestion) and inhalation. The biotransformation of chlorpyrifos yields residues with varying levels of toxicity which include chlorpyrifos oxon, diethyl thiophosphate, diethyl phosphate and 3,5,6- trichloro-2-pyridinol. Reproductive toxicity of chlorpyrifos has been reported in many literatures. In this study the reproductive risk of oral exposure to chlorpyrifos was investigated in albino rats. Acute toxicity studies established an LD_{50} of 155 mg/kg b.w. of the pesticide. Three groups of five animals each were treated orally with doses calculated to be 1/40, 1/25 and 1/10 of the LD_{50} giving 3.9 mg/kg b.w., 6.2 mg/kg b.w. and 15.5 mg/kg b.w. which represent groups 1, 2 and 3 respectively and also group 4, a control group of five animals received no treatment. Experimental animals were treated for 10days and fed normal animal feed with water given *ad libitum*. 12 hour day and 12 hour night cycle was maintained. The serum testosterone assay was conducted using BIOS ELISA kit (10007) and the serum cholesterol assay was conducted using RANDOX kit (CH 203) and Sperm count was conducted microscopically. The statistical analysis was done using SPSS v20. The results showed that there was a significant ($p<0.05$) increase in cholesterol levels in group 3 (5.81 ± 0.17 mmol/L) when compared to the control (3.93 ± 0.83 mmol/L) and a non-significant increase in cholesterol in groups 1 & 2 compared to group 4. There was significant ($p<0.05$) decrease in testosterone in group (3 1.30 ± 0.12 mg/mL) compared to group (4 3.76 ± 1.09 mg/mL) a non-significant decrease in testosterone in groups 1 & 2 compared to group 4.There was also a non-significant decrease in the sperm count across the test group when compared to the control group. The findings therefore suggest that oral exposure to chlorpyrifos increases the risk of reproductive toxicity and eventual reproductive malfunction.

Keywords: Chlorpyrifos, Organophosphate, Pesticides, Reproductive toxicity

BT 077

ACUTE TOXICITY AND ANALGESIC STUDIES ON EXTRACTS OF THE ROSE OF JERICHO *Anastatica hierochuntica L* (HANNUN MARYAM)

Abdulrahman AY*, Ibrahim HM, Ambi AA and Usman IS
Department of Phamacognosy and drug development, Ahmadu Bello University, Zaria, Nigeria
Sugarcane Bio-factory, Ahmadu Bello University, Zaria, Nigeria
Corresponding Author: adamaabdulrahman@gmail.com

Abstract
Anastatica hierochuntica L. is an annual that belongs to the family Brassicaceae and the only member of the genus Anastatica. The whole of the plant (*Anastatica hierochuntica L*.) has been used for centuries in Northern Nigeria and Arabian Peninsula to ease labor and expel dead fetus and manage several other ailments without substantial scientific evidence and information on the plant. In this present study the acute toxicity levels of the plant was determined using the 425 OECD guidelines, while the analgesic activity was determined using the acetic acid induced writhing in mice. These were carried out using six extracts of the plant extracted using sohxlet apparatus with organic solvents of ascending polarity. The extracts were hexane, chloroform, dichloromethane, Ethylacetate, methanol and water. All six extracts were not toxic at both 2000mg/kg and 5000mg/kg. All extracts were also analgesic as compared to normal saline and as active as piroxicam except hexane extract given at a dose of 250mg/kg at significance level of 95%.

BT 078

HEAVY METAL CONTENT OF SELECTED COSMETICS PRODUCTS WIDELY USED IN SOKOTO METROPOLIS, NIGERIA

S. Rabiu[1], A. Dandare[1] and A. Bello[2]
[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto Nigeria.
[2] Department of Pathology and Immunology,Usmanu Danfodiyo University, Sokoto Nigeria
Corresponding author: abufukaiha@gmail.com mobile Phone: +2347032884007

Abstract
The use of cosmetics has become an integral part of modern society probably due to quest for beauty enhancement especially among young adults (men and women). Literature has shown that most of these cosmetics are found to contain an appreciable amount of heavy metals which were deliberately added or mistakenly encountered as impurities. The present study was carried out to investigate the level of lead, chromium, cadmium and nickel in three brand samples of eyeliners, lipsticks and mascaras widely used in Sokoto metropolis. Samples were analyzed using Atomic Absorption spectrophotometer (Perkin Elmer, 6300 model USA) after digestion. The concentration of lead ranged from ND to 11.71, 0.11 to 1.88 and 0.42 to 5.72 in eyeliners, lipsticks and mascaras respectively. Chromium ranged from ND to 1.48, 0.48 to 5.31 and 0.78 to 2.19 while cadmium ranged from ND to 0.84, 0.03 to 0.06 and ND to 0.01 and nickel from ND to 11.65, ND to 1.74 and 0.28 to 2.37 respectively. An alarming concentration of chromium and nickel were detected in all the samples analyzed compared to permissible limit set by concerned regulatory agencies (WHO and EU; Pb: 10 ppm, Cd: 0.3 ppm and Ni: 0.6 ppm). The concentrations of lead and cadmium were found far above the permissible limit in the eyeliners but within the limit in lipsticks and mascaras. The non-biodegradable nature of these heavy metals in conjunction with its bio-accumulative properties had invariably confers its toxicity in humans when used for long period time. Thus, there is a need for manufactures to reformulate and test the presence of these toxic metals in their products before marketing. The regulatory bodies like NAFDAC, NIS and SON should also put stringent laws and controls on both local and imported cosmetics in order to safeguard Nigerian citizens.

Key word: Cosmetics, Heavy metals, Concentration, Control

BT 079

OPTIMIZATION OF CHROMIUM (VI) BIOSORPTION USING CORN COB POWDER BY RESPONSE SURFACE METHODOLOGY

*[1]Edem Umiom Okon; [3]Attah, Ojebbah Catherine; [1]Ukwuije Nnennaya Olachi; [1]Idio Uduakobong; [1]Aina, Olabukola Beatrice;[2]Salihu Aliyu; [2]Sallau, Abdullahi Balarabe.
*[1]National Research Institute for Chemical Technology, Zaria, Kaduna State.
[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Kaduna State.
[3]Department of Chemistry, Federal College of Education, Kano State.
*Corresponding author's Email: edem.umiom@narict.gov.ng

Abstract
The current investigation expounds the role of corn cob powder as a biosorbent for remediating chromium (VI), a heavy metal pollutant commonly found in effluents from industries. Biosorption was affected by pH, temperature, contact time, agitation speed, initial metal concentration and biosorbent dosage. A total of 86 trial runs were conducted according to the Face-Centered Central Composite Design (FCCCD) of the Response Surface Methodology (RSM). Quadratic model had Maximum R^2 value (0.95) and largest F value (48.86). From the Analysis Of Variance table, quadratic model was predicted to be the significant model with the best fit to the produced experimental data. Optimal parameters were obtained from the contour plots for the maximum sorption of chromium (VI) Cr (VI) pH value of 8, temperature of 100°C, contact time of 120mins, agitation speed of 150 rpm, initial Cr (VI) concentration of 60mg/L and adsorbent dose of 10g/L. Under these conditions, maximum Cr (VI) removal of 98.5% was obtained. Thus this biosorbent substantially eliminates chromium (VI) under optimized conditions, enabling its use in larger scale.

Keywords: Face-Centered Central Composite Design; Chromium (VI); Corn cob powder.

BT 080

HEAVY METAL COMPOSITION OF *Seasame radiatum* (BENISEED), *Corcorous walcotti* AND *Corchorus olitorus*

Macharious Bakimi, Mayaki Aliyu Muhammad*, Jigam Aliyu Audu, and Sayyadi Abdulkadir
Department of Biochemistry, Bayero University Kano
Department of Biochemistry, Federal University of Technology, Minna
mhayhaki@gmail.com*, 08062588123

Abstract
Heavy metals are naturally occurring in the earth 's crust but anthropogenic and industrial activities have led to drastic environmental pollutions in distinct areas. Consumers of agricultural produce are exposed to a diversity of chemicals that are being absorbed by plants from contaminated soil. In view of this, Analysis of some heavy metals was carried out on stems and leaves of *Black Benniseed* (*Sesamum Radiatum*), *Jute* (*Corchorus Olitorus*) *and wooly corchorus* (*Corchorus Walcotti*) obtained from Yankaba Area of Kano-Nigeria. Lead (Pb), Cadmium (Cd), Iron (Fe), Chromium (Cr) and Copper (Cu) were determined using Atomic Absorption Spectrophotometer (AAS). The concentration of the essential metals like Iron (Fe), Chromium (Cr) and Copper (Cu) were within, FAO/WHO. The maximum permissible levels for vegetables. Chromium was only detected in the leaves of *Sesamum Radiatum*. Concentrations of toxic metals analysed like Cadmium were 0.555mg/L for *Corchorus Walcotti*, 0.208mg/L for *Sesamum Radiatum* and 0.486mg/L for *Corchorus Olitorus* while lead was 0.190mg/L *Corchorus Walcotti*, 0.142mg/L for *Sesamum Radiatum* and 0.095mg/L for *Corchorus Olitorus* and both toxic metals exceeded the maximum permissible level by (FAO/WHO, 2005). The result for this study shows that these vegetables have higher concentrations of heavy metals in the leaves compared to the stems and may contribute to the body burden of toxic heavy metals especially lead and cadmium when consumed.

Key Word: *Sesamum Radiatum*, *Corchorus Walcotti*, *Corchorus Olitorus*, Heavy metals.

BT 081

HEAVY METAL EXPOSURE AND HEALTH RISK ASSESSMENT IN SOILS AROUND CONTAMINATED SITE IN KATSINA STATE, NIGERIA

Babangida Sanusi Katsayal[1]*; Abubakar Abdullahi Lema[2]; Nuradeen Wada[2]; Makiyu Lawal[3]; Aisha Saminu[2]; Mariya Mamman Charanci[2]; Habiba Auwal[2]; Sa'adiya Isah Gambo[2]; Aisha Mohammed Abba[2]; Saddam Umar[2]

[1]Department of Biochemistry Ahmadu Bello University, Zaria, Nigeria

[2] Biological Science Department, Al-Qalam University, Katsina, Nigeria.

[3]Chemistry Department Umaru Musa Yaradua University, Katsina, Nigeria

*Corresponding author's contact: Tel: +2347065655363; Email; ssskatsayal@gmail.com

Abstract

Although small quantities of metals are necessary for human development, continuous exposure to heavy metals can lead to threatening human health conditions. Exposure assessment was carried out to evaluate the content and health risk associated with heavy metals in soils around some selected site of contamination in Katsina State. Soil samples were collected from different identified contaminant sources across the three geographical zone of the state. The samples were digested using standard wet digestion methods and analyzed for heavy metal content using atomic absorption spectrophotometry. The enrichment factor, contamination factor, pollution load index, and target hazard quotient (THQ) were calculated. In addition, carcinogenic and non-carcinogenic risk assessment was carried-out using Monte-Carlo computational prediction analysis. Results show that the total mean concentrations of the heavy metals decreased with depth in soil samples and distance from the dumpsite, fertilizer company, tannery, and paint company. Possible sources of contamination were also discussed. A noteworthy observation was that the concentrations of most of the heavy metals under investigation exceeded maximum permissible levels of WHO.

Key words: Heavy Metals, WHO, Chromium, Tannery, Fertilizer.

BT 082

POTENTIAL HEALTH RISKS ASSESSMENT OF HEAVY METALS IN HONEY OBTAINED FROM APIARY FARMS IN SOUTH-EAST, NIGERIA.

Nwogo Ajuka Obasi[1]*, Chinyere Aloke[1], Stella Eberechukwu Obasi[2], Ademola Clement Famurewa[1], Gertrude Nneka Onyeji[1]

[1]Department of Medical Biochemistry, Alex Ekwueme Federal University Ndufu-Alike, Nigeria

[2]Department of Science Laboratory Technology, Akanu Ibiam Federal polytechnic Unwana, Nigeria

*Corresponding author's contact: naobasi@yahoo.com, +234(0)803 7320 579

Abstract

The importance of honey as a widely utilized healthy food as well as medicinal and pharmacological raw materials demands high level of routine assessment to ensure human health safety and wholesomeness because it has been implicated as an environmental bio-indicator of heavy metals. The heavy metal levels and potential health risk assessment of honey obtained from selected apiary farms in south-east, Nigeria were carried out using standard protocols. Honey samples were obtained from apiary farms located at Abia State (National Root Crops Research Institute Umudike, Bende, and Orie Ugba village), Ebonyi State (Umuebe Farm Ltd, Federal College of Agriculture Ishagu (FECAI) and Abakaliki metropolis and Enugu State (University of Nigeria Nsukka, Enugu State Polytechnic Iwollo, and Ogbete village and analyzed for Pb, Se, As, Fe, Mn, Cu, n, Cr, Cd, and Ni. The results showed that honey samples from the

different locations contained all the heavy metals analyzed in varying concentration but in levels that fall within the standard permissible limit set by Food and Agricultural Organization/World Health Organization. The results also showed that the total non-carcinogenic risk for all the metals ranged from 3.841×10^{-3} to 1.963×10^{-2} in adults and from 1.801×10^{-2} to 8.790×10^{-2} in children while the total carcinogenic risk for Pb, As, Cr and Cd ranged from 8.318×10^{-7} to 2.414×10^{-6} in adults and from 1.894×10^{-6} to 1.969×10^{-5} in children. In general, the results showed that children were more predisposed to non-carcinogenic and carcinogenic risk than adult consuming the honey. However in all cases, the study showed that the honey samples were all safe with total non-carcinogenic risk less unity (<1) and total carcinogenic risk less the permissible limit ($<10^{-4}$) set by United States Environmental Protection Agency.

Key words: Honey, Heavy metals, Health risk, Raw materials, Bioindicator

BT 083

DIETARY EFFECT OF *Brassica oleracea* (CABBAGE) ON HEPATIC AND RENAL FUNCTION STATUS OF LEAD INDUCED TOXICITY IN WISTER RATS

*****Olagunju Abbas, Garba Auwalu, Musa A Muawiya, Umar Aliyu Umar, Abaya Sefas Philips and Abdulbasit Muhammad Auwal.

Department of Biochemistry, Ahmadu Bello University Zaria.

Abstract

The present study was undertaken to assess the dietary effect of *Brassica oleracea* against Lead acetate induced toxicity in wistar rats. Twenty-five animals were randomly divided into five groups (n = 5); 5mg/kg body weight of lead was used to induce toxicity, control groups were given normal feed while test groups were given 10%w/w and 20%w/w cabbage in feed. 2ml/kg body weight of standard ascorbic acid was used as standard group. All rats were sacrificed after three weeks of treatment and blood sample, liver and kidneys were collected for analysis. Preliminary phytochemical analysis of *Brassica oleracea* revealed the presence of 1.31%, 0.69% and 1.19% of Flavonoid, alkaloid and tannin, respectively. The results revealed that lead acetate toxicity induced electrolytes imbalance and significantly increase the levels of serum urea and creatinine as well as activities of Liver enzymes. The biochemical alterations induced by Lead acetate were confirmed by liver and Kidneys histopathological changes. Dietary inclusion of cabbage was found to slightly ameliorate the effect of Lead acetate toxicity ($p<0.05$) in a dose dependent manner.

Keywords: Lead, *Brassica oleracea*, liver, renal function.

BT 084

TOXICOLOGICAL STUDY OF AQUEOUS-METHANOL SOLVENT FRACTION OF CRUDE METHANOL EXTRACT *Dacryodes edulis* LEAVES

*Ononamadu, C.J.[1], Ihegboro, G.O.[1], Owolarafe, T.A.[1]
[1]Department of Biochemistry and Forensic Science, Nigeria Police Academy, Wudil, Kano, Nigeria
*Corresponding author's contact: ononamaducj0016@gmail.com;ononamaducj@polac.edu.ng; phone no: +2348037202476

Abstract
Dacryodes edulis ((G. Don) H.J. Lam) is the most popular specie under the genius *Dacryodes*. It is well known for its ethno-medicinal uses in South-eastern and South-western Nigeria. This study evaluated the toxicity of the aqueous-methanol fraction of methanol extract of *Dacryodes edulis* leaves (AMDE). The rats were randomized to groups of single oral treatment with doses (10-500mg/kgbw). They were monitored for mortality and obvious signs of behavioural changes. For subchronic toxicity study, the rats were randomized to three daily treatment groups (200, 400 and 600mg/kgbw) for 28days. The control groups received 1%v/v DMSO. At the end of the experiment, blood samples were collected for hematology and clinical chemistry evaluations. Gross pathology and histopathology of liver and kidneys were assessed. The Geno-toxicity of the extract was evaluated using *Allium cepa* model. The result showed that acute administration of AMDE, upto 5000mg/kgbw did not produce marked adverse effect or mortality of the test rats. The median lethal dose (LD_{50}) determined was greater than 5000mg/kgbw. Subchronic oral administration of AMDE for 28days showed no significant ($p>0.05$) effect on liver function, kidney function indices, organ - body weight ratio, however, significant ($p<0.05$) decline in erythrocytic indices – red blood cells, haematocrit and haemoglobin - were observed at 600mg/kgbw. The mitiotic inhibition showed no lethal effect. In conclusion, the aqueous-methanol solvent fraction is relatively safe. However, there are strong indications that it may contain compounds that affects erythropoetic processes adversely at doses beyond 600g/kgbw. Thus, adequate care should be taken in dosing and administering the extract to avert anaemic condition.

BT 085

LD_{50} DETERMINATION AND SUB-CHRONIC TOXICITY PROFILE OF AQUEOUS LEAF EXTRACT OF *Bryophyllum pinnantum* ON ALBINO RATS

*[1]Mannir Abubakar Rawayau and [1]Hassan Ahmadu
Department of Biochemistry, Bayero University kano, kano state of Nigeria
Corresponding author: abumannirrawayau101@gmail.com; +2348187601105

Abstract
The aqueous leaf extract of *Bryophyllum pinnatum* has been reported to possess anti-hypertensive, anti-inflammatory, anti-microbial, anti-diabetic and antiulcer properties among others. Being readily available and easy to cultivate, the use of the plant in herbal medicine has been on the increase, its toxicity profile is still lacking. This study is therefore designed to determine the toxicity effect of the extract in Albino rats. 32 Albino rats were used for the whole study; 12 rats were used for $LD_{50,}$ three (3) groups labeled A, B and C of four rats each which were treated with 500mg/kg, 1000mg/kg and 1500mg/kg body weight of the extract respectively, and also the other 20 Albino rats were used for the experimental group, four (4) groups labeled A,B,C and D of five rats each which were treated with 200mg/kg, 400mg/kg and 600mg/kg respectively and group A served as normal control. The results revealed that, the levels of serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), Total bilirubin, direct bilirubin for the liver function test and serum levels of Urea and Creatinine for the kidney function test for the LD_{50} and the other experimental group of treated animals have significantly increased compared to the control group. Increased levels of these enzymes (AST and ALT), Total bilirubin, direct bilirubin, Urea and Creatinine appeared dose dependent. Both levels of these enzymes (AST and ALT), Total bilirubin, Direct bilirubin, Urea and Creatinine have significantly ($p<0.05$) increased in animals treated with the highest dose (1500mg/kg) compared to the control and other treated groups. However, serum levels of of total protein and Albumin in both the LD_{50} and the other experimental group of treated animals have significantly ($p<0.05$) decreased compared to the control group. Effect of crude aqueous extract of *Bryophyllum pinnantum* on liver and kidney of albino rats have been investigated. The result is suggestive of liver and kidney impairment by the crude extract, therefore thorough toxicity investigation need to be done to ascertain the safety of the plant.
Keywords: $LD_{50,}$ Sub-chronic, toxicity test, *Bryophyllum pinnantum*, liver and kidney functions test

BT 086

ISOLATION, IDENTIFICATION OF FUNGI AND AFLATOXIN CONTENT OF MAIZE MILLET AND SORGHUM COLLECTED FROM GURARA AND MOKWA LOCAL GOVERNMENT AREAS OF NIGER STATE

Joseph P. Shaba[1]*, Musa A. Dickson[1], Amanabo Musa[1], Ezikanyi G. Kelechikwu[2], Oguh C. Egwu[3]

[1]Department of Biochemistry, Ibrahim BadamasiBabangida University, Lapai, Niger State, Nigeria

[2] Department Biochemistry Federal University of Technology Minna Niger State Nigeria

[3]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.

Corresponding Author's contact: jpshabz@gmail.comand; Mobile No: +2348175082009

Aflatoxins are family of toxins produced by certain fungi that are found on agricultural crops such as maize (corn), peanuts, cottonseed and nuts, millet, etc. This study is aimed to isolate, identify fungi and aflatoxin content of maize millet and sorghum collected from Gurara and Mokwa local government areas (LGA) of Niger state. Samples of maize, millet, rice, and sorghum were collected from the market of two towns in each of the LGA. Small quantities of about 300gm were purchased from five sellers and pulled together to make about 2kg and taken to the laboratory. The samples were pulverized and used for fungi isolation and mycotoxin analysis. Fungi associated with the food samples were isolated using serial dilution method, and identification of fungi and aflatoxin content was carried out using a multimycotoxin assay using chromographic and comparism of fluorescence method. Aspergillus species was the predominant fungi found in the cereals analyzed followed by mucor pusillus, and penicillium citrinum and others. Aflatoxin B1 was found in maize, millet and sorghum. The result also showed that Maize, Millet and Sorghum of Gurara and Mokwa LGA was found to have high concentrations of aflatoxin B1 which were 27.0, 33.78 and 13.6µg/kg, respectively. These values were higher than the permissible levels of 10µg/kg. The maize and sorghum of Mokwa LGA are found to have high concentration of aflatoxin with 13.5µg/kg for the two samples while in millet the aflatoxin B1 concentration was low (6.8µg/kg) which is within the normal range. The results conclude that some of the food items obtained from the study area has high concentration of aflatoxin and therefore can pose a serious health risk if consumed regularly by the people living in this area.

Keywords: Aflatoxins, Mycotoxin, Maize, Millet and Sorghum

BT 087

Azadirachta Indica: A MULTIPURPOSE MEDICINAL PLANT WITH MARKED TOXICITY PROFILE.

S. SALIHU*, I. SANI, A. ABDULHAMID, S. FOLAMI AND S.A. JIGA

Department of Biochemistry, Faculty of Life Sciences, Kebbi State University of Science and Technology, Aliero, Nigeria

*Corresponding Author's contact: sherifsalihu1@gmail.com; Phone No.: +2347033071725

Abstract

Neem (*Azadirachta indica*) show an important role in diseases prevention and treatment through the enhancement of antioxidant activity, inhibition of bacterial growth, and modulation of genetic pathways. It has been widely used in Chinese, Ayurvedic, and Unani medicines worldwide especially in Indian Subcontinent in the treatment and prevention of various diseases. Earlier finding confirmed that neem and its constituents play role in the scavenging of free radical generation and prevention of disease pathogenesis, neem leave also exhibit toxic effect on normal tissues and on various biological activities. The studies based on animal model established that neem and its chief constituents play pivotal role in anticancer management through the modulation of various molecular pathways including transcription, tumour suppressor, oncogene, angiogenesis, apoptosis. It is considered as safe medicinal plants at certain dose and modulates the numerous biological processes without any adverse effect. In this review, I summarize the therapeutic effect and the toxic effect of Azadirachta indica the regulation of various biological and physiological pathways.

Keywords: Neem, *Azadirachta Indica*, Treatment, Prevention, Uses, Toxic

BT 088

LEAD (PB) CONCENTRATIONS IN SOME SAMPLES OF GOLD MINING COMMUNITIES IN RAFI LOCAL GOVERNMENT, NIGER STATE NIGERIA

[*]Usman, H.B. Ndatsu, Y. Abubakar, H. and Amuzat, O.A.

Department of Biochemistry, Faculty of Natural Sciences, Ibrahim Badamasi Babangida University, P.M.B.11, Lapai, Nigeria

ubhamzat@ibbu.edu.ng, 08161211483

Abstract

The Federal Ministry of Health of Nigeria notified the World Health Organization (WHO) of a suspected Lead (Pb) poisoning outbreak in Unguwan Magiro and Kawu communities in Rafi LGA of Niger State on 15 May 2015, with a total of 48 cases including 14 deaths. This paper aims to estimate the level of Pb in food and ground water in the gold-ore mining communities of Rafi, North central of Nigeria. Samples were collected from 5 different communities in study Area, which about 12 water samples and 26 food crops samples were analyzed for Pb using Atomic Absorption Spectrophotometer (AAS). The Pb concentrations in the samples were compared with maximum contaminant levels (MCL) values of WHO to ascertain the levels of Pb in the samples. The average Pb concentration in water ranges from 0.90-1.100 mg/L; food crop range from 1.127-1.791 mg/kg and crop stem range from 1.100-1.567 mg/kg. However, the MCL set by WHO for water, food stuff and crop stem were 0.01mg/L, 0.3 mg/kg and 0.3 mg/kg, respectively. Also, about 80% of soil (top, sub,) and dust Pb concentrations which ranged as (1.012-1.295, 0.983-1.736 and 154.7-537.3 mg/kg), respectively, were found within the MCL acceptable limit (400 mg/kg) approved by WHO. The findings demonstrated that the concentration of Pb in all analyzed samples exceeded the general MCL values set by WHO. The higher concentrations of Pb observed in all samples could indicate the contamination of samples by mining activities. Therefore, all analyzed samples are thus unsafe for domestic uses.

Keywords: Lead, Mining, crop plants, water, soils

BT 089

TOXICOLOGICAL PROFILE OF METHANOL LEAF EXTRACT OF *Annogeissus leiocarpus* (DC.) GILL AND PEER IN ALBINO WISTER RATS

D. A. Innalegwu[1], O. Amuda[2, 3] and T. Y. Gara[1]

[1*]Department of Biochemistry, Federal University of Technology Minna, Niger State,
[2]Department of Microbiology, Federal University of Technology Minna, Niger State,
[3]Dental Department of Niger State General Hospital Minna, Niger State, Nigeria
*Corresponding author: a.daniel@futminna.edu.ng

Abstract

Toxicity of medicinal plants and dose quantification is one of the major challenges confronting its acceptance and usage. This research is aimed at evaluating the toxicological profile of methanol leaf extract of *Annogeissus leiocarpus* in Albino Wister Rats. Acute and sub-chronic toxicity of the extract were carried out using Lorke's methods and Organisation for Economic Cooperation and Development (OECD) guidelines respectively. Gross pathology and microscopic examination of the liver and kidney was carried out using standard methods. Acute toxicity of the extract gave an LD_{50} of 1789mg/kg bodyweight while the sub-chronic toxicity profile of the extract for 10 weeks shows mild effects on the haematological, biochemical and renal parameters of the animals with a significant correlation ($p<0.01$ and $p<0.05$) between the treated and the control group. There was a significant difference ($p<0.05$) between the serum enzymes of the control and treated group throughout the 10 weeks of treatment with the extract. Microscopic examination of the live and kidney shows no alteration in the histoarchitecture of the organs. Further study is therefore required to validate the safety and usage of *Annogeissus leiocarpus* leaf.

Keywords: Toxicity, *Annogeissus leiocarpus*, Acute toxicity, Sub-chronic toxicity, Histoarchitecture, Gross pathology

BT 090

BIOSORPTION CHARACTERISTICS OF CHROMIUM (VI) BY *Aspergillus niger* BIOMASS IN CONTINOUS BIOREACTOR

*** H. Kassimu[1], A. B. Sallau[1], A. A. Kassimu[2], N. Kassimu[3], A.J. Nok[1]**

[1]Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University Zaria.
[2]Air Force Research and Development Center, Kaduna
[3]Department of Chemistry, Faculty of Physical Science, Ahmadu Bello University Zaria.
*Corresponding author- Kassimu, email: bibba4mee@gmail.com, 08038593438

Abstract

Recent development in the field of environmental biotechnology includes the search for microorganism as sorbents for heavy metals. Chromium (VI) represents an important environmental problem due to it toxic effects, serious ecological and health hazards it poses. This study was aimed at investigating the potential of *A. niger* biomass to biosorb chromium (VI) from its solution in continuous process using packed bed bioreactor. Effect of process parameters (biomass dosage, pH, time and temperature) on the biosorption process was investigated. Also, participating functional groups as well as characteristics of the biomass were studied using Fourire-Transform Infrared spectroscopy (FTIR) and Scanning Electron Microscopy (SEM) respectively**.** From the results, FTIR revealed that SH, N=H, S=O and OH groups were responsible for the biosorption of Cr (VI), SEM analysis showed that there was biosorption of chromium onto the biomass surface. The biorption capacity of *A.niger* biomass was found to be time dependent. Using Cr (VI) initial concentration of 10mM, a dose of 1.4g biomass was able to biosorb Cr (VI) up to 72% from 100ml of its solution in 120 minutes, at pH of 2.5 and optimum temperature of 40^{o}C.

BT 91

PLANT-BASED-SYNTHESIS OF ZINC OXIDE NANOPARTICLES AND ITS ANTI-MICROBIAL EVALUATION

***Unuata, O. N., Shittu O. K., muhammad, H, L., Tijjani, J.O. and Adewuyi, H.A**

Department of Biochemistry, Federal University of Technology, Minna Nigeria.
*Corresponding author:email:noraunuata@gmail.com
Phone no:+2348065198119

Abstract

Zinc oxide is an indispensible constituent of numerous enzymes, sun screens and ointments used for ache and scratch relief. Its microcrystals are very efficient light absorbers in the ultraviolet A-rays and ultraviolet B-rays region of spectra due to its wide band gap. Impact of zinc oxide on biological functions depends on its morphology, particle size, exposure time, concentration, pH and biocompatibility. Plant-based-synthesis of zinc oxide nanoparticle (ZnONPs) is a novel, non-toxic compared to the hazardous conventional methods. Therefore, the study is aimed at evaluating plant-based-synthesis of zinc oxide nanoparticle and anti-microbial properties. *Senna occidentalis* leaf extract was used to reduced zinc acetate dehydrate to ZnONPs and the synthesized ZnONPs were evaluated for nano wavelength, size, morphology and the capping agent using UV-Visible spectroscopy, zeta sizer, fourier transform infra-red spectroscopy, X-ray diffraction and scanning electron microscope analysis respectively. The ZnONPs was tested for antibacterial properties using agar well diffusion assay. The result indicated that the ZnONPs are typically crystalline and the particle size are 93nm with optimal wavelenght 344nm, also the synthesized NPs inhibit growth of *S. aureus, E. coli, S, pyrogenes* and *P, aeruginosa* at 20,40,60 mg/mL treatment concentrations. The plant synthesized ZnONPs showed minimal antibacterial activities with small particle size. Therefore, the ZnONPs nanoparticles synthesized using *senna occidentalis* exhibited potential minimal inhibitory effect that can be optimized for valuable use in pharmaceutical industry.

Keywords: *Senna occidentalis,* zinc oxide, Nanoparticles, characterization, Anti-microbial

BT 092

BIOEFFICACY OF PLANT EXTRACTS FOR THE PROTECTION OF FLOWERING AND POST FLOWERING INSECT PESTS OF COWPEA, *Vigna unguiculata* (L.) Walp IN SAMARU KATAF, KADUNA STATE.

Yahaya, Bulus[1], Nuradeen, Musa[2], *[3]Moses, Bali Emmanuel and Sheyin Emmanuel Ali[4].

[1]Department of Agricultural Extension and Management, Nuhu Bamalli Polytechnic, Zaria.
[2]Department of Crop Production Technology, Nuhu Bamalli Polytechnic, Zaria.
[3]Department of General Studies, Nuhu Bamalli Polytechnic, Zaria.
[4]Department of Agricultural Extension and Management, Nuhu Bamalli Polytechnic, Zaria.
*Corresponding author: E-mail: balimentol@gmail.com, Tel: +234(0)8036688081.

Abstract

Cowpea is known to be a cheaper and reliable source of protein. One major problem facing the production of cowpea is poor yield as a result of insect pests. Field experimentation was carried out at the research farm of School of Agricultural Technology, Samaru-Kataf Campus, Nuhu Bamalli Polytechnic, Zaria during the 2017 cropping season. The study investigated the bioefficacy of neem, moringa, eucalyptus, lemon grass and bitter leaf extracts for the protection of flowering and post flowering insect pests of Sampea 6 variety of cowpea, *Vigna unguiculata* (L.) Walp. Magic force was used as synthetic insecticide and untreated plot as control. The experiment was laid out in a randomized complete block design (RCBD) with three replications. Application was carried out at flowering (50 % podding), full podding and after podding. The result indicated that the application of plant extracts before and after spraying significantly affected the incidence of *Megalurothrips sjostaedti* and *Maruca vitrata* from all the plots. All the plant extracts increased significantly ($p \leq 0.05$), reducing the number of insect pests which were better than untreated control. Similarly, grain yield increased across all the plots treated with synthetic insecticide, neem, bitter leaf, moringa and eucalyptus when compared with the plot treated with lemon grass and the control. The result of the present study suggests that, the plant extracts used which are ecofriendly could be alternatives to synthetic insecticides as they were found to be promising biopesticides in the control of targeted pests in the study area.

BT 093

TOXICITY IMPACT ON BIOACCUMULATION OF POTENTIALLY TOXIC ELEMENTS IN AFRICAN GIANT LAND SNAIL (*Archachatina margenata*) TREATED WITH DIFFERENT SOILS AND ITS ECOLOGICAL RISK ASSESSMENT

Oguh C. Egwu[1*], Ubani C. Samuel[1], Musa A. Dickson[2] and Okunowo W. Oluwanisola[3], Amanabo Musa[2]

[1]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
[2]Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai, Niger State,
[3]Department of Biochemistry, College of Medicine, University of Lagos, Akoka-Yaba, Lagos,
*Corresponding author:collinsoguh@gmail.com; +2347036017476

Abstract

The use of dump site and mining site soils for rearing of African giant land snail (AGLS) may lead to the bioaccumulation of metals in AGLS, which is a major food chain route for the human body. This study investigated the concentrations of heavy metals (As, Cd, Cr, Cu, Hg and Pb) in AGLS treated with different soil samples dumpsite, mining site and control soil (reserve area where no activities) use in farming AGLS and also to ascertain if they are within permissible limits and its ecological risk assessment on the consumption. Soil samples; dump site (A), mining site (B) and a control site (C) (where no activities) was collected at 0-30 cm depth with the aid of soil auger and were used for AGLS farming, to ascertain whether the PTEs concentration were within the permissible limits and their ecological risk assessment on AGLS consumption. A total of 54 juvenile snails of similar weights was used for the study.

The experiment lasted for six month (182 days), during which the snails were subjected to similar dietary reign and equal quantity of feed. Snail's morphological characteristics such as Weight, length and diameter of its shell were measured after farming. The soil samples were analysed for potentially toxic elements PTEs before and after farming, and snail were also analyzed for PTEs after farming for six month using atomic absorptions spectrophotometer (AAS). The ecological health risk from the consumption of these snails was assessed using standard methods and formulas. The result of different soil before and after farming shows a significant different ($P<0.05$) between the activities sites (dump and mining) and the control site. The concentration of PTEs (As, Cd, Cr, Cu, Hg, and Pb) in snails treated with dump site soil were 3.05, 3.89, 3.60, 2.89, 3.98, and 2.55 mg/kg, and snails treated with mining site soil recorded 2.73, 2.74, 3.91, 4.96, 2.88 and 4.82 mg/kg. The values were greater than the maximum permissible limit of 0.5, 2.0, 0.3, 0.04, 0.1 and 0.1 mg/kg respectively recommended by FAO/WHO compared to the control. The study concludes that snail bioaccumulate toxic elements from the soil used in rearing them which is deleterious to humans when consumed. Also the DIM, HQ, HI on the consumption of snail reared with dumpsite, mining site soilis are nearly free of risks, but continuous consumption can lead to bioaccumulation in the food chain.

Keywords**:** Archachatina margenata, Dump, Mining, Soil, Toxic elements, Risk assessment.

BT 094

EFFECT OF SELECTED BOREHOLE WATER AROUND KOGI STATE UNIVERSITY, ANYIGBA ON SOME OXIDATIVE STRESS MARKERS IN WISTER RATS

***Oka Samson Ayodeji[1], Emmanuel Friday Titus[2], Obafemi Folake Eyitayo[3]**

[1]College of Health Sciences, Kogi State University, Anyigba.
okasamson33@gmail.com, 08132382642
[2] College of Health Sciences, Kogi State University, Anyigba.
[3] Faculty of Natural Sciences, Kogi State University, Anyigba.

Abstract

Contamination of water has been linked to oxidative stress. Identifying these contaminant sources around the University environment is valuable in managing oxidative stress associated with contaminated water. This study is aimed at evaluating the effect of selected borehole water around Kogi State University, Anyigba on some oxidative stress markers in wister rats. Three borehole sources around the University were sampled, while bottled Eva water served as standard water of choice. The samples were screened for microbial and physicochemical parameters. Albino rats were given samples orally for 21 days. Catalase and Superoxide dismutase activities were quantified spectrophotometrically. The microbial analysis showed a total coliform count for samples A and B ranged from 0 to 1/125ml which is an indication of contamination. All physicochemical parameters ((pH ranged from (6.50-8.10), electrical conductivity (149.40-254.47µs), sulphate (0.08-0.329ppm), phosphate (0.08-0.020ppm), biological oxygen demand (2.75-3.450mg/l), chemical oxygen demand (6.68-8.20mg/l), color (2.088-3.016), turbidity (3.207-4.264NTU), total solid (57.626-78.049ppm), fluoride (0.060-0.098ppm), temperature (26-270C), NO_3(0.043-0.375ppm), NH_4(0.433-1.543ppm), total hardness (10.305-22.212mg/l)) were below the World Health Organisation permissible limit. Catalase enzyme activity was raised in Albino rats administered with water obtained from borehole behind the university and water obtained from borehole close to new male hostel compared to water obtained from borehole close to Ocheja hostel and Eva bottle water. The super oxide dismutase activity was raised in sample C compared to other samples.

This study shows that microbial contamination and other human activities have a negating influence on the water quality evidenced by the high activity of free radicals caused by contamination.

Keywords: Borehole Water, Kogi State University, Oxidative Stress.

BT 095

PRODUCTION OF MICROBIAL BIOSURFACTANT BY *Bacillus subtilis* ISOLATED FROM THREE DIFFERENT AUTO-MECHANIC SOIL ENVIRONMENT IN PORT HARCOURT

Nda-Wonodi Woroma, *Onyegeme-Okerenta Blessing, Wegwu Matthew Owhonda

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Rivers State,
*Corresponding Author: e-mail: blessing.onyegeme-okerenta@uniport.edu.ng
Tel: +234 (0)803 5201 039

Abstract

Biosurfactants are surface-active molecules that are produced from different microorganisms. They have both a hydrophilic and a hydrophobic end and this helps to reduce the surface and interfacial tension between molecules. The present study isolated *Bacillus subtilis*, a microbial biosurfactant producing organism from three different auto-mechanic-polluted soil environment in Port Harcourt Local Government Area of Rivers State. The isolate was identified by morphological, biochemical and physiological characterization. Biosurfactant activity using haemolysis test, emulsification index test and oil spreading test was carried out using the organism. *B. subtilis* exhibited a large zone of haemolysis on blood agar plates with a diameter of 3.9±0.15cm. The diameter of the oil spreading ability was 5.6±0.15cm. The emulsification ability of the biosurfactant was analysed on some hydrocarbons such as kerosene, diesel, engine oil, and crude oil. *B. subtilis* showed emulsification indices of 87 ±1.53%, 92 ±1.53%, 84 ±1.53% and 98 ±1.53% for kerosene, diesel, engine oil, and crude oil respectively. Due to its high surfactant ability, the biosurfactant it produced was extracted and used to compare with that of a synthetic surfactant based on their level of degradability on fuel. The zone of inhibition was measured with lipopeptide showing a diameter of 3.6±0.15cm (36±1.5mm) and Sodium Dodecyl Sulphate (SDS) a diameter of 3.4±0.15cm (34±1.5mm). Therefore, lipopeptide which is the biosurfactant produced by *B. subtilis* may be efficient for the bioremediation of hydrocarbon-polluted soil environment.

Keywords: *Bacillus subtilis*, Biosurfactant, lipopeptide, Sodium Dodecyl Sulphate, auto-mechanic-polluted

BT 096

ASSESSMENT OF LEVELS OF TRACE METALS IN WATER, SOIL AND CARBBAGE IRRIGATED WITH KABAMA LAKE WATER, ZARIA. KADUNA STATE, NIGERIA.

Z. B. Abdullahi*[1] and B. Garba [2]

*Corresponding author: zulaihatabdul@gmail.com, +2348035347296
1. Division of Agricultural Colleges, Ahmadu Bello University Zaria, Nigeria.
2. Department of Water Resources and Environmental Engineering, Ahmadu Bello University Zaria,

Abstract

This study aimed at investigating trace metals Lead, Manganese, Cadmium, Chromium, and Zinc in water, soil and cabbage irrigated with kabama lake water using Atomic Absorption Spectroscopy. The physico-chemical parameters of the lake water samples were analyzed also. The conductivity, salinity, dissolved oxygen and temperature of the lake water were within WHO/FAO allowable limits for irrigation; however, the PH was slightly above the permissible limit. The mean concentrations of 0.33, 0.76 and 3.53mg/L for Cd, Cr and Mn respectively in the lake water were higher than the WHO/FAO

allowable limits for irrigation water (0.01, 0.1 and 0.2mg/L respectively). The mean concentrations of the trace metals in the soil samples were below the WHO/FAO permissible limits except for Mn (97.80mg/kg) and Cd (2.30mg/kg) with permissible limits of (80 and 0.8mg/kg). The mean concentrations of Cd (1.73mg/kg), Cr (18.90mg/kg) and Pb (15.42mg/kg) in the cabbage were higher than the WHO/FAO allowable limits of 0.30mg/kg, 1.50mg/kg and 10.0mg/kg respectively, whereas the mean concentrations of Zn and Mn were below the WHO permissible limits. It was generally observed that Zn and Cd had high transfer factors while Mn and Cr generally had low transfer factors in the three farms. The metal concentrations of the cabbage cultivated with kabama lake water were found to be higher than the WHO/FAO permissible limits. Therefore, consumption over time might present problems as the tendency for the soil to accumulate and transfer metals to the cabbage cultivated increases which will subsequently get to man through food chain.

Keywords: Trace metals, soil, cabbage, transfer factor, Kabama lake water.

BT 097

DEVELOPMENT AND CHARACTERIZATION OF BIOCHAR FROM COCONUT HUSK AND PLANTAIN TRUNK AS POSSIBLE BIOSTIMULANTS FOR THE TREATMENT OF CRUDE OIL CONTAMINATED SOIL.

Osisami OlubukunolaF[1] ,Egwim Evans C.[1,2]

[1]Department of Biochemistry, Faculty of Life Sciences,
Federal University of Technology, FUT. Minna, Niger-State.
[2]Agricultural Biotechnology Department, National Biotechnology Development agency, NABDA,
Umaru Musa Yar'adua express way, Lugbe, Abuja, Nigeria.

Email address: osisamiolubukunola@yahoo.com, evanschidi@gmail.com

Abstract:
Biochars from coconut husk and plantain trunk agro wastes were developed and characterized as possible biostimulants for the treatment of contaminated soil resulting from crude oil emanating from refinery operations around NNPC depot, Umurolu, Port Harcourt, Rivers State, Nigeria. The biochar, a product of pyrolysis, has been used for soil waste management. The aim of this work was to develop and characterize biochar at 250^{o}C and 550^{o}C, for the possible optimization of bioremediation of crude oil contaminated soil. Collection and assessment of the soil sample and the biochars was done for which the pH, Electrical conductivity, Temperature, volatile matter, organic carbon, % Phosphorus, % Nitrogen, ash content, methylene absorption capacity and bacterial population were measured. The pH result on the test site showed that pH for the contaminated soil sample was 5.15 in comparison to the control 7.28. Likewise, the pH of the biochars increased with increasing temperature of pyrolysis. Volatile matter and ash content decreased with increasing temperature for both biochars. There was an increase in the growth of the bacteria from the first week to the third week with the highest bacterial count being from the sample containing the Plantain trunk biochar, from 1.08 x 10^4 (cfu/g) to 2.07 x 10^4 (cfu/g) as compared to the control, 2.2 x 10^3(cfu/g) to 3.8 x 10^3(cfu/g). The increase in the growth of the existing bacteria showed that biochars can be used as possible biostimulants for the optimization of bioremediation of crude oil contaminated soil sample.

Keywords: Biochar (BC), Agro-waste, Optimization, Bioremediation

BT 098

HEAVY METALS REDUCING EFFECT OF GARBAGE ENZYME RESIDUE (GER) IN CRUDE OIL POLLUTED SOIL

***Akpoji, Bernard Samson, Essien, Eka Bassey, Ifeanacho, Mercy Onuekwuzu**
Department of Biochemistry, Faculty of Science, University of Port Harcourt, Port Harcourt Nigeria

Abstract

This research work investigated the heavy metals reducing effect of garbage enzyme residue (GER) in crude oil polluted soil. Soil spiked with 12.5ml/kg of crude oil divided into five groups was set up as follows: Group 1 (control) contained unpolluted soil, Group 2 to 5 contained GER at 0kg/5kg, 0.05kg/5kg, 0.10kg/5kg and 0.15kg/5kg in soil samples respectively. The study lasted for 60days. The heavy metals and indigenous microbes of the soil were analyzed. The result showed that all the heavy metals were reduced after 60 days. Results indicate that Cadmium (Cd) was reduced by 52.6% and Cobalt (Co) by 22.3% in Group 3, Zinc (Zn) was reduced by 81.2%, Manganese (Mn) by 69.9%, Copper (Cu) by 64.4% and Iron (Fe) by 43.7% in Group 4 while Nickel (Ni) was reduced by 78.8%, Chromium (Cr) by 64.7% and Lead (Pb) by 39.6% in Group 5. The results showed that Fe, Zn, Cu, Ni, Cr, Mn, Pb of Group 3, 4 and 5 where all statistically reduced when compared to Group 2 at day 60 except in Cd. The Indigenous microbes analyzed (Total heterotrophic Bacteria, Hydrocarbon Degrading Bacteria and Total Heterotrophic Fungi) increased significantly ($p < 0.05$) at day 30 and decreased at day 60 in all the Groups except in Group 5. Hydrocarbon Degrading Fungi was not detected in all the groups. The results indicate the effectiveness and potential of GER in reducing heavy metals in crude oil polluted soil.

SUB-THEME

CLINICAL BIOCHEMISTRY

[CB]

CB 001

CARCINOGENIC AND NON-CARCINOGENIC RISK ASSESSMENT OF HEAVY METALS EXPOSURE FROM VEGETABLES GROWN AND CONSUMED IN KANO, NIGERIA

[1,2*]Babandi, A., [1,2]Murtala Y., [1]Yakasai, M.H., [1]Shehu,D., [1]Babagana, K., [2]Anosike, C.A. and [2]Ezeanyika, L.U.S.

[1]Department of Biochemistry, Bayero University, P.M.B. 3011, Kano-Nigeria.
[2]Department of Biochemistry, University of Nigeria, Nsukka-Enugu, Nigeria
*Correspondence: email: ababandi.bch@buk.edu.ng; +2348086303170

Abstract

The environmental heavy metals exposure of human through food chain is a documented risk factor for cancer development and other health related implications. The concentration of carcinogenic (Cadmium Cd; Chromium Cr and Lead Pb) and non-carcinogenic (Cobalt Co; Copper Cu; Zinc Zn and Nikel Ni) metals in vegetables (Onion, Drum stick, Lettuce, Okra and Carrot) grown in *Sharada* industrial area, Kano was determined. Health risk implication was evaluated by estimating daily heavy metal intake and computing cancer and non-cancer risks (Incremental Life Cancer Risk, ILCR and Target Hazard Quotients, THQ) using probabilistic risk assessment (US-EPA model). The mean concentration of lead (Pb) ranged from 10.01±1.0 µg/g in Okra to 17.00±1.0 µg/g in onion. Carrot had the highest concentration of chromium (64.0±13.0 µg/g). The levels of various heavy metals found in these plants differ generally with plant species. The levels of Pb, Cr and Cd in plant samples were all found to be above WHO permissible limit. The probability of an adult developing cancer from the consumption of studied vegetables was greater than standard threshold risk limit (US-EPA $>10^{-4}$) for Cr, Pb and Cd. Non-cancer risk index also presented Pb and Cd as the dominant metal contaminants of the vegetables with Health Risk Index greater than one (>1), while Ni, Co and Zn showed a safe quotients. Its therefore, suggests that the *sharada* industrial area is unsafe for growing vegetables due to the heavy metals pollutions of the soil and water and risk of high consumption of vegetables grown exposes the population to incremental cancer risks among others.

Keywords: Vegetables, Heavy metals, carcinogenic risk, Health risk, ILCR, HLI, Kano

CB 002

DETERMINATION OF MACRO AND MICRO NUTRIENTS IN CHICKEN EGGS FROM SOME POULTRY FARMS

[1]Abba Mohammed*, [2]Aminu Haruna Tela, [3]Garba Suleiman and [4]Alhaji Ibrahim Haruna

Department of Chemistry, Yobe State University Damaturu, Yobe State, Nigeria
Email: abbamm122@gmail.com Phone No.: 07034661369

Abstract

Raw/fresh eggs were collected from two diametrical different poultry farms within Damaturu metropolis, Yobe State. Nutritional values of such samples were analyzed to ascertain quantitative parameters, i.e. Moisture, Ash, and Protein contents and some minerals of the two different samples. Ones collected from Shagari low-cost, Gashua road (Sample A) shows the results; Proximate analysis (gravimetrically) with 77% Moisture, 1.04g Ash content and 6.3g Protein content while Sample B, collected from Malari Ward Gujba road contained 97%, 1.06g and 9.9g,for Moisture, Ash and Protein contents respectively. However, determination of elemental contents using colorimetry shows that sample B is more rich in elements with the results; Iron (Fe) 3.481Abs, Manganese (Mn) 0.064Abs, Chromium (Cr) 0.030Abs, Cadmium (Cd) -0.050Abs, and Potassium (K) 3.030Abs. While, that of sample A has a minimal contents; Iron (Fe) 2.846Abs, Manganese (Mn) 0.053Abs, Chromium (Cr) 0.006Abs, Cadmium (Cd) -0.047Abs, and Potassium (K) 3.030Abs.

CB 003

ANTIOXIDANT, ANALGESIC AND ANTI-INFLAMMATORY POTENTIAL OF METHANOLIC LEAF EXTRACT OF *Talinum triangulare* (WATER LEAF) IN MICE.

*Abuchi, Nwanneka Nwakwo Ani., Akanya, Helmina Olufunmilayo and Adeyemi, Henry Yemi.
Department of Biochemistry, Federal University of Technology, Minna.
*Corresponding: nwanneka4christ@gmail.com and 08062850779

Abstract

Talinum triangulare is a commonly consumed plant with several medicinal properties. The aim of this study was to evaluate the antioxidants, analgesic and anti-inflamatory potential of crude methanolic extract of *Talinum triangulare.* Proximate composition of the dried leaves of *Talinum triangulare*, qualitative and quantitative analysis of the crude methanol extract of the leaf were carried out using various standard methods .Antioxidants, analgesic and anti-inflammatory properties were determined according to standard procedures. Results revealed the presence of alkaloids, flavonoids and phenols in high concentration. The extract scavenges DPPH radicals with IC_{50} of 320.38 mg/mL. The percentage inhibitions of paw oedema were 4.85 %, 33.42 %, 47.71 % and 61.12 % while the percentage analgesic effect were 16.75 %, 34.45 % and 44.50% in rats treated with 200, 400 and 800 mg/kg bw of the extract respectively. The extract also produced a dose dependent increase in the serum levels of glutathione peroxidase, catalase and SOD activities when compared with the control group. However, serum MDA level of the group treated with 400 mg/kg of the extract was significantly ($p<0.05$) lower when compared with the control group. This study has shown that *Talinum triangulare* is rich in antioxidants and thus could serve as a candidate for the development of antioxidant suppliments or target drugs.

Keyword: Antioxidant, Inflammation, Analgesic, *Talinum triangulare*, Phytochemical.

CB 004

VITAMIN K AND BONE HEALTH: A REVIEW

[*1]Abdulkarim Yusuf, [2]Sanusi Ibrahim Mungadi and [3]Zaharaddin Halilu

[1]Department of Chemistry, Government Secondary School Toro, PMB 008, Toro, Bauchi State, Nigeria.
[2]Department of Biochemistry, Kebbi State University of Science and Technology Aliero, Kebbi State,
[3]Usmanu Danfodiyo University Sokoto, P.M.B 2346, Sokoto, Nigeria.

Abstract

Vitamin K is a fat-soluble vitamin basically known as blood coagulation vitamin majorly due to the history of its discovery. Today, the vitamin emerges to be very critical for life, not only for the prevention of bleeding but for promoting good health and preventing diseases like osteoporosis. Osteoporosis is common global problems that affect not only the quality of life but also the economic burden of the families; it's characterized by a decrease in bone strength and low bone mineral density (BMD) leading to fracture with severe pain of joints. To date, many Clinical trials with different dietary habits, supplementation and different doses of vitamin K were administered to validate such role of vitamin K. Deficiency of vitamin K was known in decades to be rare, today such deficiency is uncommon in case of bone metabolism. The present review aimed to provides an explanation of the numerous function of vitamin K in bone health and the effect of its supplementation in osteoporosis subjects.

Keywords: Vitamin K, Osteoporosis and Bone health.

CB 005
ANTIANAEMIC POTENTIAL OF METHANOLIC EXTRACT OF TALINUM TRIANGULARE LEAF IN ALUMINUM CHLORIDE INDUCED ANAEMIA

***[1]Abdulsalam, Baba Dahiru., [1]Akanya, Helmina Olufunmilayo. and [1]Muhammad, HadizaLami.**

Department of Biochemistry, Federal University of Technology, Minna Niger State, Nigeria.
*[1]Correspondent contacts: 07063583633, dahiruabdula11@gmail.com

Abstract

Anaemia is a haematological condition, characterized by a deficiency of circulating haemoglobin resulting in insufficiency of RBCs in circulation. Children under age 5, 43% of the world population are more affected by anaemia. Research has shown that anaemia can be treated nutritionally by the use of vegetables. *Talinumtriangulare* is a vegetable with numerous therapeutic values; the effectiveness of its methanolic extract on aluminum induced anaemia was evaluated. Phytochemicals and proximate compositions of methanol extract were carried out using standard methods. Curative potential of the extract was evaluated using 5 rats in 7 groups. Group 1,2&3 were administered with normal saline,$AlCl_3$ and extract respectively, while groups 4,5,6&7 were induced with $AlCl_3$for 7 days prior treatment with ferrous sulphate, 200 mg/kg, 400 mg/kg and 800 mg/kg extract respectively for 21 days. Protective potential of the extract was evaluated with another set of 4 groups of rats. Group1 was pretreated with ferrous sulphate, while 2,3&4 were pretreated with 200 mg/kg, 400 mg/kg and 800 mg/kg of extract respectively 30 minutes prior to induction with $AlCl_3$.Changes in biochemical and haematological parameters were determined by standard methods. The extract yield was8.59% and alkaloids, flavonoids, phenols, carbohydrates, and protein were found in high concentrations. The group treated with800 mg/kg body weight in both curative and protective studies had significantly higher ($p<0.05$) PCV, body weight, serum protein, albumin, haemoglobin and RBC but significantly lower ($p<0.05$) serum level of ALT, AST and ALP compared to other treatment groups. Another therapeutic value of *Talinumtriangulare* may be to ameliorate the burden and the undesirable effects of anaemia.

Keywords: Anaemia, Haemoglobin, *Talinumtriangulare*, Phytpochemical, Aluminum chloride

CB 006
CHEMOPREVENTIVE AND REMEDIATION EFFECT OF *Adansonia digitata L.* BAOBAB (BOMBACACEAE) STEM BARK EXTRACTS IN MOUSE MODEL MALARIA

Adeoye A.O[1, 2*] and Bewaji C.O[2]

[1]Department of Biochemistry, Faculty of Sciences, Federal University Oye Ekiti, Nigeria.
[2]Department of Biochemistry, University of Ilorin, Kwara, Nigeria.
Corresponding Email: akinwunmi.adeoye@fuoye.edu.ng Tel: +2348035597883

Abstract

This study investigated the efficacy of *A. digitata* stem bark extract in offering protection against experimental malaria and also examined its remediation effect when administered after established infection. *Materials and methods:* Weanling albino mice were used in the study and were transfected intraperitonially with an inoculums size of 1x 10^7 of chloroquine susceptible strain of *Plasmodium berghei* infected erythrocytes. Mechanisms of action of the extract were investigated by measuring the degree of tissue peroxidation and tissue antioxidant status. Severity of malaria was determined by measuring the serum C-reactive protein (CRP), tumor necrosis factor-alpha (TNF-α), and serum and tissue Alkaline phosphatase (ALP) activity. *Results:* There was a significant increase in serum CRP, TNF-α concentrations and serum and tissue ALP activity in the control mice following *P. berghei* infection. All the treatment had effect on the growth of *P. berghei* parasites in mice. The extracts showed a significant dose dependent increase packed cell volume (PCV), percentage chemosupression/clearance and a significant decrease in percentage parasitemia at the two doses when administered after established infection. Methanolic extract (MEAD) at 400mg/kg exhibited the highest chemosupressive activity. The extract significantly reduced the degree of tissue peroxidation, increased the level of reduced glutathione (GSH), catalase and superoxide dismutase activity. Administration of the extract after established infection reduced serum CRP and TNF-α concentrations and serum and tissue ALP activity. *Conclusion:* Our study suggests that *A. digitata* protects against *P. berghei* induced-malaria and that administration of the extract after established infection reduced malaria progression.

Keywords: Malaria, *Adansonia digitata*, Tissue peroxidation, C-reactive protein, Tumor necrosis factor-α.

CB 007
VITAMIN K AND CANCER, EVIDENCE TO DATE: A review

[*1]Abdulkarim Yusuf, Zaharadeen Abdullahi[2], Sani Sharif Usman[3]

[1]DepartmentChemistry Government Secondary School Toro, P.M.B 008 Toro, Bauchi State, Nigeria
[2]Department of Chemical Sciences, Federal University of Kashere, Gombe State, Nigeria
[3]Department of Biological Sciences, Federal University of Kashere, Gombe State, Nigeria
Corresponding Mail:yfabdulkarim@gmail.com Phone number: +2348036917232

Abstract
Cancer is the leading cause of mortality in the world after cardiovascular diseases. Although many techniques were deployed for its treatment and/or management with chemotherapy as one of the most popular technique, however, chemotherapy is not suitable for some patients. This paves way for an alternative way of curing or treating the disease. Vitamin K (VK) is an essential nutrient for blood coagulation that belongs to the family of fat-soluble vitamins with a common chemical structure, it has been reported to possess anti-cancer activity in *in vivo* and *in vitro*studies, some of such studies are in phase I and II clinical trial.All forms of VK (K1, K2 and K3) possess anti-carcinogenic activity, with the exception of VK3, all VKs are non-toxic and can be consumed at high doses. The present review provides justification for the use of VKs in the treatment and/or management of various forms of cancer.

Keywords: Vitamin K, Cancer and anti-carcinogenic.

CB 008
EFFECT OF DOXORUBICIN ON LIPID PROFILE, LIVER AND KIDNEY FUNCTIONS

Habib Nasir Shagari, Sadiq Suleiman, AminuLawal, Simone Onoja Godwin, Latifah Abdul-Salam, Maryam Dobi Birnin-tudu, Baba Atteeque, Onu Andrew, Abbas Abdullahi Yahya*,Saidu Yusuf and Bilbis Lawal Suleman

Department of Biochemistry, Faculty of Science, UsmanuDanfodiyo University, Sokoto, Nigeria.
*Author of correspondence Email:ayabbas2002@yahoo.com Phone: +2348035052927

Abstract
Doxorubicin is widely used anthracycline drug in cancer chemotherapy and it act by inhibiting the enzyme topoisomerase II. One of its major side effects is that it induces cardiomyopathy and hence its use experimentally to induce animal model of cardiomyopathy. This work evaluated the effect of doxorubicin administration on lipid profile, liver and kidney functions. Albino rats were randomly divided into three (3) groups. Group I served as control (non-treated), group II and III were administered with doxorubicin1.0 mg/kg and 2.0 mg/kg respectively for two weeks. Standard analytical procedures were used for all biochemical analysis. The results showed that treatment with doxorubicin significantly ($P<0.05$) increase total cholesterol, triglycerides, low density lipoprotein cholesterol(LDL-C),Very low density lipoprotein cholesterol (VLDL-C), anthrogenic index of plasma (AIP),alkaline phosphatase (ALP), alanine aminotransferase(ALT), aspartate aminotransferase (AST),direct and total bilirubin,urea, creatinine, potassium, sodium and bicarbonates levels. The drug also caused significant ($P< 0.05$) decrease in the levels of high density lipoprotein (HDL) and total proteins. The results indicated that treatment with doxorubicin is associated with increased cardiovascular risk, nephrotoxicity and hepatoxicity.

CB 009

CARBONIC ANHYDRASE: ANCIENT BUT RELIABLE BIOMARKER FOR INFLAMMATION OF THE GENITAL TRACT

[1*]Ezikanyi G.K [1]Egwim, Evans, [1]Adewuyi, H.A

[1*]Biochemistry Department, Federal University of Technology, PMB 65, Minna, Niger State,

Abstract

Carbonic anhydrases (CAs) are zinc metalloenzymes that primarily catalyze the reversible hydration of carbon dioxide to form bicarbonate and protons, with a kcat of about 19.74 min-1.They comprise a family of evolutionarily ancient enzymes found ubiquitously in nature. They play important roles in facilitating transport of carbon dioxide and protons in the intracellular space, across biological membranes and in the unstirred layers of the extracellular space. Carbonic anhydrase IX (CA9), also known as membrane antigen MN) is a member of the carbonic anhydrase protein family. It is a transmembrane protein that consists of an N-terminal signal peptide, an extracellular proteoglycan-related domain and catalytic domain, a transmembrane segment, and a C-terminal intracellular tail. It has been shown that type 2 progenitors promote inflammation via their enhanced ability to develop into mast cells compared with phenotypically similar BM-resident progenitors. Collectively, these studies suggest that targeting progenitors to prevent mast cell differentiation may be sufficient to regulate type 2 inflammations. Type 2 progenitors express elevated levels of *carbonic anhydrase* (*CAs*) enzymes. CAs can therefore act as biomarkers for these types of inflammations. CAs enzymes have also been associated with type 2 cytokine responses. It has been shown that Pan-inhibition of CAs enzymes with an approved inhibitor was sufficient to prevent inflammatory mast cell responses in infections. CAs enzyme inhibition promotes immunity to *Aspergillus fumigatus*, suggesting that CAs enzymes can selectively affect specific immune modules. This paper submits that Carbonic anhydrase may be exploited in diagnosis and prognosis of different genital tract infections leading to inflammations.

CB 010

THE EFFECT OF AQUEOUS LEAF FRACTION OF *Gongronemala tifolium* on ALLOXAN-INDUCED DIABETIC MODELS.

[*1]Effiong, Grace Sylvester, [2]Essien, Grace Emmanuel, [1]Akpanyung, Edet Okon and [3]Danladi Ngyan Bala

[1]Department of Biochemistry, University of Uyo, Uyo, Akwa Ibom State, Nigeria.
[2]Department of Pharmacology and Toxicology, University of Uyo, Uyo, Akwa Ibom State, Nigeria.
[3]Department of Pharmacognosy and Natural Medicine, University of Uyo, Uyo, Akwa Ibom State

Corresponding Author: e-mail: graceffiong2007@yahoo.com Phone Number: 08063222797

Abstract

Gongronemala tifolium is a medicinal plant used in indigenous system of medicine as an antidiabetic agent. Hypoglycaemic, hypolipidemic and haematological activities of aqueous leaf fraction of *Gongronemala tifolium*in diabetic rat models were evaluated using standard analytical methods. Twenty-five animals were divided into 5 groups, all diabetic except group 1; Group I (normal control), group II (positive control), group III (negative control), while groups IV and V were administered 300mg/kg and 400mg/kg of the aqueous leaf fraction of the plant respectively. The result of the body weight of groups IV and V showed significant increase ($p< 0.05$) when compared to group III. The blood glucose level in group IV animals decreased significantly ($p< 0.05$) by 61.58% while group V further decreased by 66.11% when compared to group I (3.78%) and group III (19.79%). Diabetes induction caused significant increase ($p< 0.05$) in total cholesterol (TC)(3.80 ± 0.16mmol/l) and low-density lipoprotein cholesterol (LDL-C)(3.30 ± 0.19mmol/l)in group III when compared to normal control (TC=3.58 ± 0.02mmol/l, LDC-C=0.58 ± 0.04mmol/l), while treatment with aqueous fraction of *Gongronemala tifolium*

significantly decreased (P< 0.05) the level of TC(300mg/kg=3.74 ± 0.16mmol/l, 400mg/kg=3.54 ± 0.33mmol/l and LDL-C(300mg/kg=0.86 ± 0.10mmol/l, 400mg/kg=0.72 ± 0.04mmol/l)when compared to group III. The amino transferases (ALT and AST) parameters activities significantly increased (P< 0.05) in the diabetic group (AST=69.80 ± 4.83(µ/L), ALT=25.60 ± 3.70(µ/L)) but became reduced upon treatment with aqueous fraction of *Gongronemala tifolium;* (ALT -300mg/kg=26.00 ± 1.30(µ/L), 400mg/kg=29.60 ± 4.04µ/L; AST - 300mg/kg=60.60± 2.50µ/L, 400mg/kg=58.80 ± 1.59µ/L). Haematological indices such as WBC, RBC, HBG, HCT, PCV, also reveal significant changes with treatment of the aqueous leaf fraction. Thus, the result suggests that the aqueous leaf fraction of *Gongronemala tifolium*could ameliorate hyperglycemic andhyperlipidemicactivities and haematological disorders.

Keywords: *Gongronemala tifolium,* aqueous fraction, Hypoglycaemic, hypolipidemic and haematological activities

CB 011

SIALIC ACID LEVEL IN PREGNANT WOMEN WITH CANDIDIASIS AT THE MUHAMMADU ABDULLAHI WASE SPECIALIST HOSPITAL KANO.

[*1]Hadiza Abdullahi and [1]Fatima Nasidi

[1]Department of Biochemistry, Faculty of Basic Medical Sciences

Yusuf Maitama Sule University Kano, Nigeria

[*]Corresponding Author Email: khadeejahay@yahoo.com

Abstract

Sialic acid is a constituent of cell membrane and is present in most acute phase proteins and have been shown to be important in several aspects of microbial pathogenesis and several studies have indicated changes in sialic acid concentration in different pathological conditions. This study was carried out to determine sialic acid concentrations in pregnant women with and without candidiasis. Blood samples collected from 150 pregnant women consisting of 75 pregnant women diagnosed with candidiasis and 75without the infection. Serum of all 150 subjects was taken and subjected to sialic acid analysis by the Thiobarbituric acid assay. Sialidase activity was also measured. To compare group means, the Student's t test was used. Statistical significance was taken asp < 0.05. Results are shown as mean (SD).Higher mean serum sialic acid concentration was found in the candidiasis group compared with the apparently healthy non candidiasis group. A significant difference (p≤0.001) between the two groups with mean values of 2.959±0.434mg/ml and 1.962±0.713mg/ml for the candidiasis group and the control group respectively was found with highest sialic acid levels seen in women in the third trimester candidiasis group. Highest sialidase activity was found in the candidiasis group also. A significant correlation (p≤0.05) was also found between sialidase activity and sialic acid level in the candidiasis group. It was speculated that the high levels of sialic acid found in the candidiasis group may be due to the activity of sialidase. Sialic acid level seems to increase with increasing gestation period. Candidiasis appears toplay a role in sialic acid elevation in the study population. The findings in this study validate some studies linking changes in sialic acid concentration with microbial infection.

Key Words: Sialic acid, sialidase, candidiasis, pregnant women

CB 012
MATERNAL CHANGES ON LIVER FUNCTION INDICES OF PREGNANT RATS ADMINISTERED WITH *Piliostigma thonningii* EXTRACT FOLLOWING ACETAMINOPHEN INDUCED TOXICITY

Dasofunjo K ,Ugwu M.N , Asuk A.A , Okafor A.I, Ujong P.U ,Monjok, E. N
Department of Medical Biochemistry, Cross River University of Technology, Okuku Campus
Author for Correspondence: dasokay22@gmail.com, Phone No :+2348032370325

Abstract
Acetaminophen is commonly used as over-the-counter pain reliever and antipyretic agent among pregnant women. It has been considered to be one of the safest analgesics, for pregnant women since, it crosses the placenta and its metabolites can enter the foetal blood flow. This present research determines the effect of maternal alterations of extract of *P. thonningii* on liver function indices following acetaminophen induced toxicity in pregnant rats. Twenty five (25) pregnant female Wistar rats ranging from 180-200g were assigned on the basis of their body weight and were grouped into five of five rats each. Group **A** served as the control, **B** was administered with 200mg/kg body weight of acetaminophen, **C** was administered with 200mg/kgwt of *P. thonningii*, **D** -100 mg/kgbwt *P. thonningii* + 200 mg/kgwt acetaminophen, **E**- 200 mg/kgbwt *P. thonning ii* + 200 mg/kgwt acetaminophen. The administration was done for 21 days. Thereafter the animals were sacrificed and blood collected via cardiac puncture for the assessment of the liver function indices. The result shows significant ($p<0.005$) increase in serum albumin, globulin and total protein following the administration of the extract while groups treated with acetaminophen shows significant ($p<0.005$) decrease when compared with the control. Also the extract produced a significant ($p<0.005$) decrease on serum ALT, AST and ALP when compared with the control. The acetaminophen treated groups were found to be significantly ($p<0.005$) higher on serum ALP, AST and ALT. Alternatively, groups co-administered with both acetaminophen and *P.thonningii* were found to be significantly ($p<0.005$) lowered. The biochemical changes on maternal liver functional indices studied suggested that ethanol leaf extract of *P. thonningii* administered had a hepatoprotective effect on acetaminophen induced toxicity during pregnancy.

CB 013
ASSESSMENT OF NUTRITIONAL STATUS AND DIETARY PATTERN OF DIABETES PATIENTS ATTENDING OUT- PATIENT CLINICS IN ABUJA METROPOLIS, FEDERAL CAPITAL TERRITORY

Wakili, Kulu[1]; Anjuwon, Tayo Micheal[2*]; Owolabi A. Olumuyiwa[2] and James B. DORCAS[2]
[1,] Asokoro District Hospital, Federal Capital Territory, Abuja
[2]Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria,
*Correspondence: tayoanjuwon@gmail.com; +2348066917667

Abstract
Nutritional status and dietary pattern of 120 randomly selected type-2 diabetic patients of both sexes (age range 18 and 65 years) attending medical outpatient clinics within Abuja metropolis were assessed using standard methods in a cross-sectional survey involving the use of pre-tested and semi-structured questionnaires. Socio demographic characteristics, Anthropometric measurements, nutritional status and dietary pattern of the subjects were computed using standard methods. The result of socio-demographic characteristics indicates that 52% are males and 48% are females. Subjects with primary education constitute 4.2% while about half of them having either secondary (48.3%) or tertiary (47.5%) education. Most (80.8%) of the subjects are married, 32.5% fell within a monthly income range of ₦ 50,000 - 100,000.Anthropometric indices showed height of 75% of the respondents was 159.9 ± 7.0 cm, 100% of the respondents' weight, hip circumference, waist-hip ratio and waist-height ratio are 72.7 ± 16.9 cm, 104.6 ± 12.4 cm, 0.94 ± 0.1 and 0.61 ± 0.1 respectively. The nutritional status of the subjects revealed that only 25% fell within the normal BMI range, 1.7% underweight, 20.8% overweight and half of them (52.5%) obese and out of which 27% are morbid. Their dietary patterns showed that the food mostly consumed include cereals, processed cereals, legumes, vegetables, fruits and meat. More than a quarter of the respondents totally avoid sugar in their diet, while 33.33% rarely eat sugar. Eggs (48.33%) have a moderate frequency of consumption. This study concludes that the dietary practices of the respondents contributes to their poor nutritional status.

Keywords: Nutritional status, Dietary pattern, Semi-structured, Anthropometric, Morbid

CB 014
ANTIULCEROGENIC STUDIES OF METHANOL LEAF EXTRACT AND FRACTIONS OF *Ficus platyphylla* ON ALBINO RATS

[1]Ukwuani-Kwaja, Angela Nnenna, [1]Sani, Ibrahim and *[1]Kindzeka, Lesley Sahber.
[1]Department of Biochemistry, Kebbi State University of Science and Technology Aliero, Kebbi State,
*Corresponding Author; Cell Phone Number: +2348037423522 Email: kinleslo@gmail.com

Abstract
Peptic ulcer disease (PUD), one of the most prevalent gastrointestinal disorders, is a condition that affects many people cutting across social status and age. Despite recent advances involving the diagnosis and management of PUD, the challenge is still there when it comes to treatment and complete eradication of this condition. Therefore, this research was aimed to study the antiulcerogenic activity of methanol leaf extract of *Ficus platyphylla* and its hexane, ethyl acetate, butanol and last remaining aqueous fractions on albino rats. The antiulcerogenic activity was evaluated using ethanol induced ulcer model on albino rats. Graded doses of the plant extract (150, 300 and 600mg/kg body weight) and fractions (300 mg/kg body weight) were used to assess the antiulcer activity. Cimetidine (100mg/kg body weight) was used as the standard drug**.** The results showed a significant reduction (p<0.05) in the ulcer index and an increased percentage protection in all the treated groups when compared to the negative control group. The crude extract showed a dose-dependent antiulcer activity with the highest concentration (600mg/kg) having 52.94% protection. This was however lower than cimetidine treated group (57.54%) which was not significantly different (p>0.05) when compared. Butanol fraction offered the highest percentage protection (52.94%) amongst other fractions tested. The findings reveal that *F. Platyphylla* leaf possess potential antiulcer activity and supports its ethno medicinal use in the management of ulcer.

Key Words: *Ficus platyphylla*, Peptic Ulcer Disease, Antiulcer, Ulcer Index, Albino Rats

CB 015
THE ROLE OF TLR-4 IN ELICITING CELLULAR IMMUNE RESPONSES AGAINST RECOMBINANT BCG-BASED VACCINE CANDIDATE EXPRESSING THE MSP-1C OF *Plasmodium falciparum*

Muhammad Adamu Abbas, [1, 2] and *[1]Rapeah Suppian

[1]School of Health Sciences; Health Campus; Universiti Sains Malaysia; Kerian, Kelantan, Malaysia
[2]Department of Human Physiology, Faculty of Basic Medical Sciences, Bayero University Kano,
*Correspondence to: maabbas.mph@buk.edu.ng

Abstract
Our laboratory had earlier constructed a recombinant BCG-based malaria vaccine candidate expressing the MSP-1C of *Plasmodium falciparum* which induced robust cellular immune responses, in vivo, through a mechanism that had not been established but thought to involve toll-like receptor 4 (TLR-4). To determine the role of the TLR-4 in eliciting cellular immune responses against recombinant BCG expressing the MSP-1C of *P. falciparum*. Six groups of mice (n=6 per group) were immunised three times, three weeks apart with phosphate buffered saline T80 (PBS-T80), BCG or rBCG, intraperitoneally, in the presence or absence of a TLR-4 inhibitor; TAK-242, given one hour prior to each immunisation. Spleens were harvested from the mice and splenocytes prepared and cultured. Levels of Intracellular cytokines IL-4 and IFN-γ were then determined through ELISA. The production of IFN-γ was significantly inhibited in all mice groups in the presence of TAK-242; compared to un-inhibited groups, rBCG (p< 0.001, mean difference -163.707), BCG (p< 0.001, mean difference -40.171) and PBS-T80 (p< 0.001, mean difference -13.383). Similarly, IL-4 production was also significantly inhibited in the presence of TAK-242, rBCG (p< 0.001, mean difference -437.899), BCG (p< 0.001, mean difference -148.266), PBS (p< 0.001, mean difference -53.007). Our results presented evidence of the role of TLR-4/macrophage attachment mechanism in the increased production of IL-4 and IFN-γ by our rBCG-base malaria vaccine candidate expressing MSP-1C of *P. falciparum*.

CB 016

SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY AMONG CHILDREN WITH *Plasmodium falciparum* MALARIA

Bello Ibrahim[1, 4]*, Arpita Sharma[2], Saleh Mohammed Y.[3] and Abdullahi Mohammed[1], Ahmad Mohammad[1], Abdurrahman Siraj Abubakar[1], Nasiru Ibrahim[1], Mohammed Adamu Garga[1], Yusuf Mohammed Bawa[1] and Bashir Dalhatu Bilbis[1]

[1]National Biotechnology Development Agency, Abuja, Nigeria
[2]School of Agricultural Science, Career Point University, Kota (Rajasthan), India
[3]Disease Control Unit (Epidemiology), Primary Health Care Management Board, Ministry of Health, Yobe State, Nigeria
[4]Department of Biotechnology, Career Point University, Kota (Rajasthan), India

*Corresponding Author: bmaidabino07@gmail.com (+2348035334590)

Abstract

Glucose-6-phosphate dehydrogenase (G6PD) deficiency is one of the most common enzyme deficiencies worldwide especially among people living in malaria endemic countries. The aim of this study was to determine the basic socio-demographic factors associated with G6PD deficiency among children with *Plasmodium falciparum* malaria in three senatorial district of Katsina state, Nigeria. A cross-sectional study was conducted during the period from June - July, 2019. Demographic data, haemolytic anaemia, blood transfusion, neonatal jaundice, history, knowledge of G6PD, diet and measures taken was collected from 200 children using scheduled questionnaire. Out of 200 children sampled, 32 were G6PD deficient. Of the 32 deficient, 20 (62.5%) were males, 19 (59.4%) were from urban areas, 18 (56.3%) developed haemolytic anaemia between the age of 1-2years, 26 (81.3%) developed jaundice after birth which persist between one to two weeks, 7 (21.9%) had family history, 6 (18.8%) were consanguineously related, while only 5 (15.6%) were aware of the G6PD deficiency, thus, followed some diet and avoids some drugs. Factors that achieved statistical significance for severe haemolysis included younger age (P<05), male gender (P<05). No significant relationship was established between G6PD deficiency and factors such as sex, ethnic group, consanguinity, previous haemolytic crisis, jaundice outside of neonatal period, and anaemia. Among clinical signs, only fever and were significantly associated with the studied G6PD deficiency ($p \leq 0.0001$). Prevalence of G6PD deficiency is considerably high in Katsina state. Therefore, the introduction of systematic neonatal screening is required.

Key words: G6PD, Deficiency, *Plasmodium falciparum* Socio-demographic factor, Children

CB 017

ANTISICKLING EFFECT OF DIOSCOVITE™; A DIETARY THIOCYANATE SOLUTION

[1]Oji Agbai, *[2]Mohammed Shehu Busu, [2]Izebe Kasim Salihu, [2]Ya'aba Yakubu

National Health Research Institute, Tulsa, Oklahoma USA.
National Institute for Pharmaceutical Research and Development, Idu-Abuja, Nigeria.
Corresponding author: mshehubusu@yahoo.com. GSM +2348036889317

Abstract

Sickle cell anemia is an inherited form of anemia which was discovered over a century ago yet without cure. There is a growing interest in the nutritional alternatives as a means of decreasing morbidity and improving quality of life among sickle cell patients. The purpose of the anti-sickling diet plan is to effectively control sickle cell anemia by making the homozygous sickle cell phenotype a mere benign condition. This is achieved by eating the anti-sickling foods. An invitro anti-sickling properties of

Dioscovite™ a dietary thiocyanate was carried out using sickle cell blood. The sickling percentage of the blood samples were carried out then the effect of the solution was evaluated by incubating the blood with the solution according to the standard protocol. The percentage reversal of the sickled cells was calculated. Sickling inhibitory effect of the solution was carried out by incubating the blood with the solution and then inducing sickling. The number of sickled cells that do not reverse as a result of the effect of the treatment was expressed as percentage inhibition. The percentage reversal as a result of the effect of Dioscovite was 72.9±2% while percentage Sickling inhibition was 70±0.7%. Dioscovite a thiocyanate and its precursors, beta-cyanogenetic glucosides called nitrilosides (Vitamin B--17) are non-toxic, biochemically beneficial to man. This research has proven its effect as an anti-sickling agent and is beneficial and can therefore be recommended for sickle cell patients.

Keywords. Dioscovite, Sickle cell, beta-cyanogenetic, glucosides, thiocyanate

CB 018
FULL BLOOD COUNT, MANGANESE AND ZINC LEVELS AMONG DIEBETIC PATIENTS IN SPECIALIST HOSPITAL SOKOTO, NIGERIA

[1]Rawayau Abubakar Mannir.,*[2]GaniDalhat Ibrahim., [3]Abubakar Lawal Abba.,

1-Department of Biochemistry Umaru Musa Yaradua University, Katsina.
2-Department of Medical Laboratory Science, Usman Danfodio University Sokoto.
3-Department of Biology Umaru Musa Yaradua University, Katsina.
*Corresponding Author: Ibraheemdeeghany@gmail.com +2348165655368

Abstract

World Health Organization statistics identifies that there are about 150 million people with diabetes mellitus worldwide and suggest that this figure may double by 2025. The aim was to determine the status of full blood count, zinc and manganese levels among Diabetic patients attending Specialist Hospital, Sokoto.58 diabetic subject and 29 non-diabetic controls were used. Five milliliters of blood were collected for full blood count, serum zinc and manganese analysis. The FBC investigation was carried out using automated Mythic Haematology analyzer while Zn and Mn investigations were carried out using Atomic Absorption Spectrometry (AAS). The FBC, Zn and Mn status of both control and subjects were compared statistically. The results obtained showed a significant increase in RBC, PCV, Hb, Basophils, Eosinophil, Lymphocyte count and Manganese levels of diabetic subjects ($p \leq 0.05$) when compared with controls. There was no statistically significant difference in the other FBC parameters and Zinc levels between the groups ($p > 0.05$). There was a statistically significant difference in the Hb, PCV and lymphocyte of diabetic patients based on gender ($p < 0.05$). FBC, Manganese and Zinc have no effect based on age group, while other socio-demographic factors also have no effect on the FBC, Manganese and Zinc parameters of diabetic patients. The study also showed no statistical difference in the FBC, Manganese and Zinc of smokers and non-smokers ($p > 0.05$, respectively). In conclusion, this research shows that some haematological parameters (RBC count, Basophils, Eosinophil, Lymphocyte, Hb and Manganese) of the diabetic patients are significantly affected compared to non-diabetic controls. Marital status had a significant effect on the Hb, PCV and Lymphocyte of the diabetic patients ($p<0.05$). The age group had no significant effect on the FBC, Zinc and Manganese of diabetic subjects ($p>0.05$). And finally, correlation between FBC and trace elements (Zinc and Manganese) among Diabetes subjects. Only lymphocyte shows a statistically significant positive correlation with manganese ($r=0.32$, $p<0.01$) and WBC, Neutrophils shows a statistically significant positive correlation with zinc among diabetes subjects ($r= 0.27$, $p = 0.04$).

Keywords: Diabetes, full blood count, Manganese, Zinc and diabetic patient

CB 019

A STUDY ON THE PREVALENCE OF TYPHOID AND MALARIA FEVER CO-INFECTION AMONG PATIENTS ATTENDING UMARU MUSA YARADUA UNIVERSITY CLINIC KATSINA

***[1]Rawayau Abubakar Mannir, [2]Abubakar Lawal Abba,[3]Gani Dalhatu Ibrahim,**

1-Department of Biochemistry Umaru Musa Yaradua University, Katsina.
2-Department of Biology Umaru Musa Yaradua University, Katsina.
3-Department of Medical Laboratory Science, Usman Danfodio University Sokoto.
*Corresponding Author: Abumannirrawayau101@gmail.com +2348187601105

Abstract

Malaria is one the most common fatal disease in the world caused by one or more species of plasmodium. Typhoid fever is a symptomic bacterial infection. Typhoid fever is caused by species of Salmonella. An association between malaria and typhoid fever (malaria – typhoid co-infection) was first described in the Medical Literature in the middle of the 19th century. The main objective of this research is to investigate the rate of co-infection of malaria and typhoid in Umar Musa Yar'adua University clinic Katsina.A total number of two hundred and sixty (260) patients (age ranged 15 to 55 years) consisting of one hundred and two (102) males and one hundred and thirty seven (158) females suspected for malaria and/or typhoid fever. Five millilitres of blood drawn by venepuncture from each patient were tested for malaria parasites, Giemsa – stained thick and thin blood films were prepared for each sample according to standard method. The widal agglutination test was performed on all blood samples by the rapid slide titration method. Positive samples were identified on the basis of microscope for malaria parasite and agglutination reaction for Widal test. The result of the study show that the results of malaria typhoid fever co-infection varies between different age groups, sex and standard of living, females are more susceptible to be infected by the co-infection than males, and the age group of 15-20 and 20-25 are more susceptible also than other age group. People living in town and cities have less prevalence than people of villages and hamlet. The prevalence rate from the study is 8.84% .The prevalence of typhoid fever was believed to be due to declined standard in living and poor environmental sanitation. Malaria and Typhoid fever and their co-infection remain a significant health burden, especially in low and middle income countries. Despite the availability of more recent data on individual disease, additional researches are needed for their co-infection.

Keywords: Malaria, Typhoid, Prevalence, Co-infection, Disease, Fever

CB 020

DEMENTIA: THE ICE CAKE OF ALZHEIMER THE DISEASE OF AGEING

***[1]RawayauAbubakarMannir., and [1]Runka Tanimu Rufaatu., [1]Nasir Rufai**

1-Department of Biochemistry Umaru Musa Yaradua University, Katsina.
*Corresponding Author: Abumannirrawayau101@gmail.com +2348187601105

Abstract

Dementia is a syndrome, usually of a chronic or progressive nature, caused by a variety of brain illnesses that affect memory, thinking, behavior and ability to perform everyday activities. Dementia is overwhelming not only for the people who have it, but also for their caregivers and families. It is one of the major causes of disability and dependency among older people worldwide. Alzheimer's gets worse over time. Although symptoms can vary widely, the first problem many people notice is forgetfulness severe enough to affect their ability to function at home or at work, or to enjoy lifelong hobbies. The brain has 100 billion nerve cells (neurons). Each nerve cell connects to many others to form communication

networks. In addition to nerve cells, the brain includes cells specialized to support and nourish other cells. Groups of nerve cells have special jobs. Some are involved in thinking, learning and memory. Others help us see, hear, smell and tell our muscles when to move. As damage spreads, cells lose their ability to do their jobs and, eventually, die. There are no available treatments that stop or reverse the progression of the disease, which worsens as it progresses, and eventually leads to death. There are currently no specific markers that can confirm with a 100% certainty AD diagnosis. A combination of brain imaging and clinical assessment checking for signs of memory impairment is used to identify patients with AD. Definitive diagnosis can only be only obtained after patients autopsy by examining brain tissues. There is a clear need for tangible advances in the area of biomarkers for assessment of risk, diagnosis and monitoring disease progression. Screening of patients still remains very expensive and new research is necessary to develop non expensive and reliable tests.

Keyword: Dementia, Brain, Alzheimer, Nerve cell, forgetfulness, Learning and Memory

CB 021

AN ASSESSMENT OF PERCEPTION(ON HEALTH EFFECTS OF MONOSODIUM GLUTAMATE (A TYPICAL FOOD ADDITIVE COMMONLY USED AS FLAVOURING AGENT) AND ATTITUDES AMONG MEDICAL STUDENTS IN SOKOTO ,NIGERIA

Yusuf Sarkingobir[1]. ; IbrahimSalihu[2].; Mubarak Musa Bodinga[3]; Ibrahim U. Salau [1]; Moyi Muhammad Zayyanu[4].; Ahmad Zayyanu[5].

[1]Department of Biology, Shehu Shagari College of Education Sokoto, Nigeria

[2]Department of X-ray ,Sultan Abdurrahman College of Health Technology Gwadabawa, Sokoto state,

[3]Department of Environmental Health, Sultan Abdurrahman College of Health Technology Gwadabawa, Sokoto, Nigeria

[4]Nigeria Building and Road Research Institute, Zonal Office Kano

[5]Undergraduate Student, Department of Pharmacy, Usmanu Danfodio University, Sokoto

Email: superoxidedismutase594gmail.com Phone: 09096266980, 07089086254

Abstract:

In recent years, there is approval of thousands of additives to our food .But by the days many studies especially in animals have shown that food additives are associated with side/health effects .Particularly, the monosodium glutamate has been approved by many constituted authorities to be used in foods ,despite the numerous health effects reported to be caused by MSG in animal studies and few studies in humans. In short ,MSG is a revolving axis of controvery on whether it is safe or not. This study employed a survey, in which 420 questionnaires were distributed and 375 were retrieved later; using a tripartite of random, purposive, and convenience sampling fashions. The data collected were managed and descriptive statstics were calculated using SPSS version16. The examined respondents are mostly aware on basic knowledge of MSG and they think care should be taken when buying food products. Advocacy, health education campaigns are needed .

Key words : Food additives , Monosodium glutamate, Medical students , Perception

CB 022
DISORDERS ASSOCIATED WITH PURINE NUCLEOTIDES METABOLISM

Rukayya Abubakar[1], Ibrahim Hamza Kankia[2]
[1]Science Section, Katsina College Katsina (KCK). Ministry of Education, Katsina-Nigeria
[2]Department of Biochemistry, Umaru Musa Yar'adua University Katsina-Nigeria
Corresponding author: ibrahim.hamza@umyu.edu.ng

Abstract
Uric acid is the main product of Purine Nucleotides metabolism, it is a component of urine in human body. Uric acid causes heath issues including heart problems, hypertension, hyperuricemia, diabetes and body inflammations. Excess accumulation of uric acid can leads to an inflammatory disorder called Gout. The abnormal purine catabolism arises from the insolubility of the uric acid. Other disorders of purine metabolism are Lesch-nyhan syndrome which occurs due to deficiency of an enzyme called Hypoxanthine-Guanine phosphoribosyl transferase, and severe combined immune deficiency (SCID) which is caused by a variety of distinct genetic defects that interfere with Lympocytes development and function. This research reviews the effects of uric acid in blood and how it contributes to a particular health problem due high blood concentrations that can leads to health disorder called Gout.

Key Words: Uric acid, Purine, Meabolism, Gout, Inflammation

CB 023
BENEFICIAL EFFECT OF *CASSIA SIEBERIANA* LEAF EXTRACTS ON HAEMATOLOGICAL INDICES OF ALLOXAN INDUCED DIABETIC RATS

Tijjani Salihu Shinkafi*[1], Mohammed Hussaini Ruga[1]Maryam Bashir Dodo[1], Sulaiman Rabiu[1] and Ibrahim Hamza Kankia[2]

[1]Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Nigeria
[2]Department of Biochemistry, Umar Musa Yar'adua University, Katsina, Nigeria
Corresponding author email: tijjani.salihu@udusok.edu.ng

Abstract
Diabetes mellitus has become a major public health concern, especially in developing countries. The current orthodox treatment modalities for diabetes mellitus have many drawbacks including undesirable side-effects and the high cost of long-term treatment. The aim of this study was to determine the effects of aqueous extract and fractions of *Cassia- sieberiana* leaves on the haematological indices of alloxan-induced diabetic rats. Rats were divided into 6 groups; group 1(normal control), group 2 (diabetic control), group 3 (administered with 300 mg/kg of aqueous extracts of *Cassiasieberiana*), group 4 (administered with 300 mg/kg of methanolic extracts of *Cassiasieberiana*), group 5(administered with 300 mg/kg of ethyl acetate extracts of *Cassiasieberiana*), group 6 (administered with 150 mg/kg of Metformin). The standard drug metformin and *Cassiasieberiana* were given oral daily for two weeks to the alloxan-induced albino rats. Fasting blood glucose levels were determined weekly for two weeks. At the end of the two weeks, the animals were sacrificed and blood samples were taken from all the groups for the determination of haematological parameters. The preliminary phytochemical screening of the aqueous, methanolic and ethyl acetate extracts of *Cassia sieberiana* revealed the presence of alkaloids, flavonoids, and saponins. Treatment with *Cassia sieberiana showed* a significant decrease in haematological indices (RBC, Hb, PCV, and MCHC) of diabetic control group compared to both normal control and treated groups. Group 3 and 4 showed a significant ($p<0.05$) increase in the levels of WBC, RBC and haemoglobin. *Cassiasieberiana* is found to improve the blood sugar level as well as the hematologic indices of diabetic rats.

Keywords: Medicinal plants, diabetes, alloxan, *Cassia siebriana*, haematological indice

CB 024

ASSESSMENT OF STUDENTS KNOWLEDGE AND USE OF BIOCHEMISTRY RESOURCES: A STUDY OF COLLEGE OF HEALTH TECHNOLOGY TAKUM, TARABA STATE, NIGERIA

Bambur, J. James[1] and Anista, Y. Awarri[2]

[1]Department of General Studies, Federal School of Statistics, Manchok, Kaduna State, Nigeria.
[2]Professor Jibril Aminu Library, Federal Polytechnic Mubi, Yola Campus, Nigeria.
Corresponding Author's email: jamesjohnb09@gmail.com

Abstract

Medical libraries serve both health professionals and students of health sciences to help them make good decisions in their clinical practice, thus the need fora continual assessment of services and resource used in the library. This is to determine the extent the library is achieving its aims. The research is a survey of Biochemistry students' awareness and use of medical Biochemistry library resources in the College of Health Technology Takum, Nigeria. Sample was 300 students from the three Departments of the College: Community Health, Environmental Health and Medical Laboratory Sciences. Results show that 79.71% of the students use the library. Regular users constitute 41.45% while occasional users are 38.26%. There is high awareness of availability of print based information resources. Nevertheless, about 64% of the respondents are not aware or sure of the existence of electronic information resources in the library. Respondents' major activities in the Medical library are reading personal textbooks (78.18%), sourcing information for research or project work (61.49%) newspapers (63.07%), and class assignments (61.38%). Major barriers reported by the student on the effective use of the medical library are lack of computer/Internet (71.06%) and lack of current materials (57.06%). Improved facilities and resources may motivate the students to fully exploit the tool that is meant to provide information support for their studies and for practice of evidence upon graduation.

Keywords: Library use, Biochemistry resources, Medical library, Medical information, Medical students

CB 025

URINARY SCHISTOSOMIASIS AND CO-INFECTION WITH SALMONELOSIS AMONG SCHOOL PUPILS IN BAKURA LOCAL GOVERNMENT AREA, ZAMFARA STATE, NIGERIA

[*]Mudassiru Iliyasu,[1] Abdulhamid Yusuf,[2]Alyasa'uMi'itaAbba,[1]and Rabi'at Lawal Omenesa.[1]

[1]Department of Biological Sciences, Nigeria Defence Academy, P. M. B. 2219 Kaduna Nigeria
[2]Biology Department, SPRS, Umaru Musa Yar'adua University, P. M. B. 2218, Katsina, Nigeria
Corresponding Author Email: imudassir63@gmail.com, Mobile No: 08061524257

Abstract

In schistosomiasis endemic areas, there is a high incidence of chronic *Salmonella typhi*and *S. paratyphi* A infections and carriers. A study was carried out to determine the incidence of urinary schistosomiasis and co-infection with nephrotyphoid among school-aged children in selected Primary Schools from Bakura Local Government area, Zamfara State, Nigeria.A total of 360 urine samples were analyzed by sedimentation technique and presence of *S. haematobium* eggs were determined microscopically. Infected urine samples were cultured for *Salmonella* bacteria and identified by standard Biochemical/serological tests. The overall incidence of urinary schistosomiasis was 40.0% and co-infection with *Salmonella* spp. was 15.0%.TungarMaiburtu Primary School had the highest rate of infection than Kwanar Kalgo and Yargeda Primary School. In both *S. haematobium* and co-infection with *Salmonella*s pp, Male pupils had the highest rate of infection than the female pupils. Age group 8-11 had highest rate of 35.7% while the lowest rate of23.5% was recoded in the age group 12-15. Co-infection rate was higher among the age group 4-7 with 16.0% than age group 12-15 with 13.3%. Chi-square analysis revealed no significant difference ($p>0.01$) in the rate of infections with all the tested variables. *Salmonella* bacteria isolated were *Salmonella typhi* 49.2%, *S. paratyphi* A 28.4% and *S. paratyphi* B 22.4%. Cases of co-infection with enteric fever bacteria was found in the study area hence could complicate treatment. Therefore there is need for public health enlightenment among pupils to adapt preventive measures with control programs for snails' intermediate host.

Key words: Nephrotyphoid, Co-infection, Schistosomiasis, *S. typhi, S. paratyphi*

CB 026

STUDIES ON BIOCHEMICAL CHARACTERIZATION OF SALMONELLA AND MIXED INFECTION CASES WITH SCHISTOSOMIASIS IN KWANDE LGA, BENUE STATE, NIGERIA

[1]Yandev, D., [1]Chigor, V.N., [1]Eze, E.A., [2]Olasan, J.O. and [3]Onwuka A.U.

[1]Department of Microbiology, Water and Public Health Research Group, University Of Nigeria Nsukka
[2]Department of Botany, Biotechnology and Molecular Genetics Unit, Fed. Univ. of Agriculture, Makurdi
[3]Department of Biological Sciences University OfMkar, Mkar.
Corresponding Author: yandevdoowuese@gmail.com

Abstract

Bacterial *Salmonella* infections and helminthic schistosomiasis are classified under Neglected Tropical Diseases (NTD). Biochemical characterization was carried out on *Salmonella* serovars in Kwande LGA, Benue State, Nigeria. The aim was to determine the prevalence of the infection and mixed cases of schistosomiasis. The best biochemical test for the detection of *Salmonella* was also targeted. A total of 180 subjects were randomly investigated from five different locations (Iange, Sati, Kyogyen, Ikov Sati and Adikpo). Two specimens (stool and urine) were collected from each subject. Preparation and culture of specimens followed standard practices. *Salmonella* cases were diagnosed on stool samples using six biochemical tests. *Schistosoma haeamatobium* and *S.mansoni* were diagnosed using urine and faecal specimens respectively. Average prevalence of *Salmonella* infection in Kwande LGA was 13.9% (8.3% female, 5.6% male) consisting of 44% *S. typhi* and 56% of other serovars. Infection was associated with location (χ^2 = 145.79, p=0.000). Ikov Sati had the highest cases (65%) followed by Adikpo (15%). No cases was recorded at Kyogyen. Infection was most common among farmers (8.3% prevalent), thus associated with occupation type (χ^2 =52.63, p=0.000). Among the five biochemical tests, catalase test was the best in the identification of *Salmonella* serovars followed by hydrogen sulphide and citrate. Among the 180 subjects studied, six mixed infection cases of Salmonella-Schistosomiasis were recorded with a prevalence of 3% unassociated age, sex and location. However, farmers and school children recorded 2 cases each while okada riders and civil servants had a single case each. Based on organism type, S.typhi-S. mansoni- S. haematobium mixed infection had only one case. Co-infection of S. typhi - S. mansoni also had a single case. Salmonella-S. haematobium co-infection cases were four (2.2% prevalent). From all indications, *Salmonella* cases in the study area were high. Farming practices are implicated. This may be due to unhygienic practices in the handling, washing, and consumption of fresh food crops. Both farmers and school children are more vulnerable to contact Salmonella-Shistosoma co-infections than other occupational status, probably due to water pollution factors. The information given in this report is crucial in the diagnosis and prevention of *Salmonella* infections known to be a major killer in rural areas most especially when combined with shistosomiasis. Urgent control measures should be put in place at the Ikov Sati community recording an alarming rate of *Salmonella* infection among farmers.

Key words: Biochemical characterization, Salmonella, Schistosomiasis, Prevalence, Control

CB 027

SINGLE CELL PROTEINS AS ALTERNATIVE THERAPIES FOR PROTEIN ENERGY MALNUTRITION

Mubarak Hussaini and Umar Zubairu Darma
Department of Microbiology, Umaru Musa Yar'adua University, Katsina
E-mail: zubairu.umar@umyu.edu.ng

Abstract

Population increase and decrease in protein sources lead to the protein energy malnutrition being a public health challenge, especially in developing countries like Nigeria. According to US Centre for Disease Control (CDC), Protein Energy Malnutrition accounts for more than 6% of all deaths in Nigeria. It is agreed that current protein consumptions are far below the recommended daily allowances. Livestock production is unable to meet the rising protein need whose quantity and quality are low while fish farming is time consuming. This necessitates the need for alternative, fast-yielding, efficient and nutritious sources of protein. Microorganisms, such as yeasts, molds, algae and bacteria, are known to produce large amounts of protein concentrates, (up to 80% in bacteria), as products of metabolism. By applying biotechnology, single cell proteins can be produced from variegated substrates, ranging from household wastes to petrochemical residues, with 1,000,000 times more efficiency than livestock, and in a faster timeframe. However, this technology has few shortcomings, like the high presence of nucleic acids and absence of methionine, which can be addressed by using genetic engineering. It is recommended that this technology be embraced towards enhanced nutrition, especially in children, and reduction of protein energy malnutrition which will contribute significantly to enhanced public health and wellbeing.

CB 028

IN VITRO ERYTHROCYTE MEMBRANE STABILIZING POTENTIALS OF STEM, ROOT AND LEAVES METHANOLIC EXTRACTS OF *Sclerocarya birrea* ON HUMAN SICKLE RED BLOOD CELLS

[1]Suleiman, A.S.[1]*Atawodi, S.E. [1]Nzelibe, H.C. [2]Aminu, S.M.
[1] Department of Biochemistry, Ahmadu Bello University Zaria, Nigeria.
[2] Department of Hematology, Ahmadu Bello University Teaching Hospital Shika, Nigeria.

Corresponding author: ssaliyu.kgm@gmail.com

Abstract
The membrane stablizing effectiveness of crude methanolic extracts of leaf, stem and root of *Sclrecarya birrea* were evaluated spectrophotometrically to establish their capacitiesto protect the sickle red blood cells againts lytic conditions induced by hypertonic solution. Reagent-based screening of major phytochemical groups was also carried out on all the various part. Phytochemical screening shows that the leaf extract tested positive for the presence of cardiac glycosids, tannins, flavonoids, steriods and triterpens and alkaloids, while the stem bark extract shows the presence of saponins, flavonoids, alkaloids steroids and triterpens. The root extract test negative for tannins but positive for flavonoids, alkaloid, saponins, steroids and triterpens. The stem bark extract shows a significant ($p>0.05$) protection role with the value of 43.0±0.17% at 1.5mg/ml concentration. The root extract also shows a significant($P>0.05$) increase in percentage of protection with the value of 54.0±0.30%, while the leaf extract showed a significant ($P>0.05$) increase in protection of 45.3±0.57% at 1.0mg/ml concentration. Over view of the results shows that the root gave a highest percentage of protection while the stem extract gave a lowest protection. These findings demonstrate the stablizing role of *S birrea* in sickle cell membrane, and hence justifies its use in the management of sickle cell aneamia by traditional medical practictioners.

Keywords:Sickle cell anaemia; *Sclrecarya birrea* phytochemicals, extracts,Spectrophotometre, membrane

CB 029

EFFECT OF PARTIALLY PURIFIED *Heliotropium indicum* EXTRACT ON HEMATOLOGICAL AND BIOCHEMICAL INDICES IN ALBINO RATS

Yemisi D. Adeoye[1,2*], Tunbosun A. Oladipo[1], Omolola S. Olukunle[1]and Olufunso O. Olorunsogo[2]

[1]Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Nigeria.
[2]Laboratories for Biomembrane Research and Biotechnology, Department of Biochemistry, College of Medicine, University of Ibadan, Nigeria.
Corresponding Author: yemidejie@gmail.com, 07033051680

Abstract
Alternative medicine involves various therapeutic procedures, techniques and use of folkloric background of medicinal plants, one of such plant is *Heliotropium indicum*. This study therefore assessed the antioxidant properties of the plant, oxidative stress biomarkers hematological parameters alongside liver enzymes parameters. Twenty-four albino rats were divided into four groups; A(Control), B(100mg/kgb/w), C(200mg/kgb/w), D(400mg/kgb/w). Intraperitoneal route of extract administration was adopted for 10 days period. Blood and organ samples were collected after the animals were fasted for 24hours and analysed using standard procedures. PCV, Hb, RBC and Platelets values increased, this was not statistically significant in groupsB and C. Group D showed significant increase in GSH and SOD when compared to Group A. The results showed that oxidative stress biomarkers such as MDA, NO, H_2O_2, AOPP and MPO assayed in Groups A, B and Chad no significant increase, however significant increase in these biomarkers were seen in Group D when compared to Group A suggesting that the plant extract is not a precursor of oxidative stress. There was no significant increase in total protein, albumin, globulin, BUN and creatinine in all the groups except for group D, which may imply that the extract did not impair liver and kidney at low doses. Liver enzymes parameters showed no significant increase except Group D when compared to Group A. These findings showed that the plant extract is relatively safe for therapeutic use at low doses to boost antioxidant activities as it relatively does not cause oxidative stress.

Keywords: A lternative Medicine, Antioxidant, Oxidative Stress, *Heliotropium indicum*, Liver Enzymes

CB 030

HISTOPATHOLOGICAL EFFECT OF PARTIALLY PURIFIED *Heliotropium indicum* EXTRACT IN ALBINO RATS

Yemisi D. Adeoye[1,2*], Tunbosun A. Oladipo[1], OmololaV. Awoyemi[1]and Olufunso O. Olorunsogo[2]

[1]Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Nigeria.
[2]Laboratories for Biomembrane Research and Biotechnology, Department of Biochemistry, College of Medicine, University of Ibadan, Nigeria.
Corresponding Author:yemidejie@gmail.com, 07033051680

Abstract

Medicinal plants contain inherent active therapeutic ingredients used to cure disease or relieve pain. However, the effects these plants have on tissues are not comprehensively considered. One of such plant is *Heliotropium indicum*, It is widely used as antipyretics and also for wound healing due to active properties it contained. This present study therefore assessed the histopathological effect of this plant in albino rats.

Twenty-four albino rats were divided into four study groups; A(Control), B(100mg/kg b/w), C(200mg/kg b/w) and D(400mg/kg b/w). The administration was carried out through intraperitoneal injection for 10days. Liver, kidney and heart samples were harvested and lesions were studied. The results showed that the extract of *Heliotropium indicum* caused varying pathologies of the liver in a dose-dependent manner, the lesions ranges from foci of hepatocellular swelling and necrosis in group B to mild perivascular infiltrates around the central venule and diffuse hepato cellular degeneration and coagulation necrosis in group C and D respectively. There were no observable lesions in the nephrons of the kidney in all the groups while the heart myofibres appeared normal except myofibre atrophy, degeneration and satelitosis observed in animals in group C. These findings showed that the plant extract is relatively safe at low doses while its tendency to elicit pathological condition especially in the liver increases as the dose increases. Kidney and heart tissues were to largely unaffected by the extract, but lesions could ensue in the myofibres if given at higher dose

Keywords: Medicinal Plants, Histopathology, Liver, Kidney, Heart

CB 031

ANTIPLASMODIAL EFFECT OF SOME SELECTED PHYTOCHEMICAL EXTRACTS OF *Sida acuta* LEAF ON *Plasmodium berghei*

***Adesina, Anuoluwa Daniel, Adefolalu, Sherifat Funmilola and Jigam, Audu Ali**

Department of Biochemistry, Federal University of Technology; Minna.
Correspondent Email and Phone number: dan4jesu3@gmail.com, 08056825590

Abstract

Malaria is a pandemic disease caused by *Plasmodium* parasite. It is the cause of high mortality rate in both children and adult especially pregnant women yearly. Antimalaria drugs such as chloroquine and artemisinin in combine therapy are the commonly used drugs but many of which are compromised by resistance. *Sida acuta* (Malvaceae) is one of those plants currently used by indigenous people for the management of several health problems including malaria. Alkaloid, Flavonoid and Phenol extracted from *S. acuta* was investigated for antimalarial effect. Healthy albino mice of both sex of 6 weeks old was obtained from Animal breeding unit of Ahmadu Bello University Zaria, Nigeria. *P. berghei* NK 65 chloroquine sensitive strain was obtained from College of Medicine, University of Ibadan, Nigeria and was maintained in the laboratory by serial passage in mice. The phytochemicals were extracted using standard methods and the antiplasmodial screening using Fiddock method. The percentage parasitaemia suppression were 50.83% (Alkaloid extract of S. acuta 600mg), 38.43% (Flavonoid extract of S. acuta 600mg), 64.64% (Phenol extract of S. acuta 600mg) and 76.79% (Chloroquine 600mg). It can therefore be suggested that the Phenol phytochemical extract of *S. acuta* leaf has a high potential as a lead for antimalarial drug.

Keywords: Sida acuta, Alkaloid, Flavonoid, Phenol, Antiplasmodial acticity

CB 032
ASSESSMENT OF BIOCHEMICAL AND SOME HAEMATOLOGICAL PARAMETERS OF MALARIA PARASITE POSITIVE UNDER FIVE CHILDREN ATTENDING INSTITUTE OF CHILD HEALTH, BANZAZZAU, ZARIA, NIGERIA

Hauwa'u Yunusa[1*], Mohammed Nasiru Shuaibu[1], Ismail Alhaji Umar[1]

[1]Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria
*Corresponding Author's e-mail address: haweeyunus@gmail.com, Tel:+24308062294477

Abstract
Malaria pathogenesis is based mainly on extensive changes in biochemical and hematological parameters. The purpose of this research is to determine the serum lipid, protein profiles and some hematological parameters in children less than five years infected with malaria parasite attending Institute of Child Health Banzazzau, Ahmadu Bello University Teaching Hospital, Zaria, Kaduna state. The study was conducted on 216 malaria positive and 100 apparently healthy under five children. The patients were assessed for derangement in serum lipid and protein profiles, and some hematological parameters. Lipid, protein profiles and some haematological parameters were observed to be significantly lower ($p<0.05$) in malaria patients compared to apparently healthy individuals. The result was recorded in Mean ± STD for malaria positive and control subjects. Lipid profile results for malaria patients were lower than the control values. TC (2.29±0.25 and 3.25±0.20mmol/L), HDL (1.01±0.03 and 1.36±0.11mmol/L), LDL (1.02±0.01 and 2.09±0.15mmol/L), TG (1.07±0.012 and 2.57±0.10mmol/L) ($p=0.01$, 0.001, 0.01 and 0.02) respectively. For protein profile, Albumin (28.20 ± 0.30 and 32.05 ± 0.630g/L), Globulin (31.55 ± 0.72 and 34.84 ± 0.38g/L), TP (63.32 ± 0.38 and 63.60 ± 0.79g/L). ($p=0.01$, 0.01 and 0.68) respectively. For haematological parameters, PCV (31.53 ± 0.40 and 34.25± 1.23%), Hb (10.50 ± 0.13 and11.38 ± 0.41g/d) ($p=0.77$ and 1.79) respectively. The finding shows no significant difference by age and sex distribution among the under five children.

CB 033
ANTIPLASMODIAL ACTIVITY OF THE ROOT FRACTIONS OF *COMBRETUM MOLLE* ON WISTAR RATS

Darmasu Kulawe[1*] and James, Sindama Hena[2]

1Department of Biological Sciences, Gombe State University, Gombe, Nigeria
[2]Nigeria. Marine Environment Management Unit, Nigerian Maritime Administration and Safety Agency, Abuja Office, Nigeria.
*****Corresponding author e-mail:kulawe2002@yahoo.co.uk 08023169985

Abstract
The antiplasmodial activity of *Combretum molle* root was evaluated. Ethyl-acetate and n-butanol fractions were obtained from the crude ethanol extract and tested to determine their activity. ANOVA reveals that there is significant difference between all test doses and control groups at $p<0.05$ for the treatment with ethyl-acetate fraction. Chloroquine at 5mg/kg/day produced 100% cure, while 25, 50 and 100mg/kg/day gave 75.22%, 54.14% and 72.44% cure respectively. However, this was observed not to be dose dependent as the lowest dose of 5mg/kg/day produced the highest percentage cure. The mean survival time post infection for the ethyl-acetate fraction showed that rats treated with 0.2ml normal saline survived 10 days, chloroquine, 25, 50 and 100mg/kg ethyl-acetate fraction survived 37, 14 and 19 day post infection respectively. On comparism of the survival curves with log-rank test for trend at $p<0.05$, it is observed that all survival curves are not statistically different. The mean PCV value for rats treated with 0.2ml Normal saline is 31.40%, 42.60% for 5mg/kg chloroquine, for 25, 50 and 100mg/kg the mean PCV is 37.77%, 33.45% and 39.44% respectively. This suggests the fractions have the ability to ameliorate malaria. However this is not dose dependent as there is not much difference between PCV values of the test doses used.

Key words: *Combretum molle*, Antiplasmodial, Plant fractions, Chloroquine, Wistar rats

CB 034

PHYTOCHEMICAL PROFILING, HYPOLIPIDEMIC , HAEMATOLOGICAL AND BODY WEIGHT EFFECTS OF *Acanthus Montanus* LEAF EXTRACTS IN MALE AND FEMALE ALBINO RATS

***[1]Chukwu, Ezinne.C., [2] Onuoha, Obinna. U., [3]Osuocha, Kelechi. U.**

[1] Department of Biochemistry, Federal University, Lafia Nasarawa State
[2]Department of Biochemistry, Michael Okpara University of Agriculture Umudike
[3]Department of Biochemistry, Gregory University Uturu, Abia State
*corresponding Author: callychuksu@gmail.com

Abstract
Acanthus montanus leaves in the eastern part of Nigeria have been used in treatment diseases and this work was designed to evaluate the phytochemical constituents and biochemical effects of *Acanthus montanus* leaf extracts in male and female albino rats. Ninety (90) albino rats of 45 male and 45 female rats represented in alphabets and figures were used for the study. Groups A and 1 served as control, Groups B and 2, C and 3, D and 4, E and 5 received 200, 400, 600 and 800 mg/kg of aqueous extract of *A. montanus* leaves while groups F and 6, G and 7, H and 8, I and 9 received 200, 400, 600 and 800mg/kg of methanol extract of *A. montanus*. GC-MS analysis showed bioactive compounds such as 1,2,3-Propanetriol, monoacetate , 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl , 2(3H)-Benzoxazolone, Bicyclo (3.3.1) nonan-9-one, 2-(1-pyrrolidinyl)-Heptanoic acid, 4-methoxyphenyl ester, n-Hexadecanoic acid, 1-Methylheptyl trans-2,2-dimethyl-3-(2-methyl-, 1-propenyl) cyclopropane carboxylate, Tetradece-11-yn-1-ol, 9,12-Octadecadienoic acid, 9,12,15-Octadecatrien-1-ol, (Z,Z,Z)- and Tetracosahexane, 2,6,10,15,19,23-hexamethyl-while biochemical results showed significant ($P<0.05$) decrease in body weight, HDL, TG and cholesterol while HDL increased significantly ($P<0.05$)in test samples. The hematological test showed no significant ($P<0.05$) difference in test groups relative to control. The plant leaves contains useful bioactive compounds that may be helpful in managing heart related diseases.

Keywords: Phytochemical, Hypolipidemic, Haematological, *Acanthus Montanus*

CB 035

DETERMINATION OF GENOTYPE AND BLOOD GROUP OF MALARIA POSITIVE PATIENTS ATTENDING GENERAL HOSPITAL, MINNA, NIGER STATE, NIGERIA.

***Adefolalu, Funmilola Sherifat and Andrew, Babatunde Lucky**

Department of Biochemistry Federal University of Technology, Minna
*Corresponding author adeffun@gmail.com GSM: 08034512717

Abstract
The ABO blood group and genotype are associated with susceptibility, resistance and severity of malaria infection. This study was carried out to establish the current trend in malaria positive patients. One hundred and sixty (160) malaria positive patients attending General hospital, Minna between the age of 0 to 15 years and 16 years and above were grouped into four of forty male and forty female each. Malaria test was carried out using rapid diagnostic test, genotype, ABO blood grouping and rhesus tests were determined using the electrophoresis and the anti- sera agglutination methods respectively. The results showed that there was a higher incidence of malaria in the female patients than in the male patients of all age groups. Malaria patients with AA genotype was 73.5 %, AS genotype (22.50 %), SS (3.13 %), SC and AC were 0.63 % each. Incidence of malaria was highest in blood groups with positive Rhesus factor: O^+ (40 %), B^+ (28.75 %), A^+ (21.89 %), AB^+ (4.38 %), O^- (1.88 %), A^- (2.50 %) and B^- (0.63 %). The SS genotype that was positive for malaria predominantly had blood group A^+ (1.88 %). It can therefore be concluded that genotype AA and blood groups O^+ were more susceptible to malaria infections.

Keyword: genotype, blood group, malaria

CB 036
EFFECT OF METHANOL EXTRACT OF *Jathropha Caucus* ROOTS ON TESTOSTERONE-INDUCED BENIGN PROSTATE HYPERPLASIA (PSA) IN MALE ALBINO RATS

Ganyam, M. M., Anaduaka*, E.G, and Ezeanyika, L.U.S

Department of Biochemistry University of Nigeria, Nsukka, Enugu State, Nigeria.
*Corresponding author: emeka.anaduaka@unn.edu.ng +2348064212224

Abstract
Jathropha caucus roots extract have been claimed by traditionalist to have remedial effects on BPH. This study is aimed at evaluating the effects of methanol extract of *Jathropha caucus* roots on testosterone-induced benign prostate hyperplasia in male albino rats. A total of 15 male albino rats were divided into 5 groups of 3 each. The groups were a normal control, positive control, standard control (Dutasteride 0.5 mg/kg), and two test groups (50 and 100 mg/kg b.w) of the treatment extract.BPH was induced using 25 mg/kg b.w of testosterone propionate subcutaneously for 28 days in all the groups with exception of the normal control group. This was followed by treatment with *Jathropha caucus* roots extracts at doses of 50 and 100 mg/kg b.w for 2 weeks daily by oral gavage. At the end of the treatment period, the animals were weighed, sacrificed and blood was collected by ocular puncture. Biochemical assays such as liver function test (ALT,AST and ALP), antioxidant (SOD and CAT), MDA, prostate specific antigen (PSA),testosterone and zinc concentration levels were analyzed using standard procedures. Prostate weight (prostate /body weight ratio) was calculated and histological changes in the prostate were examined. The result showed no significant ($p > 0.05$) difference in ALT, AST and ALP. There was also no significant ($p > 0.05$) difference in MDA and SOD, however CAT significantly ($p < 0.05$) decreased when group 5 was compared with group 2. PSA significant ($p < 0.05$) decreased when group 4 and 5 were compared with group 2. There was no significant ($p > 0.05$) difference in testosterone level, however zinc concentration significantly ($p < 0.05$) decreased when group 5 was compared with group 2.The relative prostate weightshowed a significant ($p < 0.05$) decrease when group 5 was compared with group 2 in a dose dependent manner. The histological changes observed in the ventral lobe of the BPH induced prostate was suppressed following treatment with the plant extract in a dose dependent manner. These results suggest that methanol extract of *Jathropha caucus* roots may be effectively used in the management of BPH.

Keywords: *Jathropha caucus*, testosterone, benign prostate hyperplasia.

CB 037
IN VITRO ANTI-TRYPANOSOMAL POTENTIAL OF *Momordica charantia* (Seeds) METHANOLIC EXTRACT AGAINST *Trypanosoma evansi*

***Daudu Mercy Irene[1], Enoh Emmanuel Enoh[1], Dauda Habiba[2], Benjamin Joy Enechojo[1], Muhammed Hadiza Kabir[1] and AnchauRukkaya[1].**

[1]Vector and Parasitological Studies Research Deparment, NITR, Kaduna.
[2]Animal African Trypanosomiasis Research Department, NITR, Kaduna.
Corresponding e-mail address: mercynitr@gmail.comPhone number: 08038024795

Abstract
Momordica charantia L. (Cucurbitaceae) also known as bitter melon is traditionally used in the treatment of Diabetes mellitus and feverish conditions in cattle by Fulani herdsmen. In an attempt to discover drugs agents for the treatment of trypanosomiasis, Microwave Assisted Extraction (MAE) technique was employed in this study. MAE technique is a safer and cost-effective method for the extraction of phytochemicals with high yield.Preliminary phytochemical screening of the methanolic extract of *Momordica charantia* seeds revealed the presence of Carbohydrate, Glycoside, Cardiac glycosides, Saponins, Tannins, Flavonoids, Alkaloids, Steriods and Triterpenoids however Anthraquinones were absent. The *invitro* anti-trypanosomal assay against *Trypanosoma evansi* was evaluated using drug incubation survival assay at 37°C,two-hour and four-hour intervals respectively in a 96-well micro-titre plate; activity was observed as no parasite was seen. The result revealed a significant (p <0.05) concentration and time dependent effect against *T. evansi* with minimum trypanocidal concentration (MTC) of 0.3125mg/ml when compared to the reference drug Diminazeneaceturate (10.0 mg/ml). The result gives credence to the traditional use of *M. charantia* plant by herdsmen in treatment of feverish conditions in cattle and could be a potential source of trypanocidal drug.

Key words: *Momordica charantia*, *Trypanosoma evansi*, Trypanocidal, Diminazeneaceturate.

CB 038

EFFECT OF ETHANOL STEM BARK EXTRACT OF *Entada africana* GUILL. ET PERROTT. ON EXPERIMENTALLY – INDUCED DIARRHOEA IN MICE

***[1]Abubakar Bilyamini Mu'azu, [2]Abdullahi Hamza Yaro, [2]Umar Sharif Abdussalam, [3]Adamu Idris Matinja, [4]Ibrahim Ali Bukar**

[1]Department of Medical Biochemistry Yobe State University, Damaturu
[2]Department of Pharmacology and Therapeutics, Bayero University, Kano
[3]Department of Biochemistry, Bauchi State University, Gadau
[4]Department of Human Physiology Yobe State University, Damaturu
*Corresponding author: bilyaminiabubakar@yahoo.com, 08064852306

Abstract

This study was aimed at investigating *Entada africana* ethanol stem bark extract on phytochemical constituents, elemental analysis, acute toxicity, antidiarrhoeal activity in mice and its effect on isolated rabbit jejunum. The antidiarrhoeal effect of the extract was studied using castor-oil and magnesium sulphate induced diarrhoeal models (dropping test) and gastrointestinal transit time test (charcoal transit) in mice. The preliminary phytochemical screening of the extract showed phytochemical constituents such as alkaloids, flavonoids, cardiac glycosides, phenols, terpenoids, saponins and steroids while volatile oils and anthraquinone were absent. The elemental analysis of the extract showed the presence of magnesium (Mg), manganese (Mn), iron (Fe), copper (Cu), lead (Pb), zinc (Zn) and sodium (Na). The acute toxicity test revealed the intraperitoneal median lethal dose (LD_{50}) of the extract as 774.6 mg/kg body weight. The extract produced a dose-dependent protection against diarrhoea induced by castor oil and magnesium sulfate, with the highest protection (80 and 100%), obtained at 100 and 200 mg/kg. The extract significantly ($p \leq 0.01$) reduced the small intestinal transit time of charcoal meal in mice at all doses tested. The extracts (0.4-3.2 mg/ml) produced a dose-dependent relaxation of the rabbit jejunum, and the effects where blocked by propranolol (0.04 μg/ml). The results of this study showed that the ethanol extract of *Entada africana* stem bark contain pharmacologically active substance with antidiarrheal properties mediated through inhibition of hyper secretion and reduced gastrointestinal motility. These properties may explain the rationale for use of the plant as antidiarrhoeal agent in traditional medicine.

CB 039

COMPARATIVE EFFECTS OF NEUTRACEUTICALS AND FUNCTIONAL FOODS ON SOME BIOCHEMICAL AND ANTIOXIDANTS STATUS OF ISIONIAZIDE-INDUCED OXIDATIVE STRESS IN RATS

Alhassan, A.J. *Abdullahi, M.H., Haruna, G.S and Ubana, M.A

Department of Biochemistry, Bayero University, Kano, Nigeria.
Department of Biochemistry and Molecular Biology, Nasarawa State University, Keffi, Nigeria.

Abstract

The study compared the effects of nutraceuticals and functional foods as sources of antioxidants against isioniazide-induced oxidative stress in rats. A total of sixty albino rats were grouped into six experimental groups of ten rats each, group one was the normal control, group 2, induced with 50 mg/kg body weight of isoniazide, group 3, administered nutraceuticals, group 4, administered functional foods, group 5, simultaneously co-administered 50 mg/kg/day of isoniazide and 50 mg/kg body weight of nutraceuticals, group 6, co-administered 50 mg/kg/day isoniazide and functional foods. Serum ALP, ALT, AST, CK and GGT as well as Catalase (CAT), Malondialdehyde (MDA), Glutathione (GSH) and Glutathione Peroxidase (GPx) were assayed using standard methods. Data were analyzed using one-way ANOVA followed by Duncan and LSD test for statistical significance. Results showed ALP, ALT and AST values to be significantly ($p < 0.05$) higher in all the test groups compared to control. A similar result was observed for CK except for group 2 which showed no significant difference when compared with the control. GGT also showed non-significant difference ($p > 0.05$) in group 2 compared to the control. Catalase was significantly ($p < 0.05$) lower in groups 2, 3, 5 and 6 compared to the control. MDA was significantly ($p < 0.05$) higher in all the treatment groups except group 5. GPx decreased significantly ($p < 0.05$) in all the test groups compared to control. Both nutraceuticals and functional foods demonstrated little antioxidant effect on isoniazide-induced oxidative stress in rats as manifested on some of the biochemical parameters.

Keywords: Comparative Effects, functional foods, isoniazide, nutraceuticals, oxidative stress

CB 040

PHENOTYPIC EXPRESSION OF METALLO-BETA-LACTAMASE AMONG CARBAPENEM RESISTANT GRAM-NEGATIVE BACTERIAL ISOLATES IN A HEALTHCARE FACILITY IN SOKOTO, NIGERIA

Ahmed Olowo-okere*, Muhammad Abubakar Abdullahi, Nuhu Tanko, Hussain Yahya Ungokore, Abdulmalik Aliyu[2].

[1]Department of Pharmaceutics and Pharmaceutical Microbiology, Usmanu Danfodiyo University Sokoto,
[2]Department of Pharmaceutical Microbiology and Biotechnology, University of Ilorin, Nigeria.
*Correspondence: olowookere.ahmed@udusok.edu.ng; +2347031102745

Abstract

The carbapenems are among the antibiotics of last resort against infections caused by antibiotic resistant Gram-negative bacteria. However, resistance to this important class of antibiotic is on the increase due to expression of metallo-beta-lactamases (MBLs). This study aimed to investigate the occurrence of MBL-producing bacterial isolates in a healthcare facility in Sokoto, Nigeria. The bacterial isolates collected from the Microbiology Department of the hospital, over a period of three months, were tested for susceptibility to some selected antibiotics using the modified Kirby-Bauer disc diffusion method. The carbapenem resistant isolates were further evaluated for MBL-production using the combined disc method as described by CLSI. A total of 103 Gram-negative bacterial isolates were collected from the hospital. The isolates were obtained from samples collected from 60 (58.3%) and 43 (41.7%) male and female patients respectively. Majority of the bacteria (56.3%) were isolated from urine samples with *Escherichia coli* (45.6%) being the most prevalent bacteria. The bacterial isolates showed varying pattern of resistance to the various antibiotics, with the highest resistance observed against cefotaxime (78.6%) and the least against imipenem (19.41%). Out of the twenty carbapenem resistant bacteria isolated from carbapenem naïve patients, 10 (50.0%) were MBL positive. The high prevalence of carbapenem resistant bacteria in a hospital with no history of carbapenem usage further demonstrated the ingenuity of bacteria in resisting the action of antibiotics. Adequate antibiotic stewardship program should therefore be instituted to safeguard against the emergence of multidrug resistant bacteria.

Keywords: Carbapenem Resistant Bacteria; Metallo-Betalactamases; Carbapenemase; MDR.

CB 041

EFFECT OF METHANOL EXTRACT OF *Detarium microcarpum* (STEM BARK*)* ON *IN VITRO* SICKLING OF RED BLOOD CELLS

[*1]Ayevbuomwan, M.E. Okugbo, O. T. and [2]Omoregie, E.S.

[1]Department of Basic Medical Sciences, School of Basic Sciences,
[2] Department of Biochemistry, Faculty of Life Sciences, University of Benin, P.M.B 1154.
[*]Presenting author: merit.obasoyen@uniben.edu

Abstract

The effect of *Detarium microcarpum* (Tallow tree) stem bark on polymerization of sickle cell haemoglobin and red blood cell membrane stability was evaluated in this study. Amino acid and mineral constituents were determined using gas chromatography and atomic absorption spectrometry. Blood samples collected from thirty-five confirmed sickle cell patients were treated with 2% sodium metabisulphite. The mixture was treated with different concentrations (2.5-10mg/mL) of the plant extract and the haemoglobin concentration and percentage sickling of the red blood cells was determined at 0-90 min intervals. Results from the study revealed that *D. microcarpum* contain some essential and non-essential amino acids including Glu, Phe, Arg and also some minerals. At 5mg/mL and 10mg/mL,

D. microcarpum stem bark significantly ($p < 0.05$) inhibited sickle haemoglobin polymerization when compared to the untreated control. The percentage inhibition was time-dependent and was relatively comparable to that of the standard anti-sickling drug, *p*-hydroxybenzoic acid. *D. microcarpum* stem bark showed the highest percentage inhibition of sickling at 10mg/mL concentration at 90 min. A similar trend was observed in the *p*-hydroxybenzoic acid (5mg/mL) treated RBCs. The overall antisickling effects of *D. microcarpum* may be attributed to its amino acid content, most prominently Phe and Glu, which are known to interact with haemoglobin molecule and prevent the hydrophobic contacts between the HbS dimers. Furthermore, some minerals (especially potassium and magnesium) in the extract might have contributed to its antisickling effect by improving the hydration of the sickle red blood cell thus reducing formation of sickling.

Key words: *Detarium microcarpum*, Antioxidant, Polymerization, Sickle cell, p-hydroxybenzoic acid

CB 042
HOST IMMUNE RESPONSE MECHANISMS AND INTERACTIONS TO MALARIA PARASITE INVASION: AN OVERVIEW

[1*]Muhammad, F.M., [1]Jigam, A.A., [1]Abubakar, A. &[2]Adeniyi, K.A

[1]Department of Biochemistry, Federal University of Technology, Minna, Nigeria
[2]Applied Entomology and Parasitology Unit, Department of Animal Biology, Federal University of Technology, Minna, Nigeria

[*]Corresponding author: pharteama@gmail.com +234-8138066989

Abstract

The endemicity of malaria infection in sub-Saharan Africa, in spite of the recent aggressive control measures, has alerted the stakeholders of the need for an integrated approach to curbing the disease. One of such approaches is the need for better understanding of malaria parasite-host interaction and the adaptive immune response to their invasion. It has been well established that different malaria infection stages such as the erythrocytic phase provides a potent stimulus for the production of specific malaria antibodies. Macrophages, cellular effectors and cytokines are involved in the activation of immune responses at different stages of human malaria. Neutrophils, mononuclear phagocytes and natural killer (NK) cells have been shown to increase in number (during malaria infection) and lyse malaria parasite-infected erythrocytes. NK cells also secrete interferons (IFN) that can cause parasiticidalmacrophage activation that kill parasite in infected hepatocytes. Other mechanisms by which antibody is effective against parasite include blockade of invasion of red blood cells (RBCs) by merozoites and binding of the antibody to parasite induce molecules on the RBC survival surface, leading to greater clearance of infected RBCs. Additionally, regulatory T-cells may modulate effector CD4+ T-cell responses to malaria infection suppressing protective immune responses but preventing immune-mediated pathology. On the other hand, *Plasmodium* parasite puts selection pressure on human gene frequencies as a way to escape human immune response and thus, alter peptide ligand (APL) antagonism which mediates the immune response from a pro- to an anti-inflammatory T-cell response. Findings from this present review can be exploited in the development of novel anti-malaria drug and vaccine.

Keywords: Malaria infection, Antibody, Cytokines, Neutrophils, immune response

CB 043

BENEFICIAL EFFECTS OF *Solanium scrabum* ON ADVANCED GLYCATION END-PRODUCT IN STREPTOZOTOCIN-DIABETIC RAT

Chintem, D.G.W[1,2*]., Wanmi, D.A[2]., Akwa Y.V[1]., Njilma A.J[3]., Achilus, F[2]. and Diah, R[2].

[1]Department of Biological Sciences, Taraba State University, Jalingo, Nigeria.
[2]Department of Pure and Applied Sciences, Taraba State Polytechnic Jalingo, Nigeria.
Department of Biological Science, College of Education, Zing, Taraba State, Nigeria.
Corresponding author's email: williamschintemdg@gmail.com, +2348062617449

Abstract

Both oxidation and hyperglycemia cause increased glycation and the formation of advanced glycation end-products (AGEs) which underlie the complications of diabetes. The goal of this study was is to determine the beneficial effect of ethanol and aqueous extract from leaves of *Solanium scrabum* on the formation of glycated protein. Ethanol and aqueous extract will be subjected to in vitro bioassays to evaluate advanced glycation end-products formation. Bovine serum albumin (BSA)-glucose, BSA methylglyoxal, Amadori-rich protein, glycated hemoglobin, oxidation, and glycation of LDL would be determined. Doses of 100 200 mg/kg/d by oral gavage would be administered once daily for 14 days, at streptozotocin-induced diabetic rats. At the end of administration renal damage (TBARS), glucose, methylglyoxal, glycolaldehyde, and tail tendon collagen were investigated. The results show that AGE was resistant to accumulation of methylglyoxal when incubated in High dose of Ethanol extract although the flux of methylglyoxal was increased 41%. Glycation of collagen by methylglyoxal impairs binding to AGP *in vitro* resulting in a 91% decrease in the energy necessary to detach cells from the extracellular matrix protein. In mice fed with aqueous extract increased methylglyoxal in the pancreas. The result shows that *Solanium scrabum* ethanol extract is an inhibitor AGE formation, and oxidative stress with a renoprotective effect, which are considered to play important roles in diabetic kidney disease.

Keywords: *Solanium scrabum,* diabetic, Streptozotocin**,** Glycation, methylglyoxal

CB 044

URIC ACID LEVEL AND PREVALENCE OF GOUT IN PREGNANT WOMEN IN KATSINA STATE

[1]Abdullahi A.S[*], [2]Kankara Abubabakar, [3]Yusuf Runka, [1] Matazu N.U, [1]Matazu K.I, [1]Aminu Usman and [1]Ismai'la Mohammed

1. Department of Biochemistry. Umaru Musa Yar'adua University Katsina
2.Federal Medical Centre Katsina
3. Turai Yar'adua Children and Maternity hospital, Katsina
*Corresponding Author: akilu.sada@umyu.edu.ng

Abstract

Uric acid is the principal end-product of purine metabolism in man and the primary biochemical requirement for the development of clinical gout is hyperuricemia. Prevalence of gout in women who are in their reproductive age is rare. In this study, serum uric acid level was studied in 300 pregnant women attending Turai Yar'adua Women and Children Hospital Katsina. The blood glucose level of the women was also determined to check for gestational diabetes and whether there exist any correlation between blood glucose level and serum urate level. The results of the study obtained revealed that pregnancy is associated hyperuricemia. An average of 344.23±27.24^{a}µmol/L for 1st trimester, 394.22±12.14^{a}µmol/L for 2nd trimester and 455.40±11.52^{b} µmol/L for 3rd trimester serum uric acid level was observed in

pregnant women compared to the standard reference range of 380µmol/L for women. Increased serum uric acid level was observed with increased age of pregnancy, thus highest serum urate levels was observed in the third trimester as compared to the first and second trimesters. No correlation was observed between age of pregnant women and serum urate level or blood glucose level. However, slight correlation was observed between blood glucose level and serum uric acid level in most pregnant women with high blood glucose level suggesting a link between hyperglycemia and hyperuricemia. Findings from this study indicate that women diagnosed with gouty arthritis may risk experiencing gout flares when they are pregnant, particularly in their third trimester. Similarly, diabetic women may likely experience hyperuricemia and possibly gestational gouty arthritis during their pregnancy.

CB 045
ACUTE EFFECT OF THE AQEUOUS LEAF EXTRACT OF *Ficus thoningii* ON LIVER FUNCTION INDICES OF ALBINO RATS.

Ibrahim, M*, Sadiq, Z.I., and Orah, P.

Department of Biochemistry and Molecular Biology, Federal University DutsinMa. Katsina State
*Email of corresponding Author: arub84@gmail.com +2348032206024

Abstract
Acute toxicity study of Ficus thoningii aqueous leaf extract was carried out in Albino rats. LD_{50} determination was carried out using Lorke's method. The study was carried out in 2 phases. In phase I, animals were divided into 3 groups of 3 rats per group. The first, second, and third groups were respectively administered with 10mg/kg, 100 mg/kg and 1000mg/kg body weight of the aqueous leaf extract. The rats were observed for signs of toxicity for a period of 24hrs. In phase II, another set of 5 rats were divided into 5 groups of 1 rat per group. They were treated with doses based on the finding of phase I: 1250 mg/kg, 2000 mg/kg, 2750 mg/kg, 3750 mg/kg and 5000 mg/kg body weight accordingly. The rats were again observed for signs of toxicity for 24hrs. Blood samples were taken after 14 days. No death was recorded during the period under observation. The LD_{50} was determined to be greater than 5000 mg/kg body weight. Serum concentrations of liver enzymes (alkaline phosphatase, aspartate amino transferase, and alanine amino transferase), Total bilirubin, conjugated bilirubin, total protein and albumin were evaluated. Administration of 100 mg/kg and above caused significant increase ($P > 0.05$) in total bilirubin, aspartate amino transferase and alanine amino transferase compared to the control. There was no significant variation between the test groups administered with the aqueous extracts in relation to the control group for conjugated bilirubin, alkaline phosphatase, total protein and albumin. Findings indicate that even lower doses of *Ficus thoningii* aqueous leaf extract may cause organ damage.

Keywords: Acute toxicity, *Ficus thoningii*, Liver, Serum.

CB 046
INFLUENCE OF *GLIRICIDIA SEPIUM* AQUEOUS LEAF EXTRACT INTAKE ON THYROID HORMONES AND LIPID PROFILE IN WISTAR RATS

Oduola Taofeeq[1],Agaie Bello Mohammed[2], NgaskiAbdullahiAbubakar[1], Musa Kasim[1].

Department of Chemical Pathology, Usmanu Danfodiyo University, Sokoto
Department of Veterinary Pharmacology, Usmanu Danfodiyo University, Sokoto
*Corresponding author E-mail:oduola.taofeeq@udusok.edu.ng Phone number: 08033968785

Abstract
Gliricidia sepium aqueous leaf extractis used in the management of sickle cell disease in some parts of Nigeria without considering its adverse effect, hence the present study was aimed at determining the effect of ingestion of *Gliricidia sepium* aqueous leaf extract on thyroid hormones and lipid profile in Wistar rats. The oral acute and sub-chronic toxicity studies were performed according to OECD guidelines 423 and 407 respectively in Wistar rats. Thyroid function tests (T_3, T_4 and TSH) were carried out using Enzyme Linked Immunosorbent Assay and lipid profiles by spectrophotometric techniques. No

mortality or signs of toxicity were recorded in the acute oral toxicity study in the rats after 24hours and up to 14 days. In acute and sub-chronic toxicity studies, there were no significant difference in lipid profiles of control and experimental rats. T_3 was significantly higher ($p< 0.05$), and T_4 and TSH significantly lower ($p< 0.05$) in test than in control groups in acute toxicity study. In sub-chronic toxicity study, T_3 and TSH revealed no significant difference in test and control groups; T_4 was significantly higher ($p< 0.05$) in test than the control group but the differences were not dose response related. The thyroid gland tissues of both control and experimental groups showed normal thyroid follicles and follicular epithelial cells. *Gliricidia sepium* leaf extract had no adverse effect on thyroid and lipid profiles in Wistar rats.

Key Words: *Gliricidia sepium*, thyroid hormones lipid profiles, safety, toxicity

CB 047

THYROID HORMONES AND LIPID PROFILES IN HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENTS ON HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART) IN USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL, SOKOTO

Oduola Taofeeq*[1], Wali Usman[1], Liman Hamidu Muhammad[2], Idris Masuud Ilyasu[1]

[1]Department of Chemical Pathology, Usmanu Danfodiyo University Teaching Hospital, Sokoto
[2]Department of Medicine, Faculty of Clinical Sciences, Usmanu Danfodiyo University, Sokoto
*Corresponding author E-mail: oduola.taofeeq@udusok.edu.ng Phone number: 08033968785

Abstract
Effect of HAART on thyroid hormones and lipid profiles in HIV patients have been widely documented but the reports vary from one center to another hence,this study was designed to evaluate these parameters in HIV patients on HAART in UDUTH, Sokoto. A total of 120 subjects categorized into 5 were recruited, group one consists of 20 apparently healthy individuals (control), group two 20 HIV HAART naïve patients, group three 20 HIV patient on HAART for less than six months, group four 20 HIV patient on HAART (6 to < 12 months) and group five 40 HIV patient on HAART, 12 months and above. Blood samples were collected for thyroid, lipid profile sand CD4 lymphocyte count analyses using ELISA, spectrophotometric and flow cytometric techniques respectively. The T_4values in the test groups was significantly higher than the control group while the T_3values was not significantly different. The TSH values in groups 2 and 4 were significantly lower and groups 3 and 5 were not significantly different when compared to control group. The CD_4 values in the tests groups were significantly lower than the control group while BMI, HDL and LDL values in the test groups were not statistically significant compared to the control group. TG and TC values are significantly lower except for group 3 which is not statistically significant when compared with the control group. This study also revealed that HIV infections impairs thyroid hormones, lipids and CD_4 levels in HIV positive patients on HAART and HAART naïve patients.

Key Words: Thyroid hormones, lipid profiles, HIV patients, HAART

CB 048

HYPOGLYCEMIC EFFECT OF ETHYL ACETATE FRACTION OF *Momordica charantia* LEAVES EXTRACTS ON STREPTOZOTOCIN-NICOTINAMIDE INDUCED DIABETIC RATS

Ubhenin A. E[1*], AdamudeF.A[1] and Dingwoke E. J.[2]

[1,1*]Department of Biochemistry, Faculty of Medical Sciences, Federal University Lafia Nasarawa State

[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

*Correspondence: ehibram@yahoo.co.uk +2348133893080

Abstract

The present study was designed to evaluate antidiabetic potential of an indigenous *Momordica charantia* leaves extract on Streptozotocin-Nicotinamide induced type 2 diabetic albino rats. Methanolic extract was obtained by cool maceration with 5 L methanol for 72 hrs at room temperature and the extract was then fractionated using petroleum ether, chloroform and ethyl acetate in this order of increasing polarity . The albino rats were fasted overnight prior to induction of type 2 diabetes by intraperitoneal injection of 120 mg/kg body weight Nicotinamide, followed by 50 mg/kg body weight Streptozotocin. Rats with FBG above 200 mg/dl were considered to be hyperglycemic, and were selected for the experiments. The antidiabetic activity was ascertained by oral administration of leaves extracts of *Momordicacharantia* on the various animal groups; while group I received 5% tragacanth , group II were diabetic rats and were received 5% tragacanth. Group III, IV and V received 5 mg/kg body weight of Glibeclamide, *Momordica charantia* and ethyl acetate fraction of *Momordica charantia* dissolved in 5% tragacanth respectively. At the end of the study, blood samples were collected from all the animal in each group for biochemical analyses, the animals were sacrificed and liver tissues collected for hisotopathologic analyses. Following oral treatment with these extracts and Glibeclamide, there were significant reduction ($P<0.05$)in the blood glucose level in these groups as compared to the diabetic control group. The reduction started on day 7 and continue to fall through the period of the experiment. The study also revealed that diabetes was associated with a decreased in the level of liver and kidney total protein and albumin. The serum levels of urea, creatinine, alpha-amylase and lipid profiles with exception HDL-C were seen to have increased significantly ($p<0.05$) in diabetic control animals (group 2),These pathological conditions indicate a compromise in the physiological role of insulin and Oral administration *Momordica charantia* and ethyl acetate fraction of the extract at dose of 50mg/kg body weight restored the liver, kidney the serum levels of these biochemical parameters .This was further supported by normal liver architecture as revealed by histological finding in the groups treated *Momordica charantia*. . Present findings revealed that leaves extract of ethyl acetate fraction of *Momordica charantia* has the highest antidiabetic activity and has insulin mimicking action

Keywords: Hypoglycemia, Diabetes mellitus, Streptozotocin, Nicotinamide, *Momordical charantia*

CB 049
PREVALENCE OF MALARIA PARASITE AMONG ASYMPTOMATIC STUDENTS OF USMANU DANFODIYO UNIVERSITY SOKOTO, NIGERIA

S. Rabiu[1], A. Dandare[1] and A. L. Abubakar[1]
[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto Nigeria.
Corresponding author: abufukaiha@gmail.com mobile Phone:+2347032884007

Abstract
Malaria is becoming a major public health burden in Nigeria where more cases and deaths are recorded than any other country of the globe. The disease is caused by parasites that are transmitted to people via the bites of infected females *Anopheles mosquitoes.* Therefore, continuous exposure to the parasite leads to asymptomatic carriers that provide a reservoir which contribute to the persistence malarial transmission. The study therefore, investigated the prevalence of malaria parasite among asymptomatic students of Usmanu Danfodiyo University Sokoto, Nigeria using the malaria HRP2 rapid diagnostic kit. An informed consent form was given to each participant after whom 155 students were recruited for the study. Out of the 155 samples collected, 59 (38.07%) were tested positive for malaria parasite. The infection was gender bias, in which the prevalence of the asymptomatic malaria was high in males (67.80%) compared to their female counterparts (32.20%). In age related manner, the infection showed that those participants within the ages of 21 – 25 years were more affected (40.67%) compared to those in age range (16 – 20 years 35.59%, 26 – 30 years 20.33% and 31 – 35 years 3.39%). High prevalence of asymptomatic malaria detected in this study remains a big challenge not even to the Usmanu Danfodiyo University community but to the present National Malaria Control Programme at large.

Key words: Malaria, Parasite, Asymptomatic, Prevalence

CB 050
AMELIORATIVE EFFECTS OF P-HYDROXY BENZALDEHYDE ON PANCREATIC B-CELLDYSFUNCTION AND MAJOR DIABETES-RELATED INDICES INTYPE-2 DIABETESMODEL OF RATS

Ahmed Olatunde[a,b], Mohammed Auwal Ibrahim[a], Aminu Mohammed[a] and Mohammed Nasiru Shuaibu[a]*

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[b]Department of Biochemistry, Abubakar Tafawa Balewa University, Bauchi, Nigeria
*Author for correspondence: Tel: +2348023496335; E-mail:nshuaibu@yahoo.com

Abstract
The present study investigated the anti-diabetic effects of ρ-hydroxybenzaldehyde (ρ-BN)on β-cell damage and major indices of type-2 diabetes (T2D). T2D was induced in rats by feeding 10% fructose solution *ad libitum* for 2 weeks followed byintraperitoneal injection of streptozotocin (40 mg/kg body weight) and the type-2 diabetic rats were orally administered with 50 and 100 mg/kg body weight of ρ-BNonce daily for 28 days. Blood samples and pancreas were collected for subsequent investigation. At the end of intervention, the diabetic untreated rats showed significant increase ($p < 0.05$)in blood glucose, serum fructosamine, serum lipid profile (Total cholesterol, Triglyceride, LDL-cholesterol and VLDL-cholesterol), liver and kidney markers, insulin resistance (HOMA-IR), cardiovascular indices (atherogenic index, coronary risk index and cardiac index)as well as liver glycogen contents and a significant decrease ($p < 0.05$) in serum insulin, HDL-cholesterol, β-cell functions(HOMA-β) and glucose tolerance abilitycompared to the normal rats. Histological examination of the pancreas showed corresponding pathological alterations in the islet and β-cells. However, oral administration of 50 and 100 mg/kg body weight of ρ-BN to diabetic rats resulted in a significant reversal of the above diabetic alterations to near normal which is comparable to that of standard group. The data from this study shows that ρ-BN, especially at 100 mg/kg body weight exhibited higher anti-diabetic potential in T2D model of rats.

Keywords: ρ-hydroxybenzaldehyde, type-2 diabetes, pancreas, streptozotocin

CB 051
ANTIULCEROGENIC STUDIES OF METHANOL LEAF EXTRACT AND FRACTIONS OF *Ficus platyphylla* ON ALBINO RATS

[1]Ukwuani-Kwaja, AngelaNnenna, [1]Sani, Ibrahim and *[1]Kindzeka, Lesley Sahber

[1]Department of Biochemistry, Kebbi State University of Science and Technology Aliero, Kebbi State
Corresponding Author; Cell Phone Number: +2348037423522 Email: kinleslo@gmail.com

Abstract
Peptic ulcer disease (PUD), one of the most prevalent gastrointestinal disorders, is a condition that affects many people cutting across social status and age. Despite recent advances involving the diagnosis and management of PUD, the challenge is still there when it comes to treatment and complete eradication of this condition. Therefore, this research was aimed to study the antiulcerogenic activity of methanol leaf extract of *Ficus platyphylla* and its hexane, ethyl acetate, butanol and last remaining aqueous fractions on albino rats. The antiulcerogenic activity was evaluated using ethanol induced ulcer model on albino rats. Graded doses of the plant extract (150, 300 and 600mg/kg body weight) and fractions (300 mg/kg body weight) were used to assess the antiulcer activity. Cimetidine (100mg/kg body weight) was used as the standard drug**.** The results showed a significant reduction ($p<0.05$) in the ulcer index and an increased percentage protection in all the treated groups when compared to the negative control group. The crude extract showed a dose-dependent antiulcer activity with the highest concentration (600mg/kg) having 52.94% protection. This was however lower than cimetidine treated group (57.54%) which was not significantly different ($p>0.05$) when compared. Butanol fraction offered the highest percentage protection (52.94%) amongst other fractions tested. The findings reveal that *F. platyphylla* leaf possess potential antiulcer activity and supports its ethnomedicinal use in the management of ulcer.

Key Words: *Ficus platyphylla*, Peptic Ulcer Disease, Antiulcer, Ulcer Index, Albino Rats

CB 052
POTENCY OF FONIO MILLET TO ATTENUATE DIABETES AND DIABETIC RELATED CARDIOVASCULAR DISEASES

Osibemhe, M*., Omaji, G. O., Orji, B. O., Ilouno, E. L., Adejo, G. O., Geoffery, T. T., Okoyomoh, J., Ismail, A., and Iduh, P.

Department of Biochemistry and Molecular Biology, Faculty of Science, Federal University Dutsin-Ma, Katsina State, Nigeria, mosibemhe@fudutsinma.edu.ng Tel: +2348063260886.

Abstract
Diabetes has been described as one of the progenitors of cardiovascular diseases. Many researchers have focused their attention on the inherent medicinal potency of herbs in combating diseases with grains highly neglected for their medicinal values. This study is aimed at evaluating the potency of fonio millet (*Digitaria exilis*) to attenuate diabetes and diabetic related cardiovascular diseases. Twenty five (25) Wistar rats, selected into 5 groups of 5 rats per group were used for the study. Streptozotocin (60 mg/kg intraperitoneal injection) was used to induce diabetes. The rats were treated with 500 mg/kg aqueous extract of fonio millet, 10% and 20% fonio millet supplemented diets respectively for a period of 14days. Fasting blood glucose was monitored at intervals of 7days. Malondialdehyde (MDA), some antioxidant enzymes and nitric oxide were assayed in heart homogenate after the 14th day. Streptozotocin (STZ) caused significant ($p<0.05$) increases in fasting blood glucose from day 1-14 in relation to the basal values. Groups treated with 10% and 20% fonio millet supplemented diet demonstrated significant ($p<0.05$) fasting blood glucose reduction from day 7-14th. Oral administration of 500 mg/kg aqueous extract did not show any significant change in fasting blood glucose level. The activities of the assayed antioxidant enzymes, MDA and nitric oxide levels were unchanged in all the groups when compared with the control. These findings suggest that 500 mg of aqueous extract of fonio millet did not demonstrate anti-diabetic effect. Whereas 10% and 20% fonio millet supplemented diet possesses hypoglycemic and anti-diabetic potential.

Keywords: Attenuate, diabetes, fonio millet, nitric oxide, streptozotocin.

CB 053
EVALUATION OF THE ANTI-MALARIAL PROPERTIES OF *Dialum guineense* ON *Plasmodium berghei* PASSAGED MICE

Parker Elijah Joshua and Ukegbu Chimere Young*
Department of Biochemistry, University of Nigeria, Nsukka. Enugu State

Abstract
Malaria is considered to be one of the greatest health challenges responsible for about 40% mortality in the world. *Dialium guineense* is a plant belonging to the *fabaceae* family and research has found it useful in traditional medicine. This study evaluates the anti-malarial properties of methanol extract of *Dialum guineense* on *Plasmodium berghei* passaged mice. A total of 43 mice were used in this study (18 used for LD_{50} and 25 for malaria studies). In the anti-malaria study it was divided into five groups (normal control group, positive control group, standard control group, 500 mg/kg b.w. plant extract and 1000mg/kg b.w. plant extract respectively). The mean parasitaemia count of the animals treated with the plant extract showed asignificant ($p < 0.05$) reduction in the parasitemia count when compared to the positive (untreated) control group. The *P. berghei* infected mice treated with various doses of the extract showed a significantly ($p < 0.05$) increase in the packed cell volume, red blood cell count, haemoglobin concentration and antioxidant enzymes compared to the positive control group. The mice treated with various doses of the extract showed significant ($p < 0.05$) reduction in the activities of liver marker enzymes alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (ALP) compared to the positive control group. Photomicrograph of the liver tissues showed mild inflammation in the treatment groups while the positive control showed severe inflammation which was caused by malaria pigments, hemoesterosis and kupffer cells. The result of the investigation suggest that this plant possess significant antimalarial and antioxidant activities in laboratory animals which findings supports the traditional use of this plant in treatment of malaria.

Keywords; Malaria, *Dialium guineense*, Antioxidants, Haematology, Parasitemia.

CB 054
AN ASSESSMENT OF THE IMPACT OF KETOGENIC DIET ON WEIGHT, SOME BIOCHEMICAL AND HAEMATOLIGICAL PARAMETERS IN WISTAR RATS

[1]Diretkinan Jonah Vwar*, [1]Mariam Solomon, [1]Titilayo Omolara Johnson
[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Nigeria
Author for correspondence: Email:diretvwar@gmail.com; Tel: +234-7036608881

Abstract
An increasing number of Nigerians are embracing the controversial ketogenic diet (KD) which has shown to be quite effective in reducing body weight and the risk factors for various chronic diseases. The study assessed the impact of locally sourced ketogenic food materials in Jos, Nigeria, on weight, some haematological and biochemical parameters in albino rats. The proximate nutrient composition of KDs was determined using standard procedures while elemental analysis was determined using Atomic Absorption spectrometry. Wistar rats were fed hyper-calorie diets for rapid weight gain prior to treatment with KD(s) and normal laboratory feed (control). Weight, some biochemical and haematological parameters were measured to evaluate the suitability of formulated diet as tool for weight management. Furthermore, toxicological assessment of the intestine was carried out to determine safety of the diets. Analysis of data was done using analysis of variance. The results showed significant weight loss expressed in grams by Awara/African spinach (A/S): 183.13±13.70 to 176.63±15.68, Fish/Cucumber (F/C): 181.58±13.70 to 175.73±15.68 for day 20 to 30 of experiments. Also, the effects of treatments on total cholesterol and total protein were significant for A/S (1.48±0.09 mmol/l, 66.70±2.64 g/l) and F/C (1.90±0.09 mmol/l, 64.25±2.64 g/l). Results for haemoglobin, A/S: 123.67±4.0 g/l, F/C: 121.33±4.0 g/l, was significant. Toxicological results showed little structural changes in the small intestine. This study reveals that, weight management is achievable with the formulated KD(s) available and affordable.

Keywords: ketogenic diet, weight management, toxicological assessment

CB 055

EFFECTS OF TRAMADOL AND CODEINE ADMINISTRATION ON HAEMATOLOGICAL AND BIOCHEMICAL PARAMETERS IN RATS

Abiodun Olusoji Owoade*, Abdulrahman Abdullateef, Adejare Adegbola Onaolapo Victoria Ayobami Aderinwale, Rukayat Moradeke Azeez, Oluwatobi Abioye Oguntoye, Rukayat Olaitan Akano, Oluwadamilola Obasanmi, Azeezat Bolarinwa, Kareemat Ishola, Taiwo Mary Onaolapo, Mumeen Dayo Olaifa

*Department of Biochemistry, Faculty of Basic Medical Sciences, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.
*Corresponding Author: Email: aoowoade@lautech.edu.ng Phone: +234806801304

Abstract

This study was aimed to investigate whether tramadol and codeine perturb lipid metabolism and antioxidant status. Therapeutic dose (0.5 mg/kg body weight for codeine and 0.83mg/kg body weight for tramadol), high dose (therapeutic dose X 5) and extreme dose (therapeutic dose X 10) were administered orally 24 hourly to rats for 28 days. Twenty-four hours after the last tramadol and codeine treatment blood and other tissues (liver, kidney, brain, heart, lung and spleen) were harvested from the animals after an overnight fast and analyzed for their haematological and biochemical parameters. Tramadol and codeine administration significantly ($p<0.05$) reduced white and red blood cells, while other haematological parameters were also disrupted. Administration of the two drugs also resulted in dyslipidemia in different compartments investigated. In the blood, plasma and erythrocyte dyslipidemia were characterized by increased concentrations of triglycerides and cholesterol while HDL cholesterol and triglyceride were reduced. In the kidney, heart, lung, brain, liver and spleen, administration of the drugs resulted in cholesterogenesis, phospholipidosis and triglyceride constipation. The two drugs also increased AST, ALP, creatinine and urea in the plasma and increased MDA level in the liver and kidney while SOD, GSH and catalase activities were reduced. The distortion observed in the haematological balance, lipid profile and antioxidant status in most of the compartments of the animals studied, suggest that induction of dyslipidemia, hepatotoxicity and nephrotoxicity might represent additional adverse effects of tramadol and codeine.

Keywords: Tramadol, codeine, dyslipidemia, cholesterogenesis, and phospholipidosis

CB 056

STUDIES ON THE ANTI TRYPANOSOMAL POTENTIAL OF COLLOIDAL IODINE

Farida Faustina Yakubu, Bashiru Ibrahim, Emmanuel Oluwadare Balogun*

Department of Biochemistry, Ahmadu Bello University, Zaria.
Corresponding author: oluwadareus@yahoo.com. +2348183543631,

Abstract

Trypanosomiasis are a group of diseases caused by parasites known as African trypanosomes, and are transmitted by tsetse flies to animals and humans. They are endemic to tropical regions and are of economic importance to 37 countries in sub-Saharan Africa where an estimated annual death of 3 million herds of cattle due to African trypanosomiasis. Available chemotherapies are currently unsatisfactory and are faced with problems of resistance and toxicity. In this study, the anti-trypanosomal potential of colloidal iodine on *Trypanosoma brucei brucei* was investigated. Interestingly, the compound was trypanocidal at 2.8% *in vitro* but was unable to cure experimental mice with at a dosage of 1000 mg/Kg once per day for three days. Also, there was no significant difference in the body weight, packed cell volume, and total plasma protein in the groups infected and treated with colloidal iodine when compared with the group infected and untreated ($p \leq 0.05$). Therefore, it can be concluded that colloidal iodine at the administered dose had no curative efficacy.

CB 057

EFFECTS OF AQUEOUS EXTRACTS OF *Anisupos mannii* LEAVES AND STEM ON FASTING BLOOD GLUCOSE, SERUM LIPID PROFILE AND ORGAN FUNCTION OF NORMAL AND ALLOXAN-INDUCED DIABETIC RATS

[1]Matazu, Nasiruddeen Umar; [1]Abdullahi, Bilkisu; [1]Usman, Shehu; [1]Musa, Badiya Aminu; [2]Dawud, Fatima Alhassan; [3]Suleiman, Aminu and [1,3*]Umar, Ismaila Alhaji

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina;
[2]Department of Human Physiology, Ahmadu Bello University; Zaria
[3]Department of Biochemistry, Ahmadu Bello University, Zaria
*Corresponding Author: Email Address: iaumar2003@yahoo.co.uk

Abstract

Diabetes mellitus (DM) has become a public health concern in much of Northern Nigeria and unfortunately many poor patients do not have access to or purchasing – power for orthodox medicines; so majority rely on cheaper alternative herbal medicines. In Katsina state the extracts of *Anisupos mannii* ("Sakayau" or "Kashe zaki" in Hausa) are widely used by this category of patients. This report presents findings of the empirical testing of the hypothesis upon which this folkloric use of the extract is based. Alloxan was used to induce diabetes in four groups of rats and one group each was treated (orally) with 200mg/Kg of the leaves or stem extracts daily for 21 days; one group treated with oral 5mg/Kg of Glibenclimide daily and the last group was left untreated. Other groups of rats were included as non-diabetic controls. All diabetic rats had initial Fasting Blood Glucose (FBG) ranging between 334.54 $\pm$ 37.15 and 382.89 $\pm$ 59.13 mg/dl; the stem and leaves extracts were able to significantly ($p < 0.05$) decrease the FBG of diabetic rats to almost normoglycemic levels. The diabetes – induced large increases in serum Total Cholesterol, LDL – Cholesterol and Triacylglycerols and decrease in serum HDL – Cholesterol were prevented by the administration of either the leaves or stem extracts to diabetic rats. Diabetes in untreated rats caused damage to liver and kidneys which manifested as significant ($p < 0.05$) increases in serum Alanine aminotransferase (20.00 $\pm$ 2.54 U/L), Aspartate aminotransferase (19.17 $\pm$ 2.64 U/L), Total bilirubin (19.73 $\pm$ 2.69 µmol/L) and Direct bilirubin (6.58 $\pm$ 0.90 µmol/L) as well as increases in Serum Urea (41.69 $\pm$ 4.28 mg/L) and Creatinine (112.40 $\pm$ 9.61 mg/L). All these increase were prevented by treatment with the two extracts. Administration of the two extracts to normal rats indicated that they are not toxic to the two organs of interest. It was concluded that the two extracts have anti-diabetic activity and are not hepato- or nephro-toxic.

CB 058

EFFECT OF EXTRACT AND FRACTIONS OF AFRICAN WALNUTS (*Tetracarpidium conophorum*) ON HEPATIC LIPID METABOLISM IN MSG-INDUCED OBESITY IN WISTAR RATS

Item Justin Atangwho[1]*, Daniel Ejim Uti[2], Eyong Ubana Eyong[1], Grace Ufedo Umoru[2], Godwin Eneji Egbung[1] and Solomon Rotimi[3]

[1]Department of Biochemistry, College of Medical Sciences, University of Calabar, Calabar, Nigeria
[2]Department of Biochemistry, College of Science, Evangel University Akaeze, Abakaliki, Ebonyi State
[3]Biochemistry Unit, Department of Biological Sciences, Covenant University, Canaan Land, Ota,
*Correspondence: dratangwho@gmail.com, ijatangwho@unical.edu.ng (+234 805 558 2864)

Abstract

This study evaluated the effect of extracts of African walnuts (*Tetracarpidium conophorum*) on hepatic lipids and related enzymes in obese rats. The nuts were extracted in ethanol (WE) and further separated to obtain the ethyl-acetate fraction (ET) and the residue (RES). These were administered orally to 3 groups of MSG-obese rats (n=6), respectively, for 6 weeks. Other groups in the study were the normal (NC) and obese (OC) controls, and the standard control (SC), which received orlistart (5.14 mg/kg b.w.). The animals were sacrificed at end of administration and hepatic total lipids (TL), total phospholipids (TPL), triacylglycerol (TG), total cholesterol (TCHOL) and hepatic 3-hydroxyl-3-methylglutaryl-CoA (HMG-CoA) reductase and paraoxonase studied. The total lipids which increased by 77.78% in OC compared to

NC was decreased by 86.67%, 33.33%, and 23.1% with WE, ET and RES, respectively (p<0.05). A similar reduction trend was obtained for TG (8.0%, 21.7%, and 17.0%) and TCHOL (78.93%, 75.90% and 58.60%) with WE, ET and RES respectively (p < 0.05). Effect on TPL was not so profound. HMG-CoA reductase activity was found to decrease in the 3 study groups relative to OC (p < 0.05) and also showed a strong positive correlation with hepatic cholesterol synthesis. The magnitude of hepatic cholesterol synthesis (94.67% in OC) was decreased (p<0.05). Paraoxonase activity (decreased by 35.42% in OC), was up-regulated by 24.84%, 34.90% and 0.17% with WE, ET and RES, respectively (p<0.05). African walnuts can positively modulate hepatic lipid metabolism in obesity in this order: WE > RES > ET.

Key words: *Tetracarpidium conophorum*, obesity, Hepatic lipids, HMG-CoA reductase and paraoxonase.

CB 059

AFRICAN WALNUTS (*Tetracarpidium conophorum*) NUT CAN ATTENUATE OBESITY-INDUCED TISSUE PEROXIDATION IN WISTAR RATS

Item Justin Atangwho[1]*, Eyong Ubana Eyong[1], Daniel Ejim Uti[2], Grace Ufedo Umoru[2], Godwin Eneji Egbung[1] and Precious A.Udeozor[2]

[1]Department of Biochemistry, College of Medical Sciences, University of Calabar, Calabar, Nigeria
[2]Department of Biochemistry, College of Science, Evangel University Akaeze, Abakaliki, Ebonyi State,
*Correspondence: dratangwho@gmail.com, ijatangwho@unical.edu.ng (+234 805 558 2864)

Abstract

Walnuts are nutritionally and pharmacologically reputed for their antioxidant properties. In accordance, this study evaluated the effect of extracts and fractions of *Tetracarpidium conophorum* (nuts) on oxidative stress indices of MSG-obese rats. The whole ethanol extract (WE) and its liquid-liquid fractions - ethylacetate (ET) and residue (RES) were administered orally to 3 groups of MSG-obese rats (n=6), respectively, for 6 weeks. The normal (NC) and obese (OC) controls received distilled water and the standard control 5.14mg/kg b.w orlistart, a conventional anti-obesity drug. At the end of treatment, the animals were sacrificed and liver, adipose tissue, brain, kidney and heart collected and studied for impact of the treatments on tissue oxidation. Results; showed that the extract and fractions of the nuts caused decreases of body mass index (BMI) and Lee's index (LI) relative to OC. Also, there was decrease in indexes of lipid peroxidation - thiobarbituric acid reactive substance-malondialdehyde (TBARS-MDA), in groups that received the extract and fractions (p<0.05) vs OC. The concentration of glutathione and activities of glutathione peroxidase, superoxide dismutase and glutathione-s-transferase which were decreased in OC vs NC, were increased with *T. conophorun* extract and fractions (p < 0.05). Result of phytochemical evaluation showed the relative abundance of flavonoids, alkaloids, glycosides, tannins and saponins, in the extracts and fractions. In sum, data from this study suggest that *T. conophorum* nuts can attenuate oxidative stress, a pothogenic factor in obesity, hence a probable source of anti-obesigenic natural products/nutraceuticals.

Key words: *Tetracarpidium conophorum*, obesity, tissue peroxidation, oxidative stress and antioxidants.

CB 060
TESTOSTERONE AND BLOOD PRESSURE LEVELS IN PREHYPERTENSIVE MEN IN CALABAR, NIGERIA

A. Agbecha[1] and U. I. Anwana[2*]

[1]Department of Chemical Pathology, Federal Medical Center Makurdi, Nigeria.
[2]Department of Biochemistry, University of Uyo, Nigeria.
*Corresponding author: ubongisaacanwana@uniuyo.edu.ng 07061847976

Abstract

This study evaluated the relationship between testosterone levels and blood pressure (BP) in prehypertensive men. The case-control study comprised of 60 male subjects aged 40 to 49 years evaluated at the University of Calabar teaching hospital from December 2015 to February 2016. The subjects were grouped into 30 prehypertensives (PH) and 30 normotensive (NM) controls. Fasting plasma total testosterone, C-peptide, glucose (FPG), glycated hemoglobin (HbA1c) and homeostasis model assessment of insulin resistance (HOMA-IR) of the PH men were compared with age and adiposity matched NM using the student's *t*-test. Associations of total testosterone with blood pressure (systolic-SBP and diastolic-DBP), testosterone with confounding parameters in PH and NM men were determined using Pearson correlation analysis. Comparison of biochemical parameters of PH (*SBP: 131.53±3.20; DBP: 85.63±9.09*) men with the matched NM controls (*SBP: 116.87±6.03; DBP: 78.63±6.95*), showed that mean testosterone level of PH men (*4.29±1.34*) was significantly (*P=.007*) lower than that of NM (*5.10±0.87*). Results revealed a significant inverse (*r= -.577*; *P=.001*) correlation between testosterone and age in NM, whereas no significant inverse correlation (*r= -.329; P=.076*) was observed between testosterone and age in PH men. A significant inverse correlation was observed between testosterone and SBP (*r= -.423*; *P=.02*); testosterone and DBP (*r=-.377*; *P=.04*) in PH men. Testosterone levels in NM showed no significant (P>*.05*) correlation with blood pressure. No significant (*P>.05*) correlation was found between testosterone and metabolic indices in the study groups. This highly selected population of middle-aged PH men demonstrates decreased endogenous total testosterone levels with increasing blood pressure.

CB 061
EFFECT OF AQUEOUS EXTRACT OF *Helixanthera parasitica* LEAVES ON FASTING BLOOD GLUCOSE AND SERUM LIPID PROFILE OF NORMAL AND ALLOXAN INDUCED DIABETIC RATS

[1]Matazu, Nasiruddeen Umar, [1]Bello, Ibrahim,[2]Dawud, Fatima Alhassan [3]Umar, Aliyu Umar and [1,3*]Umar, Ismaila Alhaji

1. Department of Biochemistry, Umaru Musa Yar'adua University, Katsina;
2. Department of Human Physiology, Ahmadu Bello University; Zaria
3. Department of Biochemistry, Ahmadu Bello University, Zaria
*Corresponding Author: Email Address: iaumar2003@yahoo.co.uk

Abstract

Helixanthera parasitica ("Kauce" in Hausa) is a parasitic plant that grows widely in Northern Nigeria and has been used for generations for the management of diabetes mellitus (DM) by the indigenous population. The present work was designed to test this folkloric anti-diabetic claim. Three groups of rats were made diabetic by intraperitoneal injection of 160mg/Kg alloxan monohydrate. One group of these rats was treated orally with 220mg/Kg of the aqueous extract of the leaves of the plant for 21 days; one other group was given 5mg/Kg Glibenclimide daily for the same duration and the 3rd group was left untreated. All diabetic rats had initial Fasting Blood Glucose (FBG) ranging between 334.54 ± 37.15 and 382.89 ± 59.13 mg/dl and for the untreated diabetic group the FBG remained at this level throughout the duration of the experiment. However, treatment with the extract or the standard drug significantly ($p < 0.05$) lowered the FBG to normoglycemic levels. The extract was also seen to be hypoglycemic in normal rats. Diabetes caused generalized significant ($p < 0.05$) increases in serum Triacylglycerols, LDL-Cholesterol and Total Cholesterol while causing significant ($p < 0.05$) decrease in serum HDL-Cholesterol. The extract treatment significantly prevented these diabetes – induced changes in serum lipid profile of the rats, at much the same magnitude the standard drug did. It was concluded that the aqueous extract of *Helixanthera parasitica* leaves has anti-hyperglycemic and anti-hyperlipidemic activities in alloxan-induced diabetic rats; so may be beneficial to humans in managing DM.

CB 062

EFFECTS OF METHANOLIC LEAVES EXTRACT OF *Carissa edulis* (SIMPLE SPINED NUM-NUM) ON ALLOXAN INDUCED DIABETIC ALBINO RATS

Maimuna Zubairu* and Nehemia Tella

Department of Biochemistry, Faculty of Science, Kaduna State University, Kaduna
Corresponding email: muna 270@yahoo.com

Abstract

The aim of this research was to carry out the effect of methanolic leaves extract of *Carissa edulis* on the glucose level and the body weight of alloxan induced diabetic rats. Diabetes mellitus was induced by the administration of alloxan (150mg/kg body weight); the extract was administered orally at 75mg/kg, 150mg/kg and 300mg/kg body weight and Metformin at 150mg/kg body weight. There was decrease in glucose level (3.98 ± 0.09) with significant ($p \leq 0.05$) difference in the group administered with methanolic leaves extract of *Carissa edulis* at concentration of 300mg/kg compared to 150mg/kg and 75mg/kg b.w rats and negative control groups (4.65 ± 0.91, 8.35 ± 0.13 and 7.23 ± 0.22, respectively) . There was no significant ($p \geq 0.05$) difference in the glucose level between the groups administered with 150mg/kg b.w extract and the normal control group. The extract control group has a significant ($p \leq 0.05$) increase in body weight compared to the other groups. There was no significant ($p \leq 0.05$) difference in the body weight between the groups treated with methanolic leaves extract of *Carissa edulis* compared to the normal control. However, it is concluded that the methanolic leaves extract of *Carissa edulis* has anti-diabetic effect and it reduces the level of glucose in a dose depended manner.

Key words: *Carissa edulis, Metformin, Alloxan, diabetic rats.*

CB 063

COMPARATIVE ANTIHYPERLIPIDEMIC EFFECT OF ETHYL ACETATE AND HEXANE EXTRACT OF *Mentha piperita* LEAVES ON POLOXAMER 407-INDUCED HYPERLIPIDEMIC RATS.

*** Mohammed Hafsat Abdullahi[1] , Muhammad Aliyu[1], Mada Sunusi Bello[1], Muawiya Musa Abarshi[1], Auwalu Garba[1], Adamu Auwal[1], Muhammad Hadiza Usman[1] and Lawan Umma[2]**

[1]Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria.
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Yusuf Maitama Sule University Kano,
*Correspondence author: hafsee1@gmail.com. 08132482008

Abstract

Hyperlipidemia is crucial pathogenic factor for coronary heart disease. The present study investigates and compares the antihyperlipidemic effect of ethyl acetate and hexane extracts of peppermint (*Mentha piperita*) on the lipid profile of hyperlipidemic and normal rats. Ethyl acetate and hexane extracts of peppermint (200mg/kg body weight) was administered to normal rats and poloxamer-407 induced hyperlipidemic rats. Atorvastatin was used as a standard drug (20mg/kg body weight). After 21 days of treatment, the animals were sacrificed and serum was used for the determination of total cholesterol (TC), triacylglycerol (TAG), low density lipoprotein (LDL-c), and high density lipoprotein (HDL-c). The results shows a significant ($p<0.05$) decrease in the TC, LDL-c, TAG, and an increase in HDL-c levels in animals treated with ethyl acetate extracts when compared to hyperlipidemic control. There was no significant ($p>0.05$) difference in the level of TC, LDL-c, TAG in the animals treated with hexane extract when compared to hyperlipidemic control.. Altogether, it can be concluded that ethyl acetate extract shows a higher antihyperlipidemic effect than hexane extract and could be exploited as an antihyperlipidemic agent.

Keywords: Antihyperlipidemic, *Mentha piperita* leaves, poloxamer-407, lipid profile.

CB 064

HISTOPATHOLOGY STUDIES OF *Spondias mombin* AND *Aspilia africana* AQUEOUS EXTRACTS ON RATS WITH MONOSODIUM GLUTAMATE-INDUCED LEIOMYOMA

EZE-STEVEN, Peter Emeka [*1] and UDEDI, Stanley Chidi [2]

[1]Applied Biochemistry Department, Enugu State University of Science and Technology, Agbani, Enugu
[2]Applied Biochemistry Department, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.
*****Author for Correspondence. Email: pejansej@yahoo.co.uk. Telephone: +234-803-740-6569.

Abstract

Uterine leiomyoma is commonly known as fibroid. It is a gynaecological problem that is prevalent among black women of child-bearing age. There is no known anti-fibroid drug and treatment by surgical removal has huge side effects. It is necessary to determine a safer method for its treatment. This work investigated the histopathologic effects of *Spondias mombin* (Hog plum) and *Aspilia africana* (Wild sunflower) leaves on uterus and kidney cells of rats with monosodium glutamate (MSG)-induced fibroid. Twenty-eight rats used for this study were divided into four groups of seven rats and acclimatized. Control I was the normal control without fibroid. Control II, the negative control, had fibroid and remained untreated. Groups III and IV had fibroid on the first 28th days but treated with daily ingestion of 250mg/kg body weight aqueous extracts of hog plum and wild sunflower leaves, respectively, on the second 28th days with continuous MSG ingestion. Histology examinations were performed on the 2nd and 4th weeks, respectively, on two rats from each group. Histology examinations showed degenerated endometrial cells and preserved nephritic tissues after treatment with aqueous extracts of *Spondias mombin* leaves. Also, there was a mild hyperplasia of endometrial cells after treatment with extract of *Aspilia africana* in the 2nd week which differed from that of the 4th week. Monosodium glutamate induces fibroid in rats and has nephrotoxic actions. Aqueous extracts of *Spondias mombin* and *Aspilia africana* alleviated the oxidative powers of MSG on rats' endometrial cells. *Aspilia africana* aqueous extract did not protect the hepatocytes from the oxidizing actions of MSG. These extracts should be further investigated and used as a safe chemotherapy in the treatment of fibroid.

Keywords: Leiomyoma, fibroid, monosodium glutamate (MSG), *Spondias mombin*, *Aspilia africana*, histopathology, uterus, kidney.

CB 065

PLASMA LEVEL OF MARKER ENZYMES IN CORONARY ARTERY DISEASED PATIENTS IN SOUTH WESTERN NIGERIA

***Ibikunle Akinlua, Modupe Fisayo. Asaolu, Ajibade Oluwagbemiga Oyeyemi and Olubunmi Clementinah Ojo**

Biochemistry Department, Ekiti State University, Ado Ekiti.
*ibikunle.akinlua@eksu.edu.ng.

Abstract

Cardiovascular diseases (CVD) is a global health problem presently escalating in developing countries as an important component of non-communicable disease burden. It is a major cause of death with coronary artery or heart disease (CAD or CHD) being the single most important cause of death worldwide. Plasma activity of marker enzymes have been generally used to monitor the onset, progression and the physiological impart of diseases in the body. This study evaluate the plasma level of some marker enzymes namely Alkaline Phosphatase(ALP), Aspartate amino transaminase(AST), Lactate Dehydrogenase(LDH) and Creatine Kinase(CK) in three coronary artery diseased patients attending various teaching hospitals and medical centers in Southwestern Nigeria. The result of this study shows a significant increase in the mean plasma level of AST, LDH and CK in CAD patients when compared with the control subjects. The plasma level of ALP in coronary artery diseased patients was not significantly different when compared with the control subjects This study revealed alterations in the plasma concentrations of most of the marker enzymes considered in these patients when compared with the control subjects and a possible relationship between these enzymes and CAD which could be used to support clinical diagnosis, prognosis and treatment of the disease.

Keywords: Alkaline Phosphatase, Creatine Kinase, Aspartate amino transaminase, Lactate dehydrogenase Coronary artery disease.

CB 066

PATHOLOGICAL EFFECT OF SOME HORMONES ON RATE INFECTED WITH *TRYPANOSOMA BRUCEI BRUCEI.*

Bashir Adamu Kugu*[1], Halima Ali Muhammad[2], Maryam Abdulkadir Kassim[2], Nusaiba Bala Sarkin Gobir[2], Sarah Iwuongo Bala[2] and Zainab Saleh Tamba[3].

[1,2,3]Nigerian Institute for Trypanosomiasis Research (NITR). Kaduna state, Nigeria.
*Corresponding author: Mobile Phone: +2348067029512; E-mail: bashkugu@yahoo.com

Abstract

The Pathological effect of some hormones on rate infected with *trypanosoma brucei brucei* was investigated. The rats where divided randomly into two group (Group one and two), Ten in each group. Group two were infected intraperitoneally with the same load of parasites. At the peak of parasitaemia, the rats where sacrificed by human decapitation and blood sample where collected for serum biochemical analysis. The level of Alanine Aminotransferase (ALT) and Aspartate Aminotransferase (ASP) was investigated using Bergmeyer *et. al*. (1978) using a commercial reagent kit. Alkaline phosphatase (ALP) was investigated using McComb and Bowers (1972) with a commercial reagent kit. The blood serum analysis of ALT, ASP and ALP were significantly higher in the infected group. In conclusion, The presence of *trypanosoma brucei brucei* in the albino rats lead to the increased in the normal level of ALT, AST and ALP which is indicating damage to liver, brain, cardiac muscles, hepatocellular damage and generalized degenerative changes in other tissues and organs in trypanosomiasis.

CB 067

EFFECTS OF AQUEOUS EXTRACT OF *Pistia strateotes* ON FASTING BLOOD GLUCOSE, SERUM LIPID PROFILE AND SOME BIOCHEMICAL INDICES OF ORGAN FUNCTION OF NORMAL AND ALLOXAN-INDUCED DIABETIC ALBINO RATS

[1]Matazu, Nasiruddeen Umar; [1]Lawal, Mudassir; [1]Suleiman, Abdulazeez; [2]Dawud, Fatima Alhassa; [3]Mohammed Aminu and [1,3*]Umar, Ismaila Alhaji

1. Department of Biochemistry, Umaru Musa Yar'adua University, Katsina;
2. Department of Human Physiology, Ahmadu Bello University; Zaria
3. Department of Biochemistry, Ahmadu Bello University, Zaria
*Corresponding Author: Email Address: iaumar2003@yahoo.co.uk

Abstract

The claim by herbalists in Katsina state that extract of *Pistia strateotes* ("Kainuwa" in Hausa) is useful in management of diabetes mellitus ("ciwon siga" in Hausa) was subjected to scientific testing in this work. Rats were intraperitoneally injected with 160mg/Kg alloxan monohydrate to induce diabetes mellitus and orally treated with 200mg/Kg of the extract daily for 21 days. Fasting blood glucose (FBG) levels were monitored and lipid profiles were determined at the end of the 21 days of treatment. Control groups were included in the experiment. The induction of diabetes was successful as the initial FBG for all rats injected with alloxan ranged between 327.29 – 355.89mg/dl. For the duration of the experiment the FBG of the diabetic Control rats remained at the diabetic level but that of the extract treated group gradually dropped to 145.80±37.97mg/dl on the 21st day of experiment; an effect that was significantly similar to that of a standard drug (Glibenclimide) administered to another set of diabetic rats (decreased FBG by 60.61 ± 14.44%). The extract was also observed to significantly lower the FBG of normoglycemic rats. The levels of serum Total Cholesterol, Triacylglycerols and LDL – Cholesterol in the untreated diabetic rats were significantly ($p < 0.05$) higher than those in normal rats, but serum HDL – Cholesterol was lower in untreated diabetic rats than in normal rats. Treatment with 200mg/Kg of extract prevented the diabetes – induced increases and decreases in the lipid parameters mentioned earlier; as did the standard drug. Diabetes-induced liver and kidney damage was also prevented by extract treatment. It was concluded that the extract may be useful in the management of DM in humans as claimed by herbalists

CB 068
EFFECT OF *Hibiscus sabdariffa* CALYX EXTRACT ON CARBON TETRACHLORIDE INDUCED LIVER DAMAGE

Nasir Sirajo Sadi[1], *Usman Sunusi[1] Ramla Muhammad Kamal[2], Salihu Ibrahim[3], Aminu Sahlu Bello[1]

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano, Nigeria.
[2]Department of Pharmacology, College of Medicine and Health Sciences, Federal University, Dutse,
[3]Center for Biotechnology Research, Bayero University, PMB 3011 Kano, Nigeria.
*Corresponding Author: usunusi.bch@buk.edu.ng, +234 8068171800

Abstract
Hibiscus sabdariffa (Malvacea) calyx extract is one of such important herbal hepatoprotective drug; it has a wide range of pharmacological properties, such as antioxidant and free radical scavenging capacity. The present study was carried out to determine the hepatoprotective effects of *Hibiscus sabdariffa* calyx extract on carbon tetrachloride (CCl_4) induced liver damage. Experimental rats were divided into seven groups. Group I: served as the control rats, group II: was administered with CCl_4 only. Group III and IV: were administered with 250 and 500mg/kg extract respectively. Group V: was administered with CCl_4 + standard drug. Group VI and VII: were administered with 250 and 500mg/kg extract only. Serum alanine transaminase (ALT), aspartate transaminase (AST) and alkaline phosphatase (ALP) activities, total cholesterol (TC) and triacylglycerol (TG) were measured. The liver tissues of different groups were examined. Oral administration of the extract following administration of CCl_4 significantly reduced the damage as determined by the activities of serum AST, ALT and ALP. Also treatment with the extract shows a significant decrease in the level of TC and TG. Histopathological analysis of the liver tissues of CCl_4 group shows the presence of severe vacoulation and inflammation. Treatment with the extract promotes healing of the damage in the liver. *Hibiscus sabdariffa* calyx extract was effective in the treatment of liver damage induced by CCl_4.

Key Words: *Hibiscus sabdariffa* calyx extract, carbon tetrachloride, hepatoprotective

CB 069
Cola rostrata FRUIT SOLUTION ENHANCES ORAL MALTOSE, SUCROSE AND STARCH TOLERANCE LEVELS IN RATS

Mayen David Inim[a], Mujaheed Abubakar[a,b*] and Mohammed Auwal Ibrahim[a],

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
[b]Department of Biological Sciences, Sule Lamido University, Kafin Hausa, Nigeria.
*Correspondence to: Telephone: +2348039654644; E mail: mujaheedabubakar88@gmail.com

Abstract
Diabetes mellitus is a group of diseases associated with various metabolic disorders and characterized by chronic hyperglycemia. A therapeutic approach for decreasing postprandial hyperglycemia is retarding glucose absorption by the inhibition of carbohydrates hydrolyzing enzymes. In the present study, the inhibitory effects of *Cola rostrata* on decreasing post-prandial hyperglycemia were investigated in rats. Four groups of Wistar rat model were administered with *C. rostrata* fruit solution (1% and 2% w/v), water and 0.02%w/v acarbose *ad libitum* and the effects of the *C. rostrata* fruit solution on oral maltose, sucrose and starch tolerance tests were monitored. Rats supplied with a lower dose (1% w/v) of *C. rostrata* significantly ($p<0.05$) exhibited a more reduced pattern of blood glucose level after the maltose, sucrose and starch loading compared to the high dose (2% w/v) which was supported by the computed Area Under the Curve data. Furthermore, the fruit solution decreased the time for the maximum blood glucose levels to be attained after the ingestions of the sugars. These results suggest that *C. rostrata* with a substantial blood glucose lowering effect could be physiologically useful for the treatment of diabetes.

Keywords: Hyperglycemia, *Cola rostrata*, Sugars, Rats

CB 069

ACCESSING THE POTENTIAL OF ANTIMALARIAL DIHYDROARTEMISININ TO KEY HORMONAL SIGNALS CRITICAL FOR THE GROWTH OF BREAST CANCER

Malami Ibrahim[1]*, Alhassan Muhammad Alhassan[2], Aliyu Muhammad[3], Ibrahim Babangida Abubakar[4]

[1] Department of Pharmacognosy and Ethnopharmacy, Usmanu Danfodiyo University, Sokoto
[2] Department of Pharmaceutical and Medicinal Chemistry, Usmanu Danfodiyo University, Sokoto,
[3] Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria;
[4] Department of Biochemistry, Kebbi State University of Science and Technology, Aliero
*Corresponding author: ibrahim.malami@udusok.edu.ng

Abstract

Breast cancer is widely the most common cancer among women population and second most common cancer worldwide, whilst in Sub-Saharan African countries, it's the most frequently diagnosed cancer and the leading female malignancy in Nigeria. Most of the anticancer drugs currently in clinical applications for the treatment of breast cancer are either accompanied with toxic side effects or confer resistance to patients taking them. Dihydroartemisinin (DHA) is an antimalarial drug synthetically derived from natural artemisinin. It's among the first-line antimalarial drugs on the World Health organization's (WHO) recommendations. DHA in combination with piperaquine is currently in clinical application for the treatment of malarial infection. Previous studies have demonstrated that DHA possesses a remarkable and selective anticancer activity with minimal or no cytotoxic effect to the normal cells. Although, findings from the previous studies confirmed the mechanism underlying the antitumor effect of DHA in causing cancer cell death however, there has not been any report elucidating the role of DHA to key hormonal signals essential for the growth and development of breast cancer. In the present study, we employed molecular docking simulation techniques to access the potential of DHA useful for breast cancer therapy. Its potential drug targets with a comprehensive target pharmacophore were identified from PharmMapper database and validated by molecular docking simulation. The present findings predicted a remarkable antitumor properties of DHA through molecular binding into the active sites of the target proteins, providing a lead to safe and effective anticancer agent useful for breast cancer therapy.

CB 070

ANTIOXIDANT ACTIVITY OF BIO-ENHANCED METHYL GALLATE AND PALMATINE COMBINATION AGAINST OXIDATIVE STRESS IN THE LIVER AND ERYTHROCYTE OF *Plasmodium berghei* INFECTED MICE

Adegunloye, A.P. and Adebayo, J.O*

Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria
*Corresponding author. E-mail: topebayo2002@yahoo.com; Phone: +2347035487636

Abstract

Oxidative stress, marked by increased lipid peroxidation and reduced levels of antioxidants, is a common pathophysiological feature of malaria. Methyl gallate and palmatine are compounds with known *in vitro* activities against drug-resistant strains of *P. falciparum*. However, these compounds have not been evaluated for their abilities to ameliorate the oxidative stress associated with malaria. Thus, the response of antioxidant defense system of *Plasmodium berghei* NK65-infected mice to methyl gallate and palmatine combination (3:2 ratio; MGPAL3:2) in the presence of a bio-enhancer was investigated. Seventy mice were randomly assigned into seven groups (A - G) of ten mice each. Group A (control) mice were uninfected while mice in groups B, C, D, E, F and G were inoculated with *P. berghei* NK65. Mice in groups A and B were orally administered 5% DMSO while group C mice were administered 10

mg/kg body weight of chloroquine. Mice in groups D, E, F and G were administered 6.25, 12.5, 25 and 50 mg/kg body weight of MGPAL3:2 respectively with 20 mg/kg body weight of piperine (bio-enhancer). Administration started 24 h post-inoculation and was done once daily for three days. Antioxidant parameters of erythrocyte and liver were evaluated on days 4 and 8 post-inoculation. Results revealed that malondialdehyde concentrations in the liver and erythrocyte were significantly increased ($p<0.05$) in untreated infected and chloroquine-treated mice compared to both uninfected control and bio-enhanced MGPAL3:2-treated groups. Activities of superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase and glutathione-S-transferase and concentration of reduced glutathione in the liver and erythrocyte were significantly reduced ($p<0.05$) in untreated infected and chloroquine-treated mice compared to mice treated with bio-enhanced MGPAL3:2, except at the lowest dose. The results suggest that administration of bio-enhanced MGPAL3:2 may stimulate antioxidant defense of biological systems against oxidative stress associated with malaria.

Keywords: Methyl gallate, Palmatine, Malaria, Antioxidant, Oxidative stress, Bio-enhancer

CB 071
HISTOPATHOLOGICAL EFFECT OF PARTIALLY PURIFIED *Heliotropium indicum* EXTRACT IN ALBINO RATS

Yemisi D. Adeoye[1,2*], Tunbosun A. Oladipo[1], Omolola V. Awoyemi[1] and Olufunso O. Olorunsogo[2]

[1]Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Nigeria.
[2]Laboratories for Biomembrane Research and Biotechnology, Department of Biochemistry, College of Medicine, University of Ibadan, Nigeria.
Corresponding Author:yemidejie@gmail.com, 07033051680

Abstract

Medicinal plants contain inherent active therapeutic ingredients used to cure disease or relieve pain. However, the effects these plants have on tissues are not comprehensively considered. One of such plant is *Heliotropium indicum,* It is widely used as antipyretics and also for wound healing due to active properties it contained. This present study therefore assessed the histopathological effect of this plant in albino rats. Twenty-four albino rats were divided into four study groups; A(Control), B(100mg/kg b/w), C(200mg/kg b/w) and D(400mg/kg b/w). The administration was carried out through intraperitoneal injection for 10days. Liver, kidney and heart samples were harvested and lesions were studied. The results showed that the extract of *Heliotropium indicum* caused varying pathologies of the liver in a dose-dependent manner, the lesions ranges from foci of hepatocellular swelling and necrosis in group B to mild perivascular infiltrates around the central venule and diffuse hepatocellular degeneration and coagulation necrosis in group C and D respectively. There were no observable lesions in the nephrons of the kidney in all the groups while the heart myofibres appeared normal except myofibre atrophy, degeneration and satelitosis observed in animals in group C. These findings showed that the plant extract is relatively safe at low doses while its tendency to elicit pathological condition especially in the liver increases as the dose increases. Kidney and heart tissues were to largely unaffected by the extract, but lesions could ensue in the myofibres if given at higher dose

Keywords: *Medicinal Plants, Histopathology, Liver, Kidney, Heart*

CB 072

BODY MASS INDEX AND SERUM TESTOSTERONE LEVEL IN INFERTILE MALES OF REPRODUCTIVE AGE ATTENDING AMINUKANO TEACHING HOSPITAL, KANO

Ahmad Isyaku Adamu, Muhammad Yelwa Gwarzo, Muhammad Ahmad Bello and Mubarak Sale Bagwai

Department of Medical Laboratory Science, College of Health Sciences BUK
Corresponding Author/Lead Author: agalawa127@yahoo.com

Abstract:

While little was known on the relationship between BMI and Sex Hormones level particularly serum testosterone level. This study aimed at determining the possible relationship between BMI and serum testosterone level in infertile males of reproductive age attending Aminu Kano Teaching Hospital (AKTH). A total of Fifty nine (59) infertile males and thirty (30) apparently healthy fertile males were recruited as test and control group respectively. Data obtained were analysed using Statistical Package for Social Science (SPSS) version 20.0. A P-value ≤0.05 was considered statistically significant. The mean ± standard deviation of the serum testosterone level in the test and control group were 2.16 ± 0.70 ng/ml and 6.08 ± 1.21 ng/ml (p= 0.001), respectively. The mean ± standard deviation for BMI in the test and control group were 30.54 ± 5.89 and 21. 85 ± 3.85 (p = 0.002), respectively. This findings indicated extreme statistical significant difference (p < 0.0001) between the serum testosterone level as well as the BMI in the test and control group. BMI and serum testosterone level in the test group were found to have negative correlation (r = - 0.020). However, BMI and age showed positive correlation (r = +0.250), whereas age and testosterone level showed a negative correlation (r = - 0.024).There is a significant decrease in serum testosterone level in the test group compared with the control group, and BMI increases in the test group compared to the control group.

Keywords: BMI, Male Infertility, Serum Testosterone.

CB 073

PREVALENCE AND SEVERITY OF HYPOGLYCAEMIA AND LACTIC ACIDOSIS IN UNDER-FIVE CHILDREN DIAGNOSED WITH Plasmodium falciparum MALARIA

***Anunobi, Oluchukwu Ogechukwu [1,2] and Nwanguma, Bennett[1]**

[1]Department of Biochemistry, Faculty of Biological Sciences, University of Nigeria Nsukka, Enugu state.
[2]Department of Biochemistry, Faculty of Science and Technology, Bingham University Karu, Nasarawa
olychukwu@gmail.com , 07034439524

Abstract

Malaria is a public health threat to children in Africa and its main victims are children under five years of age. Some of mortality and severe outcome of malaria are caused by metabolic complications like hypoglycaemia and lactic acidosis. 110 ≤5-year-old children visiting a paediatric hospital in Nsukka, Enugu State between July and October, 2013 were examined. Only children (43) with positive clinical and/or laboratory diagnosis of *Plasmodium falciparum* malaria were included in the study. After arrival of the patient and with direction from attending physician, venous blood was drawn for rapid malaria parasite test and to determine the blood glucose and lactate concentration using diagnostic meter. Subjects were grouped thus; Group 1 were patients diagnosed with malaria alone and group 2 were patients diagnosed with malaria co-morbidity with another disease state especially typhoid fever. Prevalence of profound hypoglycaemia (BGC of ≤2.5mmol/L) in group 1 was 12%, and 17.65% in group 2, moderate hypoglycaemia (BGC 2.5-4.4 mmol/L) in group 1 was 69% and 64.7% in group 2. Prevalence of lactic acidosis (BLC > 5mmol/L) was 11.5% in group 1 and 18% in group 2 and hyperlactataemia (BLC 2-5mmol/L) was 73.1% in group 1 and 53% in group 2. Mean glucose level (mmol/l) for profound hypoglycaemia was 2.033±0.351 in group 1 and 1.90±0.01 in group 2. Lactic acidosis (mmol/l) was 5.633±0.577 in group 1 and 3.921±0.901 in group 2. Data on prevalence of hypoglycaemia and lactic acidosis will assist in alleviating the outcome of metabolic complications in paediatric malaria.

CB 074
AMELIORATION OF POTASSSIUM DICHROMATE - INDUCED CARDIO-RENAL DYSFUNCTION BY LUTEOLIN IN WISTAR RATS

Omolola V. AWOYOMI [1*]; Yemisi D. ADEOYE[1], Ademola A. OYAGBEMI[2], Temitayo AJIBADE[2] and Blesssing S. OGUNPOLU[2] ;

[1]Federal College of Animal Health and Production Technology, Moor Plantation, Ibadan, Oyo State.
[2]Department of Veterinary Physiology and Biochemistry, University of Ibadan, Oyo State.
[*]**Corresponding author: Email:** omolola.v.awoyomi@fcahptib.edu.ng**; Phone:** 08064584931

Abstract

Potassium dichromate (PD) is widely used as laboratory and industrial chemical agent and has been noted to be acutely and chronically harmful. It will therefore be of interest to sort out mechanism that can eradicate or probably ameliorate the adverse effect caused by this compound. Luteolin 3', 4', 5, 7-tetrahydroxyflavone, belongs to a group of naturally occurring compound called flavonoids. This study evaluated ameliorative effects of luteolin (LT) on PD-induced cardio-renal dysfunction. Forty Wistar rats were randomly placed into four groups of ten rats per group. Group A: control (received clean tap water); Group B: PD only (30mg/kg body weight); Group C: PD + LT (100mg/kg body weight); Group D: PD + LT (200mg/kg body weight). Blood pressure (BP) profile; markers of oxidative stress and antioxidant defense mechanism status were assessed. Exposure to PD caused significant ($p < 0.05$) increases in the BP parameters, malondialdehyde (MDA), hydrogen peroxide (H_2O_2) generation, advanced oxidation protein products (AOPP), myeloperoxidase (MPO) activity, protein carbonyl but with decreases in the nitric oxide, non-protein thiol, protein thiol levels as well as significant ($p < 0.05$) decrease in glutathione (GSH) level, glutathione-S-transferase(GST) and glutathione peroxidase(GPx) activities accompanied by increase in serum urea level with significant decrease in albumin level. Histopathology study also revealed that PD caused severe disseminated tubular necrosis. However, pretreatment with LT showed protective properties in the cardiac and renal tissues of rats exposed to PD. Conclusively, LT showed ameliorative effect on cardio-renal dysfunction by its antioxidant properties in rats exposed to PD.

CB 075
EVALUATION OF EFFECT OF *Cussonia bateri* AND *Afrostyrax lepidophyllus* OIL ON SOME SERUM MINERALS AND OXIDATIVE STRESS MARKERS IN RATS

[1]Ogugofor, Martins Obinna and [1*]Njoku, Obioma U.

[1]Department of Biochemistry, University of Nigeria Nsukka
*Correspondence: obinna.ogugofor.pg76810@unn.edu.ng

Abstract

The study was designed to evaluate the physicochemical properties of *Cussonia bateri* and *Afrostyrax lepidophylus* seeds oil, and the influence of the oil on some serum minerals (Ca^{2+}, Mg^{2+} and Zn^{2+}), vitamin E, catalase, glutathione peroxidase and malondialdehyde. Fifteen (15) wistar albino rats were divided into 3 different groups of 5 rats each. Group 1 received distilled water which served as the control while groups 2 and 3 received 6 ml/kg b.w *Cussonia bateri* and *Afrostyrax lepidophylus* seeds oil respectively. The administration of the oil lasted for 14 days after which blood samples were collected for analysis. The physicochemical properties of *Cussonia bateri* were acid value (2.67±0.40 mg KOH/g), iodine value (21.41±0.73 g I_2/100g), saponification value (128.67±2.52 mg KOH/g) and peroxide value (3.40±0.60 mq/kg) while the physicochemical properties of *Afrostyrax lepidophyllus* were acid value (4.83±0.53 mg KOH/g), iodine value (16.06±0.36 g I_2/100g), saponification value (133.67±2.51 mg KOH/g) and peroxide value (4.33±1.52 meq/kg). In addition, there were non-significant ($p>0.05$) decreases in $Zn^{2+}$and Mg^{2+} across the test groups. There was a significant ($p<0.05$) decrease in Ca^{2+} in rats that received *Afrostyrax lepidophyllus*, and a non-significant ($p>0.05$) decrease in rats that received *Cussonia bateri*. There were non-significant ($p>0.05$) increases in catalase, glutathione peroxidase across the test groups while vitamin E was significantly ($p<0.05$) higher in rats that received *Cussonia bateri* compared to control and group that received *Afrostyrax lepidophyllus* respectively. Malondialdehyde showed a non-significant ($p>0.05$) increase across the test groups. This study showed that *Cussonia bateri and Afrostyrax lepidophyllus* oil reduced the absorption of the selected minerals, and also, may not serve as good sources of antioxidant.

Key words: *Cussonia bateri* seed oil, *Afrostyrax lepidophylus* seed oil, physicochemical properties, serum minerals, antioxidants

CB 076

ORAL SUPPLEMENTATION OF VIRGIN COCONUT OIL IMPROVES LIPID PROFILE, HEPATIC AND RENAL OXIDATIVE STRESS MARKERS IN DIABETIC WISTAR RATS.

***[1]Chima .A. Egedigwe-Ekeleme, [1]Chinedum .O. Eleazu, [2]Ademola .C. Famurewa, [3]Gabriel .G. Akunna [1] Ebuka .E. David [4]Chimaraoke Onyeabo, [4]Ngozi .K. Achi, [5]Chinedum .U. Emelike, [1]Charles Ayogu, [1]Favour .A. Chukwu, [1]Boniface .E. Nwofe, [1]Precious .A. Amakor, [1]Wisdom .O. Akano, [1]Queendolyn Etimjoe, [1]Henry Nweze**

[1]Department of Chemistry/Biochemistry and Molecular Biology. Faculty of Science, Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State

[2]Department of Medical Biochemistry, Faculty of Basic Medical Sciences, Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State.

[3]Department of Anatomy, Faculty of Basic Medical Sciences, Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State.

[4]Department of Biochemistry, College of Natural Sciences, Michael Okpara University of Agriculture, Umudike, Abia State.

[5] Department of Physiology, Faculty of Basic Medical Sciences, College of Medicine Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State.

Corresponding Email: chimaeges@gmail.com

Abstract

The effect of virgin coconut oil (VCO) on markers of hepatic and renal dysfunction in alloxan induced diabetic rats was studied. Twenty-four male rats were divided into four groups: Group I (normal control) received normal rat feeds; Group 2 (VCO control) was administered with VCO (5ml/kg body weight) orally, Group 3 (diabetic control) received normal feeds chows while Group 4 (diabetic treated) rats received VCO (5ml/kg body weight) orally. Groups 3 and 4 rats were made diabetic by intraperitoneal injection of 150 mg/kg of alloxan monohydrate. After 72 hours of alloxan injection, the fasting blood glucose was determined to confirm diabetes mellitus (DM). After 21 days of VCO administration, the fasting blood glucose levels of the animals were determined following which they were euthanized and their blood samples were collected for biochemical analysis. The results of the study showed that there were no significant differences ($P>0.05$) in the final blood glucose, albumin, alkaline phosphatase (ALP), aspartate amino transaminase (AST), alanine amino transaminase (ALT), urea, creatinine and uric acid levels of group 2 rats compared with group 1, significant ($P<0.05$) increases in the final blood glucose, ALP, AST, ALT, creatinine, and uric acid levels of group 3 rats compared with group 1; significant decrease in the albumin levels of group 3 rats compared with group 1; no significant differences in the urea levels of group 3 rats compared with group 1. There were significant ($P<0.05$) decreases in the final blood glucose, ALP, AST, ALT, urea, creatinine levels of group 4 rats compared with group 3; significant increases in the albumin levels of group 4 rats compared with group 3 but significant decreases in the uric acid levels of group 4 rats compared with group 3. The study revealed the potentials of VCO in arresting hepatic and renal complications arising from DM.

Keywords: Virgin coconut oil, Lipid profile, Blood glucose, Antioxidant, Alloxan

CB 077

EFFECT OF METHANOL EXTRACT OF *Psidium guajava* (GUAVA) LEAVES ON FERTILITY OF MALE WISTAR RATS.

***Ephraim Akuaden Audu, Osu Dorcas Kure, Isa Mohammed Engha and Abdullahi Abubakar**
National Research Institute for Chemical Technology Basawa Zaria Nigeria.
Physiology Department, Bingham University. Karu, Nasarawa State.
Department of Environmental Technology, Coventry University, United Kindom
Corresponding Author: ephraim.audu@yahoo.com 07061817129

Abstract
Male infertility is becoming a ubiquitous issue all over the world due to environmental, nutritional, behavioral, and physiological factors. The aim of this study therefore was to determine the effect of methanol extract of *Psidium guajava* (guava) leaves on fertility of male wistar rats. Twenty four adult male rats weighing between 160g and 200g were used for this study. The animals were divided randomly into four groups of six rats each. Group 1 served as control, Group 2 and Group 3 served as low dose and high dose groups which received 200mg/kg and 400mg/kg of methanol extract of *Psidium guajava* leaves respectively. Group 4 served as vitamin E group which received 200mg/kg of vitamin E daily for 56days. On the 57th day, the rats were sacrificed. Phytochemical analysis of methanol extract of *Psidium guajava* shows no presence of Alkaloids, Tannins, Saponins and Anthraquinones with little trace of Terpenes, Sterols, Carotenoids and presence of Glycosides, Flavonoids, Phenols and Quercetin. The activities of Lactate dehydrogenase enzyme increased in group 2, 3 and 4 (992±31.69, 715.3±50.92 and 1186.6±44.89 respectively). The semen analysis carried out showed that sperm concentration increased in all treated groups (82.67±3.51, 82.67±3.51, 82.67±3.51) group 2, 3 and 4 respectively when compared with control. Sperm motility decreased in low and high dose groups while a slight increase was observed in the vitamin E group. The results shows that treatment of rats with methanol extract of *Psidium guajava* leaves can improve fertility.

Key words;, epididymis, lactate dehydrogenase, Seminal vesicle, prostate gland Seminiferous tubules. Spermatogonia spermatocytes

CB 078

SIALYLTRANSFERASE ACTIVITY IS EXACERBATED WHILE SIALIDASE ACTIVITY IS DIMINISHED IN SOME ORGANS OF TYPE 2 DIABETIC ANIMALS: VITAL IMPLICATION FOR THE PATHOGENESIS OF TYPE 2 DIABETIC COMPLICATIONS

Osas Graham Erhabor[a], Ismaila A. Umar[a] and Mohammed Auwal Ibrahim[a*],
[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
***Correspondence** +2347031104932; E-mail: mauwalibrahim@gmail.com or maibrahim@abu.edu.ng

Abstract
Type 2 diabetes is associated with modulations of sialic acid levels in the blood and some T2D-relevant organs but the involvement of sialidase and sialyltransferase has not been verified. In the present study, sialidase and sialyltransferase activities were monitored in the serum and organs of T2D animals over a period of 12 weeks at 4 week intervals. At the early phase of T2D, sialidase activity was found to reduce, though insignificantly ($P > 0.05$), in the serum, liver and heart but was increased in the kidney, skeletal muscle and pancreas, while sialyltransferase activity was increased in the serum, and other organs except pancreas. Meanwhile, at the later phase, sialidase activity also decreased in the serum and other organs except the pancreas where a significant ($P < 0.05$) increase was observed while sialyltransferase activity increased in the serum and all other organs. A correlation analysis between sialidase activity in the serum and the corresponding activity in the individual organs showed a significant ($P < 0.05$) negative correlation in the kidney and heart only, while that of sialyltransferase activity was significant ($P < 0.05$) in the kidney only. During T2D progression, sialic acid hydrolysis via sialidase activity seems to be reduced in some organs except in the pancreas, while sialic acid transfer via sialyltransferase activity is enhanced. Also, kidney might be an important contributor to the sialidase and sialyltransferase activities in the serum during T2D.

CB 079
EVALUATION OF NITRIC OXIDE SYNTHASE ACTIVITY, LIVER AND RENAL FUNCTIONS IN FRUCTOSE-INDUCED METABOLIC SYNDROME

[*]Dallatu MK[1], Bunza JM[1], Suleiman N[2], Suleiman H[1] and Rumah SS[1]
[1]Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, UDU, Sokoto
[2]Department of Biochemistry, Faculty of Veterinary Medicine, UDU, Sokoto
*Corresponding Author: muhammad.dallatu@udusok.edu.ng, +2348065457656

Abstract
Metabolic Syndrome (MS) encompasses cluster of risk factors for cardiovascular diseases which include obesity, dyslipidaemia, obesity, hypertension, and hyperglycaemia. Increased fructose consumption is closely related to the incidence of obesity which may be due to fructose not being able to stimulate the secretion of insulin. Twenty (20) Albino Westar rats, weighing 100-120g, divided into control (10 rats) and fructose drinking water (FDW) (10 rats) groups were used in the study. MS was induced by consumption of 10% FDW for 8 weeks. Body Mass Index (BMI), Fasting Blood Glucose (FBG), Lipid Profile, Liver and Renal functions were assessed by standard techniques. The mean BMI, FBG, Total Cholesterol, LDL-cholesterol, VLDL-cholesterol, Triglycerides and Atherogenic Index in FDW group are significantly higher ($p<0.05$) than corresponding values in the controls while HDL-cholesterol though the difference is not significant ($p>0.05$) values are slightly lower in FDW group compared to controls. The mean plasma Urea and Creatinine Values were higher ($p<0.05$) in FDW group than Controls. Mean plasma Total Protein and Albumin levels were lower ($p<0.05$) in FDW group than in controls. The mean plasma activities of Aspartate Transaminase and Alanine Transaminase were higher ($p<0.05$) in FDW group than Controls while Nitric Oxide Synthase (NOS) activity was lower ($p<0.05$) in FDW group than controls. Administration of 10% FDW produced biochemical changes characteristics of MS which affect NOS activity, liver and renal functions.

Keywords: Metabolic syndrome, fructose, kidney, livers

CB 080
CEFTRIAXONE: ASSESSMENT OF ITS USE BY VETERINARIANS; STUDY OF ITS EFFECT ON THE PHYSIOLOGY AND HAEMATOLOGY OF DOGS.

[1]Eze U. U, [2]Eke I. G, [2]Anaga A. O,[2] Abah E, [3]Udeani I, [1]Anene B. M.
[1]Department of Veterinary Medicine, Faculty of Veterinary Medicine, University of Nigeria.
[2]Dept. of Veterinary Physiology and Pharmacology, Faculty of Veterinary Medicine, University of Nigeria.
[3]Veterinary Teaching Hospital, University of Nigeria, Nsukka.
*Corresponding Author: Ukamaka Uchenna Eze

Abstract
This study assessed the use of ceftriaxone in dogs and its effect on the heamatologic and physiologic parameters following 21 days Intramuscular administration. Fifty copies of questionnaire were distributed to Veterinarians in Enugu State, Nigeria. Sixteen (16) dogs were randomly selected into four group designated A-D and were given ceftriaxone intramuscularly for 21 days at the dose of 12.5mg/kg, 25mg/kg, 50mg/kg for groups A, B, C, respectively, while the control- group D received distilled water. Samples were obtained on days 7, 14 and 21 and one week (day 28) post-administration. Thirty (62.5%) respondents use ceftriaxone to treat canine bacterial cases, of which 22 (73.3%) use it to prevent secondary bacterial infection and 27(90%) do not conduct sensitivity tests before using it. Following ceftriaxone administration, significant decrease ($p < 0.05$) in red blood cell count (RBC), haemoglobin concentration (Hb) and Packed cell volume (PCV) was observed in group C on days 7 and 14, while on day 21, these parameters in group D were significantly higher ($p < 0.05$) than the treated groups. The mean pulse and heart rate of dogs in group C was significantly higher ($p < 0.05$) than those of group A, B and D. It can be concluded that some Veterinarians in Enugu State administer ceftriaxone without necessary precaution. Ceftriaxone at dose of 12.5-25mg/kg was shown to be safe in dogs as most of the adverse effects reversed after withdrawal of the drug; however, at 50mg/kg it caused irreversible adverse effects including anaemia and tachycardia.

Keywords: Ceftriaxone, dogs, haematology, physiological parameters.

CB 081
NEUTRALISATION AND ANTIVENOM POTENTIAL OF ELLAGIC ACID AGAINST *Naja nigricollis* VENOM

[*1]Hadiza Lawal Abdullahi, [2]Angela Aliyu., [3]Raphael Aminu, [4]Saadatu Auwal Hamza, and [3]Mohammed Auwal Ibrahim.

[1]Department of Medical Laboratory Science, Bayero University, Kano, Nigeria
[2]Department of Biochemistry, Kano State University of Science and Technology, Wudil, Kano, Nigeria
[3]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[4]Department of Chemistry, Ahmadu Bello University, Zaria, Nigeria
Correspondence: Tel: +234-803-705-2469. Email: hadeezalawal@gmail.com, hlabdullahi.mls@buk.edu.ng

Abstract

Despite the widespread use and acceptance of conventional antivenoms as the only specific antidote for snakebite envenomation, several bioactive compounds also have remarkable potential as antiophidians. In this study, the effect of ellagic acid on recalcification time of bovine, caprine, ovine and camelid plasma treated with *Naja nigricollis* venom was investigated. The *N. nigricollis* venom was found to increase the plasma recalcification time of all the plasma samples. However, ellagic acid at 1, 10 and 100 µg/ml reduced the venom-associated increase in the plasma recalcification time in a dose dependent pattern except for camelid plasma where the effect of the extract was non-dose dependent. This study showed that ellagic acid could serve as a prototype for an antidote aimed to reverse the increase in plasma recalcification time posed by *N. Nigricollis* venom.

Key words: *Naja nigricollis*, Ellagic acid, *Plasma* recalcification time.

CB 082
THE EFFECT OF A KAOLIN−INCLUDED DIET ON OXIDATIVE STRESS MARKERS IN PREGNANT MICE

*** Ijeoma Okolo. Olumuyiwa Adeyemi Owolabi., and Umar Ibrahim**

Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University, Zaria, Nigeria.
*Corresponding Author: bestijeoma62@gmail.com, GSM +2348081724583

Abstract

The effect of a kaolin−included diet on some antioxidant biomarkers of pregnant mice was investigated. Twenty (20) female mice were randomly grouped into 4 of five mice each. Three male mice were introduced to each group for mating purpose. Salted kaolin was purchased from Samaru market, Zaria, crushed and sieved. Mice in group 1 were fed on normal grower feed while those in 2, 3, and 4 were fed on grower feed containing 5%, 10% and 15% kaolin respectively. Pregnant mice were isolated separately until parturition. Changes in weight were assessed weekly using a digital weighing balance. Mice were sacrificed after parturition and livers were harvested. The chemical constituents of the salted kaolin, and the concentration of TBARS and GSH in liver homogenate were determined using standard protocols. The results showed a significant ($p<0.05$) increase in weights from day 0 to 14 for all groups, and a significant ($p<0.05$) decrease in postnatal weight. The concentration of TBARS significantly ($p<0.05$) increased for mice in groups 2, 3, and 4 when compared to group 1. However, the increase were not statistically different ($p>0.05$). Also, mice in groups 2, 3, and 4 had an increased GSH concentration when compared to group 1, although the increase were not significant ($p>0.05$). XRF analysis of kaolin revealed oxides as the dominant compounds. Silicon (65.44± 0.09), Aluminum (28.34±0.12), Titanium (2.10±0.04) and Iron (1.60±0.03) oxides showed higher concentrations (g/100g). This study has shown that kaolin consumption in pregnancy can cause an increase in antioxidant biomarkers.

CB 083
THE IRON DEFICIENCY INDUCING POTENTIAL OF TWO LOCALLY FORMULATED DIET ON FEMALE WISTAR RATS

*** Ijeoma Okolo.,[1] Olumuyiwa Adeyemi Owolabi.,[1] and Muhammad Suleiman Shehu[1]**

[1]Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University, Zaria, Nigeria.
*Corresponding Author: bestijeoma62@gmail.com, GSM +2348081724583

Abstract

This study aimed at investigating the iron deficiency inducing potential of two locally formulated diet on female wistar rats. The diets; locust-bean based, and egg-white based feed were prepared using low iron dense ingredients. Eighteen (18) rats were grouped into three of six rats each. Group 1 (control rats on normal rat chow); Group 2 (rats on locust-bean based feed), Group 3 (rats on egg-white based feed), feeding was done for 9 weeks. All analysis (Minerals, anti-nutrients, changes in weights, Fe content of some organs and serum, and haematological parameters) were determined using standard methods. The results showed higher Fe, Zn, and Cu content in the egg-white based feed. Anti-nutrients analysis revealed more phytate in the locust-bean based feed, while the egg-white based feed had higher oxalate content. The assessment of the weight changes showed significant ($p<0.05$) decrease for rats in group 2, and a significant ($p<0.05$) increase for those in group 3 when compared group 1. The red cell indices showed no significant ($p>0.05$) difference between groups and between week 1 and 9. WBC count was elevated significantly ($p<0.05$) in group 2 compared to the control. Group 2 rats had significant ($p<0.05$) increase in relative organ weight ratios and decreased organ iron content which was not significant ($p>0.05$). Significant decrease ($p<0.05$) was implicated in the serum iron levels of group 2 rats compared to group 3 and control group. Therefore, this study has demonstrated the positive potential of the locust-bean based feed to induction of iron deficiency.

CB 084
RENAL DYSFUNCTION IN NIGERIAN BENIGN PROSTATIC HYPERPLASIA PATIENTS

[1]Ndefo, Joseph Chinedum, [2]Ezeanyika Lawrance U.S. and [2]Okagu, Innocent Uzochukwu

[1]Department of Science Laboratory Technology, University of Nigeria, Nsukka, Enugu State, Nigeria.
[2]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
* Correspondence **E-mail**: innocent.okagu@unn.edu.ng **Tel:** +2348034627630

Abstract

Benign prostate hyperplasia (BPH), a condition with high prevalence and excruciating symptoms, needs a detailed understanding of the pathological mechanisms, possible disparity in risk based on race/region, biomarkers and co-morbidities. This study therefore, was designed to evaluate kidney status of men with benign prostatic hyperplasia. Concentrations of prostatic surface antigen (PSA) and, serum creatinine, urea and uric acid were determined while activities of total and prostatic acid phosphatase (TAP and PAP) of 200 men comprising 100 BPH subjects and 100 normal subjects were assayed using classical methods. The activities of TAP and PAP of subjects in group 2 were significantly ($p < 0.05$) higher than control subjects. The creatinine, urea and uric acid concentrations of group 2 subjects were significantly ($p < 0.05$) higher than that of the control subjects. There were significant positive correlation between PSA in BPH patients and the following: PAP, TAP, urea, creatinine and uric acid with correlation coefficients of $r = 0.859$, $r = 0.877$, $r = 0.820$, $r = 0.843$ and $r = 0.819$ respectively. Also, there were significant positive correlation among PAP and the following: PSA, TAP, urea, creatinine and uric acid with correlation coefficients of $r = 0.859$, $r = 0.864$, $r = 0.813$, $r = 0.830$ and $r = 0.780$ respectively. From the results of the present study, it is evident that BPH is associated with kidney dysfunction and that our result validates findings from other parts of the world.

Keywords: Benign prostatic hyperplasia, prostatic surface antigen, prostatic acid phosphatase, renal dysfunction

CB 085
COMPARISON OF LIPID PEROXIDATION AND LIPID PROFILE AMONG APPARENTLY HEALTHY ABDOMINAL AND GENERALISED OBESE SUBJECTS IN SOKOTO

Najib, H.H.[1]*, Wali, U.[2] and Mainasara, A.S.[3]

[1]DNA Labs Kaduna
[2]Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, UDUS
[3]Department of Chemical Pathology, College of Health Sciences, UDUS
Correspondance: janizahar@yahoo.com 0803 373 6913,

Abstract

Globesity is a term that describes the escalating global epidemic of overweight and obesity which appears to be catching up with Sub-Saharan Africa. Obesity has been defined as having a Body Mass Index of equal or greater than thirty (BMI ≥30Kg/m²). Research has shown increasing morbidity and mortality in obese subjects based on the findings. In the current study lipid profile, lipid peroxidation and anthropometric parameters were determined in sixty apparently healthy non-obese subjects as control, abdominal and generalized obese subjects of comparable age and social status. The results showed significant (P<0.05) high levels in MDA, LDL-C, AIX, BMI and hip circumference and lower HDL-C and insignificant (P>0.05) levels in TC and VLDL-C in generalized obesity compared to abdominal obesity. The result further revealed positive correlation of BMI and MDA, TC, TG, LDL-C, VLDL-C and AIX and negatively correlated with HDL-C. Conclusively, results show increased risk of cardiovascular and oxidative stress in generalized obesity compared to abdominal obesity.

Key words; Globesity, lipid profile and lipid peroxidation

CB 086
MECHANISMS OF DRUG RESISTANCE BY PLASMODIUM SPECIES - A REVIEW

Liadi Yusuf M.* and Usman Ibrahim A.

Department of Biology, Umaru Musa Yar'adua University Katsina, Nigeria.
Email: liadi.yusuf@umyu.edu.ng

Abstract

Malaria has continued to be a menace particularly in third world countries. The severity of the disease is however aggravated by drug resistance phenotype portrayed by the parasites. The present review intends to elucidate the mechanisms by which malaria parasites undermine the efficacy of antimalarial drugs. The parasites have systematically evaded their mosquito-host immune systems by nullifying mechanism which will rather make them visible to complement system that will usually eliminate them. Conventional drugs known to destroy the parasites in the human host are also not spared in this respect. Chloroquine, a synthetic antimalarial drug eliminates the parasites by entering the food vacuole and preventing polymerization of ferriprotoporphyrin IX (heme) which is lethal to the parasite into hemozoin. Contrastingly, the parasites have developed a mutated (Pfcrt) gene that rapidly efflux chloroquine. A similar drug is mefloquine whose resistance is linked to the over expression of a multidrug resistant gene (Pfmdr 1). The more revered artemisinin has also been found to be compromised by this parasites and its resistance is hinged on mutation of Kelch 13 gene. Moreover, the notable strategies utilized by the parasites include efflux of drug from food vacuole and slow clearance of parasites from the host cell. Hence, in order to overcome the scourge of malaria, researchers need to thoroughly study and understand the genetic driven adaptability of the parasites, design drugs with synergistic activities that destroy biosynthetic pathways and finally develop a holistic vaccine capable of triggering antibodies to different stages of the parasites.

Keywords: Malaria, drug resistance, chloroquine, mefloquine, artemisinin.

CB 087

INFLUENCE OF ANTIOXIDANT VITAMINS SUPPLEMENTATION ON OXIDATIVE STRESS AND THYROID HORMONES OF WISTAR RATS WITH INDUCED THYROID DYSFUNCTION

M. H. Yeldu[1*], K. Usman[1], M. K. Dallatu[1] I. Z. Wasagu[1], U. Musa[2]and B. M. Yale[1]

[1]Department of Chemical Pathology, School of Medical Laboratory Sciences, Usmanu Danfodiyo University, P.M.B. 2346 Sokoto, Nigeria.
[2]Department of Veterinary Pathology, Faculty of Veterinary Medicine, Usmanu Danfodiyo University, P.M.B. 2346 Sokoto, Nigeria.
*Corresponding Author: hmyeldu@yahoo.com, Tel: +238036050479

Abstract

Oxidative stress has been implicated in the pathogenesis of thyroid dysfunction. The current study was designed with the aim of investigating the potentials of antioxidants vitamins C and E the management of these disorders. Twenty-one (21) male Wistar rats weighing 140 - 180 grams were randomly divided into three groups of 7 rats each. Euthyroid (control): received daily intraperitoneal injection of 0.9% normal saline solution; hypothyroid: received daily oral administration of 6-propyl-2-thiouracil (5 mg/100 g b.w) and hyperthyroid: received daily intraperitoneal injection of L-thyroxine (0.1 µg/g) for 30 days. Both hypo-and hyperthyroid rats were supplemented with 1 ml of vitamin C (10 mg/ml) solution administered to each rat per day through an oral gastric tube and 0.050 ml of vitamin E (10 mg/ml) administered intramuscularly to each rat per day. Control rats received daily intraperitoneal injection of 0.025 ml of 0.9% saline solution for the 21 days. At the end of the treatment, rats were fasted for 12 hours and blood samples collected under chloroform anaesthesia for the estimation of serum total triidothyronine (tT3), total tetraiodothyronine (tT4), thyroid stimulating hormone (TSH), total antioxidant status (TAS), total oxidant stress (TOS), oxidative stress index (OSI) and malondialdehyde (MDA) using standard techniques. The supplementation significantly decreased serum TSH, tT_3, TOS and OSI and there was significant decrease in serum levels of tT_4 and MDA of the hypothyroid group compared with euthyroid. The study concluded that oxidative stress was present in both hypothyroid and hyperthyroid states and that antioxidant supplementation has significantly reversed oxidative stress biomarkers.

Keywords: Antioxidants, Vitamins, Thyroid hormones, Oxidative stress

CB 088

EFFECT OF ETHANOL EXTRACT-FRACTIONS OF *Balanites aegyptiaca* FRUIT-MESOCARP ON GLUCOSE METABOLIZING ENZYMES IN DIABETIC RATS

Daniel Hassan Mhya [1*], Janet O Alegbejo[2], Kola Matthew Anigo [3]. Ismail Alhaji Umar[3]

[1]Department of Biochemistry, Abubakar Tafawa Balewa University Bauchi, PMB 0248, Bauchi,
[2]Department of Pediatric, Ahmadu Bello University Teaching Hospital Zaria, PMB 06 Shika,
[3]Department of Biochemistry, Ahmadu Bello University Zaria, PMB 1045 Nigeria.
Corresponding author's email address: dmhassan@atbu.edu.ng Phone: +2348039652964

Abstract

In diabetes mellitus, activities of enzymes involves in glycolysis, gluconeogenesis, glycogenolysis and glycogenesis are altered and which disturbs maintenance of normoglycemia. Reversing the activities of the enzymes constitutes an approach to glycemic control and probing antihyperglycemic action of some agents. A recent study on *Balanites aegyptiaca* leaves extract has suggested that the leaves extract

exhibit glucose enzymes regulatory effect in diabetes. This study aimed at investigating effect of ethanol extract-fractions of *Balanites aegyptiaca* fruit-mesocarp on the activities of enzymes in glycolysis, gluconeogenesis, glycogenolysis and glycogenesis in liver of diabetic rats. Ethanol extract of defatted *Balanites aegyptiaca* fruit-mesocarp was petition with water and ethyl acetate (1:1 v/v) then separated. Aqueous and ethyl acetate fractions obtained were separately administered to streptozotocin-induced diabetic rats daily for 28 days period. Results of the study showed that treating diabetic rats with either aqueous or ethyl acetate fractions of ethanol extract of *Balanites aegyptiaca* fruit-mesocarp exert significant regulatory effect on the activities of some key hepatic enzymes of glucose metabolism. The aqueous fraction (AFF) in particular enhances glucokinase activity (from 2.22±0.02 to 3.58±0.05 U/min/mg protein) and G6PDH activity (from 1.45±0.02 to 2.10±0.02 U/min/mg protein) but suppressed glucose-6-phosphatase (from 1.44±0.05 to 0.17±0.00 U/min/µmole Pi liberated) among others. In conclusion, ethanol-aqueous fraction of *Balanites aegyptiaca* fruit-mesocarp exert glucose enzymes regulatory effect by enhancing glucokinase and G6PDH activity but suppressed gluconeogenic enzymes possibly to low blood glucose in diabetic rats. Further research is needed to explore the potent extract-fraction (ethanol-aqueous fraction) in order to ascertain the bioactive hidden compounds.

Keywords: Balanites *aegyptiaca*, Fruit-Mesocarp, Ethanol Extract-Fractions, glucose, metabolizing enzymes

CB 089

SPECIFICITY OF PHOSPHOLIPASE A_2 AND SERINE PROTEASE INHIBITORS FROM *N. NIGRICOLLIS* SERUM ON NEUROTOXIC AND NON-TOXIC SECRETORY PHOSPHOLIPASE A_2 AND SERINE PROTEASE

***Muhammad Abdullahi Magashi, A[1] , Abdulazeez, A.Mansurah[2], Yakubu, Hannatu[2], Rabiu, B. Rabi[2]**

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
[2]Center for Biotechnology Research, Bayero University, Kano
*Corresponding Author abdullahiumarmuhd7@gmail.com +2348164846220

Abstract

In Nigeria more severe cases of snakebite envenomation are inflicted by cobra species. Although snake anti-venom is the only specific antidote to snake venom, most of the available antivenoms are not effective against the local necrotic effect of the venom. The present study was aimed at investigating the specificity of partially purified serine protease and Phospholipase A_2inhibitors from *Naja nigricolli*s serum (SPINS and PINS, respectively) towards snake venom neurotoxic and nontoxic mammalian secretory PLA_2s and serine proteases. The SPINS and PINS were incubated with their respective partially purified enzymes from *N. Nigricollis* venom andthe enzyme activities determined titrimetrically. From the results, the partially purified PINS and SPINS were found to inhibit PLA_2 and serine protease activity of *N. nigricollis*, respectively, at different concentrations of the inhibitor when compared to the control and standard, tannic acid. With respect to nontoxic mammalian samples, the partially purified inhibitors inhibited the PLA_2 activity of bovine samples, but had no effect on the PLA_2 and serine protease activity of caprine and ovine samples. Tannic acid was not an effective inhibitor of both the neurotoxic and non-toxic PLA_2 and serine protease. In conclusion, the partially purified PIS and SPINS may be of pharmacological importance in the synthesis of drugs for therapeutic treatment of snake bites.

CB 090
JAK-STAT SIGNALING SYSTEM MIGHT BE A POTENT THERAPEUTIC TARGET AGAINST TYPE 2 DIABETIC COMPLICATIONS

Hauwa'u Yakubu Bako[ab]*, Mohammed Auwal Ibrahim[a], Muhammad Sani Isah[c] and Sani Ibrahim[a]

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[a]Department of Biochemistry, Kaduna State University, Kaduna, Nigeria
[b]Department of Medicine, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.
***Correspondence** Telephone: +2347033446762;E mail: lady_h83@yahoo.com

Abstract

Chronic inflammation is associated with the production of high levels of proinflammatory cytokines via the JAK-STAT and Nf-kB signaling pathways which are known to be inhibited by tofacitinib and aspirin respectively. This present study was conducted to determine the effect of tofacitinib and aspirin on some T2D diabetes complications. Rats were induced with type 2 diabetes (T2D) and treated with tofacitinib (10 and 20 mg/kg bw), aspirin (100 and 200 mg/kg bw) and a combination of similar doses of tofacitinib with aspirin. Treatment with tofacitinib at 10 and 20 mg/kg bw significantly ($P<0.05$) decreased the serum level of total cholesterol, LDL-cholesterol, aspartate transaminase (AST) and alanine transaminase (ALT) compared to diabetic untreated rats while the combination therapy did not affect the serum AST and ALT levels in the diabetic animals. However, all groups significantly ($P<0.05$) decreased serum creatinine and urea when compared to untreated diabetic rats with the exception of A200, A2T2 which does not affect the urea level. Furthermore, histopathological studies revealed that the tofacitinib treatments were able to protect diabetic animals from the disease-associated histopathological changes in the liver and kidney. The data shows that tofacitinib could protect animals from type 2 diabetic associated hyperlipidemia and histopathological alterations in the liver and kidney suggesting that the JAK-STAT signaling system might be a good target against diabetic complications.

CB 091
ISOLATION AND CHARACTERIZATION OF BACTERIA PATHOGENS ASSOCIATED WITH ACUTE RESPIRATORY DISEASE

Saidu Talatu Bosso[1*] and Daniel Augustine Innalegwu[2]

[1] Department of Microbiology, Federal University of Technology, Minna, Niger State, Nigeria
[2]Department of Biochemistry, Federal University of Technology, Minna, Niger State, Nigeria
Corresponding author: talatusaidu@yahoo.com

Abstract

Respiratory infection remains a major killer disease particularly in the developing world. Organisms associated with Acute Respiratory Infections (ARI) include bacteria such as *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Staphylococcus aureus*. Other such as *Mycoplasma pneumoniae*, *Chlamydophila pneumoniae*, and *Klebsiella pneumaniae* are less associated with the disease. This study was therefore aimed to determine common bacteria pathogen associated with track respiratory infections. A total of 100 sputum samples were collected from patient of both sexes between the age of 5-65 years attending Umaru Sanda Hospital Bida, in Niger State and was analyzed in the laboratory under aseptic condition. From the study, *S. pneumoniae* (23.1%) and *K. pneumoniae* (23.1%) has the highest prevalence followed by *Escherichia coli* (17.3%), *Staphylococcus aureus* (17.3%) and *Pseudomonas aeruginosa* (19.2%). The prevalence was also higher in female (62 %) than the male (38 %) and also among the middle age group of 21-30 years (34.6 %). Therefore, proper measures by individuals and government agencies is needed to prevent the spread of this disease which have high mortality rate.

Keywords: Acute respiratory infections (AIR), Prevalence, *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Staphylococcus aureus*, Bida.

CB 092
CAPTOPRIL DECREASES MALARIA INFECTION BY DOWN-REGULATING ANGIOTENSIN CONVERTING ENZYME (ACE) AND ANGIOTENSIN TYPE-1 RECEPTOR (AT1R) EXPRESSION IN *PLASMODIUM BERGHEI*-INFECTED MICE

***Abdulazeez, A.M.[1], Mahmoud, R.U.[2], Atiku, M.K.[2] and Muntari, B.[2]**

[1]Center for Biotechnology Research, Bayero University, Kano
[2]Department of Biochemistry, Faculty of Basic Medical Sciences,
Bayero University, Kano

Abstract

The peptides of the Renin Angiotensin System (RAS) have been suggested to play significant role in the pathogenesis of malaria infection. This study was carried out to investigate the effect of captopril on parasitemia and levels of some RAS peptides in *Plasmodium berghei*-infected mice. Forty (40) apparently healthy mice were divided into 5 groups of 8 mice each: Group 1(control, not infected and not treated), Group 2 (Malaria control, infected, untreated), Group 3 (standard control, infected and treated with 0.03 mg/kg lonart), Group 4 (infected and treated with 0.03 mg/kg captopril) and Group 5 (infected and treated with 0.09 mg/kg captopril). Mice were treated for 14 days and on the 15th day, they were sacrificed to obtain the blood and kidneys for biochemical analysis. Results showed a significant ($P<0.05$) decrease in parasitemia in all treated mice compared to the malaria control, and on the 14th day, the parasitemia level in mice given 0.09 mg/kg captopril and 0.03 mg/kg lonart was not different ($P>0.05$) from the control group. The ACE and Ang II levels increased significantly ($P<0.05$) in serum and kidneys of *P. berghei*-infected mice, but decreased ($P<0.05$) when given 0.03mg/kg lonart, 0.03 mg/kg and 0.09 mg/kg captopril. With respect to gene expression, the ACE and AT_1R mRNA were significantly ($P<0.05$) expressed in the kidneys of *P. berghei*-infected mice, but treatment with captopril reduced it significantly ($P>0.05$) in a dose-dependent manner. In conclusion, this study has demonstrated that captopril, especially at a higher dose may be beneficial against *Plasmodium* infection.

CB 093
ANTI-HYPERGLYCEMIC EFFECT OF GASCA D HERBAL FORMULATION ON ALLOXAN INDUCED DIABETIC RATS

Ibrahim S. Ismail[1*], Ibrahim, D. Gezawa[2,3], Muhammed F. Yahya[3], Bashir Chedi[4], Kabir Nafisatu[1], Imam, A.A[5].[1]Department of Biochemistry, Federal University Dutse

[2]Department of Medicine, Aminu Kano Teaching hospital
[3]Department of Medicine, Abdullahi Wase Specialist Hospital, Kano
[4]Department of Pharmacology, Bayero University Kano
[5]Department of Biochemistry, Bayero University Kano
*Correspondence: +2348036316108, email: salihu.ibrahim@fud.edu.ng

Abstract

Gasca D herbal formulation is an herbal anti-diabetic medication developed from the combination of Adansonia digitata, Gum Acacia and organic cellulose. The study aims to evaluate the acute toxicity profile, hypoglycemic potential and the effect of the formulation on hematological indices and biochemical parameters of Gasca D herbal formulation in normal and Alloxan induced diabetic rats. Diabetes was induced by interperitoneal injection of Alloxan monohydrate 150mg/kg bw followed by a booster dose of 70mg/kg bw after 48 hours after first induction. Both normal positive control (group 2) and diabetic treated (group 4) rats received Gasca D herbal formulation at a dose of 1,000mg/kg bw for

28 days. Acute toxicity study of Gasca D herbal formulation did not cause any mortality or abnormalities even after 14 days post treatment in rats up to a dose of 5,000mg/kg bw. The result showed a progressive decrease in both weight and glucose concentration from 1st through the 4th week of the study, with significant decrease in both weight and glucose concentration in the 3rd and 4th week of normal positive control. There is a significant ($p<0.001$) and progressive reduction in blood glucose concentration in diabetic treated with Gasca D herbal formulation. There was significant ($p<0.001$) increase in PCV, Hb, RBC and WBC in diabetic rats treated with Gasca D herbal formulation. The mean value of Tchol, HDL, LDL and Trig for the lipid parameters and AST and ALT for liver function and Electrolyte, urea and creatinine for kidney function in normal positive and diabetic treated groups was not found to be significantly ($p<0.001$) different from normal and diabetic control except for urea and potassium in normal positive control and treated group with Gasca D herbal formulation. Thus Gasca D herbal formulation can be said to be practically non- toxic herbal formulation category and can therefore be used in the management of diabetes mellitus.

Keywords: Diabetes, Gasca D herbal, hematological indices, biochemical parameters, toxicity

CB 094
ANTI-HYPERGLYCEMIC EFFECT OF GASCA D HERBAL FORMULATION ON ALLOXAN INDUCED DIABETIC RATS

Ibrahim S. Ismail[1*], Ibrahim, D. Gezawa[2,3], Muhammed F. Yahya[3], Bashir Chedi[4], Kabir Nafisatu[1], Imam, A.A[5].

[1]Department of Biochemistry, Federal University Dutse
[2]Department of Medicine, Aminu Kano Teaching hospital
[3]Department of Medicine, Abdullahi Wase Specialist Hospital, Kano
[4]Department of Pharmacology, Bayero University Kano
[5]Department of Biochemistry, Bayero University Kano
*Correspondence +2348036316108 salihu.ibrahim@fud.edu.ng

Abstract

Gasca D herbal formulation is an herbal anti-diabetic medication developed from the combination of Adansonia digitata, Gum Acacia and organic cellulose. The study aims to evaluate the acute toxicity profile, hypoglycemic potential and the effect of the formulation on hematological indices and biochemical parameters of Gasca D herbal formulation in normal and Alloxan induced diabetic rats. Diabetes was induced by interperitoneal injection of Alloxan monohydrate 150mg/kg bw followed by a booster dose of 70mg/kg bw after 48 hours after first induction. Both normal positive control (group 2) and diabetic treated (group 4) rats received Gasca D herbal formulation at a dose of 1,000mg/kg bw for 28 days. Acute toxicity study of Gasca D herbal formulation did not cause any mortality or abnormalities even after 14 days post treatment in rats up to a dose of 5,000mg/kg bw. The result showed a progressive decrease in both weight and glucose concentration from 1st through the 4th week of the study, with significant decrease in both weight and glucose concentration in the 3rd and 4th week of normal positive control. There is a significant ($p<0.001$) and progressive reduction in blood glucose concentration in diabetic treated with Gasca D herbal formulation. There was significant ($p<0.001$) increase in PCV, Hb, RBC and WBC in diabetic rats treated with Gasca D herbal formulation. The mean value of Tchol, HDL, LDL and Trig for the lipid parameters and AST and ALT for liver function and Electrolyte, urea and creatinine for kidney function in normal positive and diabetic treated groups was not found to be significantly ($p<0.001$) different from normal and diabetic control except for urea and potassium in normal positive control and treated group with Gasca D herbal formulation. Thus Gasca D herbal formulation can be said to be practically non- toxic herbal formulation category and can therefore be used in the management of diabetes mellitus.

Keywords: Diabetes, Gasca D herbal, hematological indices, biochemical parameters, toxicity

CB 095

AMELIORATIVE EFFECTS OF P-HYDROXYBENZALDEHYDE ON PANCREATIC B-CELL DYSFUNCTION AND MAJOR DIABETES-RELATED INDICES IN TYPE-2 DIABETES MODEL OF RATS

Ahmed Olatunde[a,b], Mohammed Auwal Ibrahim[a], Aminu Mohammed[a] and Mohammed Nasiru Shuaibu[a]*

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[b]Department of Biochemistry, Abubakar Tafawa Balewa University, Bauchi, Nigeria
*Author for correspondence: Tel: +2348023496335; E-mail: nshuaibu@yahoo.com

Abstract

The present study investigated the anti-diabetic effects of ρ-hydroxybenzaldehyde (ρ-BN) on β-cell damage and major indices of type-2 diabetes (T2D). T2D was induced in rats by feeding 10% fructose solution *ad libitum* for 2 weeks followed by intraperitoneal injection of streptozotocin (40 mg/kg body weight) and the type-2 diabetic rats were orally administered with 50 and 100 mg/kg body weight of ρ-BN once daily for 28 days. Blood samples and pancreas were collected for subsequent investigation. At the end of intervention, the diabetic untreated rats showed significant increase ($p < 0.05$) in blood glucose, serum fructosamine, serum lipid profile (Total cholesterol, Triglyceride, LDL-cholesterol and VLDL-cholesterol), liver and kidney markers, insulin resistance (HOMA-IR), cardiovascular indices (atherogenic index, coronary risk index and cardiac index) as well as liver glycogen contents and a significant decrease ($p < 0.05$) in serum insulin, HDL-cholesterol, β-cell functions (HOMA-β) and glucose tolerance ability compared to the normal rats. Histological examination of the pancreas showed corresponding pathological alterations in the islet and β-cells. However, oral administration of 50 and 100 mg/kg body weight of ρ-BN to diabetic rats resulted in a significant reversal of the above diabetic alterations to near normal which is comparable to that of standard group. The data from this study shows that ρ-BN, especially at 100 mg/kg body weight exhibited higher anti-diabetic potential in T2D model of rats.

Keywords: ρ-hydroxybenzaldehyde, type-2 diabetes, pancreas, streptozotocin

CB 096

ANTIOXIDATIVE PEPTIDE (VLPVPQK) FROM BUFFALO MILK CASEIN EXHIBIT ANTI-OSTEOPENIC EFFECTS IN ESTROGEN-DEFICIENT RAT MODELS

Sanusi Bello Mada [a, b], Srinu Reddi [b], Suman Kapila [b], Auwalu Garba [a], Muawiya Musa Abarshi[a], Hafsat Abdullahi Mohammed [a]

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[b]Animal Biochemistry Division, ICAR-National Dairy Research Institute, Karnal, India
* Corresponding author's e-mail address: sbmada@abu.edu.ng Phone Number: +2348038152143

Abstract

Introduction: Oxidative stress has been implicated as a crucial pathogenic factor in the development of postmenopausal osteoporosis. Milk-derived antioxidative peptides are gaining much attention toward the development of prodrugs for alleviating several human diseases, including osteoporosis. The aim of the present study was to determine whether antioxidant peptides are good candidates for alleviating postmenopausal osteoporosis. In the present study, an ovariectomized (OVX) osteoporotic rat model was used to investigate the protective effects of buffalo milk casein-derived novel peptide VLPVPQK (PEP) against OVX-induced bone loss and the related mechanisms. The results of the present study indicated

that daily administration of antioxidative peptide PEP at 50 and 100 mg/kg for eight weeks prevents body weight gain, uterine weight loss, and atrophy of endometrial lumen. Moreover, PEP increased femur dry weight, ash weight, bone ash calcium, and serum calcium and phosphorus level. Interestingly, PEP increased bone mineral density and improved trabecular microarchitecture in femur of OVX rats. Additionally, PEP increased bone strength, reduced serum bone turnover markers, inhibited bone resorbing cytokines and decreased malondialdehyde level in OVX rat. Furthermore, PEP-elevated serum transforming growth factor-β, increased, reduced glutathione levels, superoxide dismutase, and catalase activity altered by OVX. **Conclusion:** We demonstrated that PEP exhibits antiosteopenic effects via enhancement of antioxidant activity and reduction of bone-resorbing cytokines expression.

Keywords: Peptide (VLPVPQK)**,** antioxidative effect**,** postmenopausal osteoporosis, ovariectomized rat**,** oxidative damage**,** bone-resorbing cytokine.

CB 097

INFLUENCE OF *GLIRICIDIA SEPIUM* AQUEOUS LEAF EXTRACT INTAKE ON THYROID HORMONES AND LIPID PROFILE IN WISTAR RATS

Oduola Taofeeq[1], Agaie Bello Mohammed[2], Ngaski Abdullahi Abubakar[1], Musa Kasim[1].

Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto

Department of Veterinary Pharmacology, Faculty of Veterinary Medicine, Usmanu Danfodiyo University, Sokoto

***Corresponding author E-mail:** oduola.taofeeq@udusok.edu.ng **Phone number:** 08033968785

Abstract

Gliricidia sepium aqueous leaf extract is used in the management of sickle cell disease in some parts of Nigeria without considering its adverse effect, hence the present study was aimed at determining the effect of ingestion of *Gliricidia sepium* aqueous leaf extract on thyroid hormones and lipid profile in Wistar rats. The oral acute and sub-chronic toxicity studies were performed according to OECD guidelines 423 and 407 respectively in Wistar rats. Thyroid function tests (T_3, T_4 and TSH) were carried out using Enzyme Linked Immunosorbent Assay and lipid profiles by spectrophotometric techniques. No mortality or signs of toxicity were recorded in the acute oral toxicity study in the rats after 24hours and up to 14 days. In acute and sub-chronic toxicity studies, there were no significant difference in lipid profiles of control and experimental rats. T_3 was significantly higher ($p< 0.05$), and T_4 and TSH significantly lower ($p< 0.05$) in test than in control groups in acute toxicity study. In sub-chronic toxicity study, T_3 and TSH revealed no significant difference in test and control groups; T_4 was significantly higher ($p< 0.05$) in test than the control group but the differences were not dose response related. The thyroid gland tissues of both control and experimental groups showed normal thyroid follicles and follicular epithelial cells. *Gliricidia sepium* leaf extract had no adverse effect on thyroid and lipid profiles in Wistar rats.

Key Words: *Gliricidia sepium*, thyroid hormones lipid profiles, safety, toxicity

CB 098

THYROID HORMONES AND LIPID PROFILES IN HUMAN IMMUNODEFICIENCY VIRUS (HIV) PATIENTS ON HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART) IN USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL, SOKOTO

Oduola Taofeeq*[1], Wali Usman[1], Liman Hamidu Muhammad[2], Idris Masuud Ilyasu[1]

[1]Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, Usmanu Danfodiyo University Teaching Hospital, Sokoto

[2]Department of Medicine, Faculty of Clinical Sciences, Usmanu Danfodiyo University, Sokoto

***Corresponding author E-mail:** oduola.taofeeq@udusok.edu.ng **Phone number:** 08033968785

Abstract

Effect of HAART on thyroid hormones and lipid profiles in HIV patients have been widely documented but the reports vary from one center to another hence, this study was designed to evaluate these parameters in HIV patients on HAART in UDUTH, Sokoto. A total of 120 subjects categorized into 5 were recruited, group one consists of 20 apparently healthy individuals (control), group two 20 HIV HAART naïve patients, group three 20 HIV patient on HAART for less than six months, group four 20 HIV patient on HAART (6 to < 12 months) and group five 40 HIV patient on HAART, 12 months and above. Blood samples were collected for thyroid, lipid profiles and CD4 lymphocyte count analyses using ELISA, spectrophotometric and flow cytometric techniques respectively. The T_4 values in the test groups was significantly higher than the control group while the T_3 values was not significantly different. The TSH values in groups 2 and 4 were significantly lower and groups 3 and 5 were not significantly different when compared to control group. The CD_4 values in the tests groups were significantly lower than the control group while BMI, HDL and LDL values in the test groups were not statistically significant compared to the control group. TG and TC values are significantly lower except for group 3 which is not statistically significant when compared with the control group. This study also revealed that HIV infections impairs thyroid hormones, lipids and CD_4 levels in HIV positive patients on HAART and HAART naïve patients.

Key Words: Thyroid hormones, lipid profiles, HIV patients, HAART

CB 099

ANALYSIS OF AMINO ACIDS CONTENT IN FISH SPECIES AND POLYCYCLIC AROMATIC HYDROCARBON AS INDEX OF POLLUTION IN SOME SELECTED RIVERS IN BAYELSA STATE.

Ezomoh, O, O[1]., Ukoha, A.I[2]., Nwachukwu, N[2].and Ujowundu, C.O[2].

[1]Department of Biochemistry, Niger Delta University, Wilberforce Island. Bayelsa State. Nigeria.

[2]Department of Biochemistry, Federal University of Technology, Owerri. Nigeria.

Abstract

Analysis of amino acid content of some selected fishes was carried out and polycyclic aromatic hydrocarbons pollution in Swali River. Gas Chromatography was used to determine the amino acid content of the fishes and PAHs of the river. Four different species of fresh water fishes, were used for this analysis namely, Oreochromis Niloticus (Nile Tilapia), Clarias Gariepinus (Cat Fish), Mormyrops Deliciosus (Conish Jack), Synodontis Budgetti (also known as Ekpoki), which were caught from Swali River in Bayelsa state. The result shows that, Valine, 4.66±0 .01, 4.36±0.03, 4.34±0.03, 3.59±0.01, Threonine, 4.36±0.01, 3.74±0.02, 4.36±0.005, 3.09±0.01, Isoleucine, 4.66±0.01, 4.18±0.02, 4.07±0.01,

3.82±0.005, Leucine, 8.91±0.005, 8.21±0.01, 9.31±0.02, 8.61±0.03, Lysine, 8.96±0.01, 9.24±0.005, 9.57±0.02, 8.98±0.02, Methionine, 2.95±0.02, 2.07±0.02, 2.89±0.01, 3.36±0.005, Phenyalanine, 3.99±0.01, 3.78±0.02, 3.92±0.02, 5.98±0.01, Histidine, 3.02±0.01, 2.76±0.03, 3.01±0.01, 3.22±0.01, Tryptophan, 1.09±0.01, 9.25±0.01, 1.68±0.01, 3.47±0.01 and their corresponding WHO/ FAO, Standard (g/ mg). 3.50, 3.40, 2.80, 6.60, 5.80, 2.50, 6.30, 2.50, 1.10. shows that the fishes are rich in essential amino acid. Polycyclic aromatic hydrocarbons result indicate, Naphthalene 0.01±0.002, Acenaphthene 0.09±0.00 Fluorene 0.03±0.001 Phenanthrene 0.12±0.002 Anthracene 0.09±0.002 Fluoranthene 0.08±0.001 Pyrene 0.15±0.001 Benzo (a) anthracene 0.24±0.003 Chrysene 0.05±0.003 Benzo (b) Fluoranthene 0.07±0.002 Benzo(K)fluranthene0.05±0.001 Benzo (a) Pyrene0.06±0.001, and its corresponding WHO/ FAO, Standard 0.024-0.10,0.02-0.11,0.09-9.0, 009- 0.450, 0.04- 0.20, 0.01- 0.60, 0.08- 0.40, 0.08- 0.40, 0.004- 0.22 0.008- 0.40 0.001- 0.005, 0.001- 0.06. according to this result, essential amino acid has higher standard than FAO/ WHO and PAHs. Summarily, the value gotten for PAHs indicate that the river was polluted, however, the pollution does not have any significant effect on the amino acids content on fish samples.

Key words: fresh water fish, polycyclic aromatic hydrocarbons, analysis (PAHs).

CB 100
RISK FACTORS AND PREVALENCE OF PRE-DIABETES IN FEDERAL UNIVERSITY DUTSE COMMUNITY

Nafisatu Kabir[1*], Salihu Ibrahim Ismail[1] and Abubakar Idris Aujara[2]
[1] Department of Biochemistry, Federal University Dutse, Jigawa State-Nigeria
[2] Department of Biological Sciences, Federal University Dutse, Jigawa State-Nigeria
Corresponding author's email address: kabirnafisa0@yahoo.com

Abstract
Sedentary lifestyle and western style diet are major risk factors for an increase in the morbidity and mortality of diabetes mellitus. The purpose of the present study was to determine the prevalence of prediabetes and its associated risk factors in Federal University Dutse (FUD) community. A cross sectional random sampling was employed to recruit staff and students of FUD community. A semi structured questionnaire was used to obtain socio-demographic, anthropometric and physical data from one hundred participants, 61 males and 39 females aged above 20 years. Prediabetes was defined as impaired fasting glucose (IFG) according to WHO expert committee of 6.1-6.9 Mmol/L and association between prediabetes and risk factors was analysed. The mean age of the studied population was 23.74±5.88 years and ten participants; 7 males and 3 females were prediabetic with a mean age of 36.5±3.4 years. Prevalence of prediabetes was 1.1% and age, obesity (mean body mass index (BMI) and waist circumference (WC)), decreased physical activity, and blood pressure (r=0.0014) were found to be significantly associated with prediabetes development. Conclusively, prediabetes prevalence was low in FUD community and its modifiable risk factors were age, obesity, physical inactivity and blood pressure. Screening checks, health education and prompt treatment to protect against diabetic complications are strongly recommended.

Keywords: Diabetes, prediabetes, FUD, blood glucose, risk factors

CB 101

IN VITRO ANTIOXIDANT ACTIVITIES AND PHYTOCHEMICAL SCREENING OF METHANOL EXTRACTS OF *Musanga cercropioides* AND *MAESOBOTRYA BARTERI* LEAVES

Ufuoma B. Shemishere[1,2*], Judith Taiwo[2], Umar A. Karabonde[1], Daniel A. Anyebe[1] and Ehimwenma S. Omoregie[2]

[1]Department of Biochemistry and Molecular Biology, Federal University, Birnin Kebbi, Kebbi State.
[2]Malaria Research, Molecular Biology and Toxicology unit, Department of Biochemistry, University of Benin, Benin city, Edo state
*Corresponding Author: +2348065712129; shemishere.ufuoma@fubk.edu.ng

Abstracts:
The quest for antioxidants of herbal origin is growing at a massive rate due to their efficacy and affordability. This study examined the phytochemical constituents and *in vitro* antioxidant activities of methanol leaf extracts of *Musanga cercropioides* and *Maesobotrya barteri*. Standard techniques were used to determine the phytochemical constituents of the leaves extracts. *In vitro* antioxidant activity of the methanol plant extracts was determined by a broad spectrum of antioxidant assays. Qualitative phytochemical screening revealed the presence of flavonoids, tannins, cardiac glycosides, saponins, steroids, alkaloids, coumarins, phenols and terpenoids in both plants. The quantitative analyses of the phytochemicals showed that *M. cercropioides* had higher levels ($p< 0.05$) of total phenol, total tannins, proanthocyanidin and lower total flavonoids as against *M. barteri*. DPPH and NO radical scavenging activities of *M. cercropioides* (IC_{50} of $1.22.75 \pm 0.046$ and 0.057 ± 0.006 mg/ml respectively) were significantly higher ($p < 0.05$) than that of *M. barteri* (IC_{50} of $1.95.75 \pm 0.023$ and 0.128 ± 0.051 mg/ml respectively) but lower than that of ascorbic acid standard (IC_{50} 0.15 ± 0.003 and 0.027 ± 0.0045 mg/ml respectively). *M. cercropioides* extracts had significantly higher ($p<0.05$) capacity to reduce ferric ions to the ferrous form and also inhibit lipid peroxidation when compared with *M. barteri*. However, the reducing potential of *M. cercropioides* was comparable to the Ascorbic acid standard but significantly higher than that of *M. barteri* extracts. The study suggests that *M. cercropioides* and *M. barteri* contain bioactive compounds that may be effective in the management of oxidative stress related diseases.

Keywords: Phytochemical screening, *Musanga cercropioides, Maesobotrya. Barteri*, Antioxidant

CB 102

ANTIMALARIAL POTENTIAL OF *CARICA PAPAYA* AND *VERNONIA AMYGDALINA* IN MICE INFECTED WITH *PLASMODIUM BERGHEI*

[1]Vincent A. Upev, [1*]Oche Okpe, [2]Nathan Habila, [1]Joseph Ikwebe, [2,3]Stanley I.R. Okoduwa, and [1]Omiagocho T. Isaac,

[1]Department of Biochemistry, University of Agriculture, Makurdi, Nigeria
[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[3]Directorate of Research and Development, Nigerian Institute of Leather and Science Technology, Zaria,
*Correspondence: Email:ocheking10@gmail.com, oche@sironigeria.com; GSM:+2348066804929.

Abstract

The study determined if administration of *Vernonia amygdalina* and *Carica papaya* plants provides synergistic effects in ameliorating plasmodium infection in mice. Thirty mice (17.88–25.3 g) were divided into 6 groups of 5 mice each. Group 1 was normal control, while groups 2–6 were intraperitoneally inoculated 2.5×10^7 *Plasmodium berghei* parasitized red blood cell, followed by daily administration of 350 mg/kg aqueous leaf extracts after establishment of infection. Group 2 was disease control, while group 6 was treated with standard drug for four consecutive days. The results showed significant ($p<0.05$) reduction in percentage of parasite load between the infected treatment groups and disease control group at day 3 after infection, which remained consistent until the end of the experiment. All infected treated groups showed significant ($p<0.05$) increases in RBC and PCV recovery compared to the disease control, with the exception of WBC. There was insignificant ($p>0.05$) change in mean body weight of all treated groups except in disease control group. Histological studies of the infected mice indicate recovery of hepatic cells from congested black pigmentation. The reduction in parasite load and recovery of hepatic cell damage/ hematological parameters were induced by these plant extracts. This highlighted the important usage of the plant in traditional remedy of malaria infection.

Keywords: *Plasmodium berghei; Vernonia amygdalina; Carica papaya; parasitemia.*

CB 103

BIOCHEMICAL EFFECTS OF HEPATITIS C VIRUS (HCV) ON HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTED PERSONS ON ANTIRETROVIRAL THERAPY (ART) IN SOME SELECTED HOSPITAL IN NORTH CENTRAL, NIGERIA.

[1]*Ya'aba Y, [1]Mohammed SB, [1]Izebe KS, [2]Baba J, [1]Ibrahim K and [3]Uba A.
[1]Department of Microbiology and Biotechnology,
National Institute for Pharmaceutical Research and Development (NIPRD) Idu-Abuja, Nigeria.
[2]Department of Microbiology, Ibrahim Badamasi Babangida University, Lapai, Niger state,
[3]Department of Biological Sciences, Abubakar Tafawa Balewa University, Bauchi, Nigeria.
*Correspondence: E-mail: yakyabnig@yahoo.com Phone no: +234 8033326544.

Abstract

Human immunodeficiency virus or acquired immunodeficiency syndrome (HIV/AIDS) remains the leading cause of death in sub-Saharan Africa, Nigeria being one of them. Hepatitis C Virus (HCV) infection are known to impact progression and management of HIV infection. Biochemical abnormalities is a common clinico-pathological manifestations of HIV/AIDS and hepatitis co-infected persons on anti-retroviral therapy (ART). Data are scarce regarding the impact of ART on HIV/HCV co-infected persons in north central, Nigeria. Hence, this study was therefore designed to determine the biochemical effects of HCV on prognosis of HIV persons taking antiretroviral drugs. A total of 2,322 HIV infected and 109 co-infected patients with HCV were initiated on ART regimens and follow-up from June, 2013 through February, 2015 at ART hospitals in North Central Nigeria for changes in clinical profiles. The determination of Alanine aminotransferase (ALT) and Aspartate transaminase (AST) estimations were carried out using Reflotron plus machine according to the manufacturer's instructions. Socio-demographic information of co-infected patients was collected. The results showed that ART treatment increased AST of co-infected patients from 18.46±0.73 to 34.32±0.6053U/l, ALT from19.37±0.6804 to 34.87±0.5637U/l while among HIV mono-infected persons there was increased in AST from17.35±0.1542 to 34.49±0.0981U/l, ALT from17.67±0.1412 to 34.80±0915U/l. The increased in these parameters were statistically significant $p \leq 0.05$. The continued ART administration with longer periods of monitoring of patients will benefit in timely identification of liver related diseases and addressing viral hepatitis co-infections at the earlier stage under qualified clinician.

Keywords: Alanine aminotransferase, Aspartate transaminase, Hepatitis C Virus, Anti-retroviral therapy, Human immunodeficiency virus

CB 104

ISOLATION AND MORPHOLOGICAL CHARACTERIZATION OF *Trichoderma Spp.* AND BIOCOMPATIBILITY ASSESSMENT WITH *Mycorriza Spp.* FOR IMPROVE ORGANIC FARMING PRACTICE

[a]Mustapha Isah*, [b] Zaharradeen Umar, [b]Rayhan Mohammed
[a]Department of Biochemistry, Sokoto State University, Sokoto State-Nigeria
[b]Department of Biotechnology, Universiti Teknologi Malaysia
corresponding author: mustyeeser029@gmail.com; +2347031207826

Abstract

Trichoderma spp. is an endophytic, symbiont and a genus of asexual fungi grown in almost all conditions. Mainly found in soil, roots, leaves and decayed organic matter. In this research, the *Trichoderma spp.* were isolated from the soil sample and morphologically identified as *Trichoderma harzianum* and then cocktailed with *Mycorrhizae spp*. both of which are beneficial fungi to plants. The result indicated that some of these fungal species are compatible to one another through cocktailing them together by visual observation of inhibition zone and this can be experimented for agricultural purposes that can produce safer and healthier crop compared to the chemical counterpart such as fertilizer, insecticide and pesticides that are deleterious to the ecosystem upon prolong usage.

CB 105

ANTICHOLINESTERASE INHIBITOR COMPOUNDS FOR THE POTENTIAL TREATMENT OF ALZHEIMER DISEASE

Nura Suleiman Gwaram,* Nafiu Muhammad and Abubakar Lawal
Umaru Musa Yar'adua University, Faculty of Natural and Applied Sciences, Department of Pure and Industrial Chemistry, P .M.B. 2218 Katsina, Nigeria.
*Corresponding author's Email: nura.suleiman@umyu.edu.ng

Abstract
Acetylcholinesterase inhibitors with antioxidant activities are considered potential treatments for Alzheimer's disease (AD). Laboratory findings have shown that oxidative stress may play an important role to the pathogenesis of AD. Mainly from in vitro studies, phenolic compounds have been reported to have antioxidant. Therefore, the risk of AD disease might be decreased by intake of antioxidants that neutralize the unfavourable effects of oxidative stress. A number of morpholine derivatives have been described as analgesics and local anaesthetics. Understanding of cholinesterase structure and their inhibition is important for effective drug design and treatment of AD. Condensation reaction between 4-(2-aminoethyl)morpholine and 4-(2-aminopropyl)morpholine with 2,4-dihydroxybenzaldehyde or 2,4-dihydroxyacetophenone yields the corresponding ligands. In the crystal structures, one oxygen atom of hydroxyl group connect the adjacent hydrogen atom of the amine group via O1…H1 interactions to form a six member ring and morpholine moety adopt a chair transformation. Molecular docking is done by using Autodock 4.2, setting at 160x180x176 Gridbox, centered at 115.955, 105.139, -139.962 with 0.375Å spacing. Ligand is docked well in the hydrophobic pocket of TRP86, TYR119, GLY120, GLY121, TYR124, SER125, GLY126, ALA127, LEU130, TYR133, GLU202, SER203, TYR337, PHE338, HIS447 and GLY448. There are 3 intermolecular hydrogen bonds between: (1)TYR124:OH - LIGAND:O18 (distance: 2.91336 Å) (2) LIGAND:H19 - TYR124:OH (distance: 2.05211 Å) (3) LIGAND:H20 - GLN71:OE1 (distance: 1.92168 Å). *In silico* molecular modelling revealed that the compounds positioned themselves in the enzyme's active-site gorge, interacting with residues in the peripheral anionic subsite (PAS) and acyl binding pocket (ABP).
Keywords: Alzheimer's disease; acetylcholinesterase inhibition; cyclooxygenase-2; *In silico*.

CB 106

DETERMINATION OF ANTIOXIDANT CAPACITY AND FREE RADICAL SCAVENGING ACTIVITY OF HORSE MILK

* Abarshi Muawiya Musa, Mada Sanusi Bello, Umar Aliyu Umar, Abdulazeez Muhammad
Department of Biochemistry, Ahmadu Bello University Zaria, Nigeria
*Corresponding author's contact: muawiyam@yahoo.co.uk, Tel: +234 (0) 8069517779

Abstract
Antioxidants are molecules that inhibit the oxidation of other molecules caused by free radicals. Hence, Milk and its dairy products contain bioactive compounds that help to protect individuals from oxidative stress related diseases. This study investigates antioxidant activity and free radical scavenging activity of horse milk (fermented, pasteurized and raw) fractions by 2, 2-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging and ferric reducing antioxidant power (FRAP) assays. The fermented milk had the highest radical scavenging activity and ferric reducing power of 63.04% and 0.822 respectively, followed by the pasteurized milk (61.34% and 0.631), while raw milk (55.28% and 0.461) shows least antioxidant activity. The total reducing power and radical scavenging activity was found to be concentration dependent with the least antioxidant activity observed at the lowest concentration of all the three milk samples. The study further demonstrated a time-dependent decrease in both DPPH radical scavenging and ferric ion reducing power of the milk fractions, when stored at 4ºC up to three weeks. Thus, these results indicated that fermented horse milk may serves as functional food and used as a supplement in the management of oxidative stress-related diseases.

CB 107

ANTI-PARASITE TARGETING WITH AMINO ACID-CAPPED NANOPARTICLES MODULATES MULTIPLE TARGETS IN HOST CELLS

*ADEYEMI Oluyomi Stephen[1, 2] & KATO Kentaro[2]

[*1]Department of Biochemistry, Medicinal Biochemistry and Toxicology Laboratory, Landmark University, Omu-Aran, 251101, Kwara State, Nigeria.

[2]National Research Center for Protozoan Diseases, Obihiro University of Agriculture & Veterinary Medicine

Corresponding Author: yomibowa@yahoo.com; +2347034507902

Abstract

Toxoplasma gondii is the etiological agent of toxoplasmosis, a common parasitic disease capable of infecting a range of hosts, including nearly one-third of the human population. Current treatment options for toxoplasmosis patients are limited. In consequence, toxoplasmosis represents a large global burden that is further enhanced by the shortcomings of the current therapeutic options. These factors underscore the need for better anti-*T. gondii* agents and/or new treatment approach. In the present study, we sought to find out whether preparing and capping NPs in amino acids, would enhance specificity toward the parasite versus the host cell. The selection of amino acids was premised on the fact that *T. gondii* is auxotrophic for some amino acids. The amino acid-nanoparticles (amino-NPs) were synthesized, purified and characterized following established protocols. Next, we tested to determine the anti-*T. gondii* activity of the amino-NPs using *in vitro* experimental model of infection. Overall, our data show evidence that supports enhanced and excellent selective action against the parasite versus the host cells by amino-NPs. The findings are new and promising, and provide additional support that warrants exploring the prospects of NPs as alternative anti-parasite agents. In addition, the anti-parasite action by amino-NPs indicates that nutritional requirement of parasite may represent a viable target in the development of new and effective anti-parasite agents. Furthermore, data suggest the anti-parasite mechanism of the amino-NPs involves multiple cellular processes including the production of reactive oxygen species (ROS), modulation of hypoxia-inducing factor-1 alpha (HIF-1α) as well as the activation of kynurenine pathway. Taken together, findings highlight further, the prospects of NPs as alternative source of anti-parasite agents.

Keywords: Drug discovery; Infectious Diseases; Mode of action; Nanomedicine

CB 108

ABROGATION OF APOPTOSIS BY GLUCOMORINGIN ISOTHIOCYANATE ON H_2O_2-INDUCED CYTOTOXIC DIFFERENTIATED SH-SY5Y: PROSPECTIVE INVOLVEMENT OF MITOCHONDRIAL SIGNALLING PATHWAY

*Mohammed Sani Jaafaru[a], Hauwa'u Yakubu Bako[a], Halliru Umar Farouk[a], Baraka Abdullahi[a], Hajara Aminu Usman[a], Peter Maitalata Waziri[a], Amina Husnah Balarabe[a], Mohammed Mustapha Barau[b] and Ahmad Faizal Adull Razis[c],

[a]Department of Biochemistry, Kaduna State University, Main Campus, PMB 2339, Kaduna, Nigeria.

[b]Department of Biochemistry and Forensic Science, Nigeria Police Academy, Wudil, 3474 Kano,

[c]Laboratory of Molecular Biomedicine, Institute of Bioscience, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.

*Corresponding author's contact: email; biojafar@kasu.edu.ng); phone no: 08065431244

Abstract

Glucomoringin isothiocyanate (GMG-ITC) is an antioxidant whose potential neuroprotective activity has been reported in numerous *in vivo* and *in vitro* models of neurodegenerative diseases. However, its neuroprotective role via mitochondrial-dependant pathway remains unknown. The main objective of the present study was to unveil new markers affected by the presence of GMG-ITC in terminally differentiated neurons, when exposed to oxidative stress condition, and the connection of the mitochondrial apoptotic signalling pathway in the reputed neuroprotective mechanism. The results showed that pre-treatment of retinoic acid-mediated differentiated SH-SY5Y cells with 1.25 µg/mL purely isolated GMG-ITC significantly reduced reactive oxygen species (ROS) production level when compared to H_2O_2 control group as evidenced by flow cytometry-based evaluation of ROS generation.

Presence of GMG-ITC prior to development of oxidative stress condition, downregulated the expression of *cyt-c, p53, Apaf-1, Bax, CASP3, CASP8 and CASP9* genes with concurrent upregulation of *Bcl-2* gene in mitochondrial apoptotic signalling pathway, confirmed by genetic analysis system (GeXP). Protein Multiplex results revealed significant decreased in Apaf-1, cyt-c, p53, Bax, CASP8 and CASP9 due to GMG-ITC pre-treatment in oxidative stress condition. While expression of Bcl-2 increased under the same condition when compared to H_2O_2 control group. The present findings suggested that pre-treatment with GMG-ITC mitigated oxidative stress condition in neuronal cells by abrogating ROS production and protected the cells against apoptosis via mitochondrial intrinsic signalling pathway, which could be potential therapeutic target in drug design and development.

Keywords: Apoptosis; Glucomoringin-isothiocyanate; Mitochondria; Neurodegenerative diseases; Neuroprotection; Oxidative stress.

CB 110

EFFECT OF LEAF EXTRACT OF *Senna alata* ON BIOCHEMICAL INDICES OF WISTER RATS INFECTED WITH *Trypanosoma brucei brucei*

Kugama, Meshack Anthony[1,*]., Tese Timothy[2].,Sabo Hauwa[1]., Onaolapo, Yetunde Aminat[2]., Onogwu, John Owuicho[2]., Agbo Augustine., Danjuma, Daniel Wayo., Adamu Maisamari Usman[3]. and Audu Sunday[2]

[1]Human African Trypanosomiasis Research Department, NITR Kaduna

[2]Vector and Parasitological Studies Research Department, NITR Kaduna.

[3]Kaduna State Ministry of Health

*Email and Phone number of Corresponding Author-meshackkugama@gmail.com/07039777947

Abstract

The study was aimed at determining the effect of leaves of *Senna alata* extract on biochemical indices of wister rats infected with *Trypanosoma brucei brucei*. Phytochemical screening revealed the absence of steroids in all extracts, absence of saponins in chloroform extracts and presence of free anthraquinones only in chloroform extract.Post infection treatment of animals stirred the emergence of parasitaemia by Day 3. Only animals receiving 200mg/kgbwt of chloroform extract survived by day 16. A significant ($P<0.05$) decrease in ALT for groups receiving methanol (400mg/kgbwt), chloroform and aqueous extracts and significant ($P<0.05$) increase in unconjugated bilirubin in group receiving methanol extract (200mg/kgbwt) compared to infected not treated rats. Significant ($P<0.05$) decrease in potassium concentration in groups receiving methanol and chloroform, and a significant ($P<0.05$) increase in sodium concentration in group receiving 400mg/kgbwt of aqueous extract compared to the infected not treated rats. These results thereby demonstrate ameliorative potential of *Senna alata* leaves against *Trypanosoma brucei brucei*.

Keywords: Trypanosomiasis, *Senna alata*,Biochemical indices, Parasitaemia.

CB 111

SURVEY OF CANCER INCIDENCE AND CARBONIC ANHYDRASE ACTIVITY IN CANCER PATIENTS ATTENDING NATIONAL HOSPITAL, ABUJA

Deborah Awoniran[*1], Evans Egwim[1,2], Henry Adeyemi[1]
[1]Department of Biochemistry Federal university of Technology Minna, PMB 65, Niger State, Nigeria.
[2]Center for Biotechnology and Genetic Engineering Federal University of Technology Minna, PMB 65, Niger State, Nigeria.
[*]Corresponding author: *awoniran.deborah@yahoo.com, +2348181367163, +2348117003360

Abstract
Cancer is a major public health problem and it is one of the leading causes of death worldwide. Its early detection is critical to survival rate. Although, different techniques have been employed in its diagnosis, there is a need for biomarkers which can be easily detected in the patient's fluid with high specificity and sensitivity. Carbonic anhydrases are zinc metalloenzymes that exist in 16 isoforms, they differ in their subcellular localization, catalytic activity and susceptibility to different classes of inhibitors. This study aims at determining the incidence rate of the different cancer types and the changes in carbonic anhydrase activities in cancer patients attending National Hospital compared to healthy individuals. Questionnaires were administered to cancer patients in Oncology Department of National Hospital Abuja. Blood samples were collected from 50 patients and 15 healthy individuals. Carbonic anhydrase was assayed using standard procedures. The result of the survey for 2010-2018 showed the mean yearly incidence of cancer to be 309 for females and 155 for males. The percentage incidence is 50%, 6% and 6% for Breast, colorectal and prostate cancer respectively while the other cancer types represent the remaining 40%. The mean carbonic anhydrase activity is 0.015 ± 0.0015, 0.020 ± 0.0034, 0.019 ± 0.0014 and 0.018 ± 0.0007 for control, breast, colorectal and cervical cancer respectively. The carbonic anhydrase activity was significantly higher in patients with breast cancer than in healthy individuals ($P<0.05$). The result indicates that carbonic anhydrase could be a potential diagnostic target for breast cancer.
Keyword: Cancer, Carbonic anhydrase, breast cancer, colorectal cancer and prostate cancer

CB 112

IN VITRO MEMBRANE STABILITY EFFECT OF *STERCULIA SETIGERA* LEAF METHANOLIC EXTRACT AND FRACTIONS ON HUMAN SICKLE RED BLOOD CELLS.

*****Abdullahi Baraka[a], Halliru Umar Farouk[a], Hajara Aminu[a] and Mohammed Sani Jaafaru[a]
[a]Department of Biochemistry, Kaduna State University, 2339, Tafawa Balewa Way, Kaduna State, Nigeria.
Corresponding Author's email: barakaabdullahi@gmail.com;

Abstract
Sickle cell anaemia is a serious genetic disease affecting red blood cells causing some major physiological changes in the cells. Sickle red blood cells (RBCs) exhibit abnormal morphology and membrane mechanics under deoxygenated conditions due to the polymerization of hemoglobin S. this study investigated the ability of crude methanolic extract, ethylacetate, n-hexane, butanol, and aqueous fractions of *Sterculia setigera* leaf to stabilize sodium metabisulfite sickle RBCs by preventing osmotic induced lysis. The membrane stability test was carried out using sodium phosphate buffered saline at concentration of 0.1, 0.2, 0.3, 0.5, 0.6, and 0.9 mg/ml, with extract and fraction concentrations of 0.5, 1.0, 2.0, and 2.5 mg/ml. The percentage inhibition of heamolysis was found to be dose dependent, with, 2.5 mg/ml showing the highest inhibition. However, an abnormally high level of inhibition was observed in butanol fraction where an activity of 84.12±0.40 % was observed at saline concentration of 0.1 mg/ml which is the concentration where the RBCs were most challenged. Conversely, when comparing the methanolic extract and its fraction with ibuprofen, a significantly lower ($p< 0.05$) difference was observed except for the butanolic fraction. Results from this study show that S. *setigera* leaf can prevent sickle erythrocyte lysis, hence it is a potential remedy for management of sickle cell anaemia.
Keywords: Sickle cell, Anaemia, Haemoglobin,

CB 113

ENVIRONMENTAL MONITORING BY GENE EXPRESSION BIOMARKERS IN NILE TILAPIA (*Oreochromis niloticus)*: LABORATORY AND FIELD STUDIES IN NORTHERN NIGERIA FRESHWATER BODIES

Lawal I[1,2]

[1]University of Stirling, FK9 4LA, Stirling, Scotland, United Kingdom,

[2]Umaru Musa Yar'adua University, Katsina, Nigeria.

email: jallejibia@yahoo.com; Tel: +447436550578

Abstract

Nile Tilapia (*Oreochromis niloticus*) is a freshwater fish used as a sentinel species in environmental monitoring programmes and ecotoxicological studies in the University of Stirling tropical aquarium, Scotland, United Kingdom, and in the northern Nigeria, particularly in the two contaminated freshwater bodies, Dan Agundi sewage pond, Kano municipal, Kano state and Daberam reservoir, Daura, Katsina state and one potentially non-contaminated (reference) site Jibia reservoir, Katsina state. We developed specific primers for the quantification of Cytochrome P4501A (CYP1A) and Vitellogenin (VTG) gene expression by qPCR in prefeeding larvae and liver tissue of adult Nile Tilapia in order to assess their suitability in biological exposure monitoring of Polycyclic aromatic hydrocarbon (PAH) particularly Aroclor 1254 and synthetic estrogen compound Ethinylestradiol (EE2) respectively. All the two genes responded as expected in laboratory tests, using the above analytical grade chemicals. Prefeeding larvae CYP1A mRNA levels showed an approximate 13-fold induction while VTG mRNA showed an approximate 7-fold induction when exposed in 250 ml beakers in the laboratory for 24h. Nile Tilapia CYP 1A hepatic mRNA in Dan Agundi site was not significantly expressed compared to control while that of Daberam site was significantly expressed with an approximate fold difference of 5-fold compared to control site. VTG mRNA of tilapia liver were significantly expressed in both the two sites with an approximate fold difference of 4-fold and 11-fold in Dan Agundi and Daberam sites compared to control respectively. These results demonstrate the utility of Nile tilapia CYP1AmRNA expression and VTG mRNA expression as a biomarker of exposure in field studies. The tools and protocols developed here are likely to apply to other species of the Tilapia species distributed throughout most of the tropical countries.

Keywords: CYP 1A mRNA, VTG mRNA, Tilapia niloticus, Biomarker, Prefeeding, Dan Agundi, Daberam.

CB 114

THE STARRING ROLE OF GENOTYPIC VARIATIONS ON RESISTANCE TO *Plasmodium falciparum* Infection; *In Vitro*

Babangida Sanusi Katsayal[1]*; Aimola Idowu[1]; Muhammad Suraj Abba[2]

[1]Ahmadu Bello University, Zaria

[2]Bayero University, Kano

*Corresponding Authors contact: Tel: +2347065655363; Email;ssskatsayal@gmail.com

Abstract

Plasmodium falciparum malaria remains a significant cause of human suffering, and most malaria-related morbidity and mortality occurs in children living in sub-Sahara Africa. Evolutionary pressure has explained that various erythrocyte polymorphisms could protect against severe complications and death from *Plasmodium falciparum* malaria. Several mechanisms have been proposed to explain the protection of hemoglobin AS and SS from severe *Plasmodium falciparum* malaria. Sickle trait; the heterozygous

and homozygous state of normal hemoglobin A (HbA) could confer protection against malaria in Africa. In the present study, we cultured *Plasmodium falciparum* infected red blood cells from AA, AS and SS for six days. During the six days period, the level of parasite load (Parasitemia) and the activity of arginase released by the parasite were monitored on daily basis. Result obtained shows a significant ($P<0.05$) increase in both the level of parasite load and the activity of arginase. This increase was found to be higher in AA genotype while lower in both SS and AS, but with AS been much lower. The mechanisms by which sickle trait confer such malaria protection might be as a result of change in structural conformation that alter with the parasite ability to invade into the cells through the membrane protein receptors and hence a decrease in its activity in both AS and SS respectively.

CB 114
ASSESSMENT OF AMELIORATIVE EFFICACY OF VITAMIN C AND E ON CYPERMETHRIN-MEDIATED TISSUE DYSFUNCTION IN RATS

*Oyewole O.I., Oladele J.O., Ilori O.T. And Gbolagade A.M.
Drug Design and Toxicology Laboratories,
Department of Biochemistry, Faculty of Basic and Applied Sciences, Osun State University, Osogbo,
*Corresponding author: E-mail: ioluoye@yahoo.com. +2348066808560

Abstract
Cypermethrin is a potent pyrethroids insecticide causing different pathological features when exposed to mammal. Vitamins are used as nutrient supplements and in clinical studies as medical intervention in some disease conditions. The study was designed to determine the possible ameliorating effects of vitamin C and E on cypermethrin-induced toxicity in tissues (liver, kidney and heart) of rats. Twenty-eight female albino rats sorted into four groups were used. Group A-control received distilled water. Group B, C and D were orally administered 25 mg/kg bw cypermethrin. Group C and D were treated daily with 40 mg/kg bw vitamin C and 20 mg/kg bw vitamin E respectively while group B were left untreated. Administration lasted 14 days. Cypermethrin significantly ($P<0.05$) induced hepatic damage characterized by elevated levels of ALT, AST and bilirubin. Levels of albumin, globulin, total protein, ALP, LDH and GGT were also significantly reduced by cypermethrin in the heart which indicate cardiac dysfunction. In addition, the insecticide induced nephrotoxicity characterized by significant increase in the serum levels of urea, uric acid and creatinine as well as decreased concentrations of total protein, albumin and globulin in kidney homogenate. Significant electrolyte imbalance (Na^+, K^+, Cl^- and HCO_3^-) were also recorded in the serum of rats administered the drug. Histological study showed marked distortion in appearance and architecture of the hepatic, renal and cardiac tissues characterized by discolouration, lesions and tissue necrosis in cypermethrin intoxicated rats. Treatment with vitamin C and E significantly reversed the observed alterations in tissue functions caused by cypermethrin as measured parameters in treatment groups were brought close to that obtained in the control group. Vitamin C appeared to have better chemoprotective effect than vitamin E. We conclude that regular intake of vitamin C and E might offer protection against chemical-induced liver, kidney and cardiac damage probably by preserving the membrane integrity of the tissues.
Keywords: Hepatotoxicty, nephrotoxicity, cardiotoxicity, cypermethrin, vitamins.

CB 115

IDENTIFICATION OF MICROORGANISMS RESPONSIBLE FOR CORROSION OF MILD STEEL IN SEA WATER AND EFFLUENT ENVIRONS

[1] Usman M. T., Naja'atu U. A. and Bishir Usman*

[1]Department of General Studies, Emirate College of Health Science and Technology Kano, Kano State,

*Department of Pure and Industrial Chemistry, Bayero University Kano, Kano State, Nigeria

*Email address busman.chm@buk.edu.ng

Abstract

Corrosion is natural process, oxidation and electro-chemical reaction between the metal and its environment in which the metal deteriorate to iron oxide. Microorganisms responsible for influence corrosion of mild steel in Seawater and effluent environs were investigated using the culturing technique. Culturing technique was used to specify presences of microorganisms responsible for changes in weights of water environments prosper and produce acidic by-products. Seawater was found to contains Streptococcus pneumonia bacterial species with average populations of 1.40×10^{-3} cfu/ml and 2.53×10^{-3} cfu/ml and effluent was found to contains Escherichia coli bacterial species with average populations of 3.25×10^{-3} cfu/ml and 3.28×10^{-3} cfu/ml before and after immersion of mild steel respectively. Similarly, fungal species identified in both seawater and effluent, that is Rhizopus fungal species with average populations of 2.98×10^{-3} cfu/ml was found in Seawater and Mucormycosis fungal species with average populations of 9.01×10^{-3} cfu/ml respectively, before and after soaking of metal coupons. Scanning electron microscope (SEM) shows the metal surface micrograph of both seawater and effluent environs, effluent has the highest corrosion products follows by sea water sample. Effluent has a compact surface structure, shows cracks and breaks, which can be attributed to the release of a large amount of carbon dioxide by bacteria and fungi during oxidation process.

Keywords: Corrosion, Microorganisms, Bacteria, Fungi, Mild steel, Seawater, Effluent

CB 116

SEROLOGICAL EVALUATION OF TOXOPLASMA, RUBELLA, CYTOMEGALOVIRUS, HERPES SIMPLEX VIRUS IMMUNOGLOBULIN G ANTIBODIES IN TYPE 2 DIABETIC PATIENTS

Kabir Magaji Hamid [1*], Yazeed Garba Bala [1], Abdullah Sulaiman Mainasara [2], Anas Ahmad Sabir [3], Mohammed Haruna Yeldu [4], Mustapha Umar Kalgo[1], Isah Sulaiman Yahaya [5], Ibrahim Garba [6], Habiba Yahaya Muhammad [1]

[1] Department of Immunology, School of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto

[2] Department of Chemical Pathology and Immunology, College of Health Sciences, Usmanu Danfodiyo University, Sokoto

[3] Department of Medicine, College of Health Sciences, Usmanu Danfodiyo University, Sokoto

[4] Department of Chemical Pathology, School of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto

[5] Department of Medical Laboratory Science, Faculty of Allied Health Sciences, Bayero University. Kano

[6] Department of Medical Microbiology, School of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto

*****Corresponding author**:** kabirhamid11@gmail.com +2348034551260

Abstract

There is limited knowledge regarding whether infection by specific pathogens contribute to the subsequent occurrence of diabetes. The aim of this study was to evaluate the presence of Toxoplasma, Rubella, Cytomegalovirus (CMV), Herpes Simplex Virus (HSV) 1 and 2 (ToRCH) immunoglobulin G (IgG) antibodies among diabetic patients attending Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto. The study was cross sectional study. About 82 diagnosed diabetic patients attending

diabetic clinic of UDUTH, Sokoto were enrolled in the study. Blood sample was collected from the Patients then process to obtain a serum. The serum was used for detection of ToRCH IgG antibody using Immunochromatography techniques. A questionnaire was administered to obtain necessary information. The finding of this study shows that the prevalence of ToRCH IgG was Rubella 78 (95.1%), CMV 67 (81.7%), HSV-1 23 (28.0%), HSV-2 15 (18.3%) and Toxoplasma 5 (6.1%). Most of the patients 33 (40.2%) were exposed to two organisms from the ToRCH. A reasonable number of the participants 29 (35.4%) were seropositive to three pathogens. However, 15 (18.3%) have one infection while 5 (6.1%) have four infection of ToRCH members. The high prevalence of Rubella and CMV among the type 2 diabetic patients is alarming. ToRCH screening as part of routine tests for diabetic patients is recommended.

Keywords: Diabetes Mellitus, Human Herpesvirus, Immunoglobulin G, Prevalence, Rubella, Toxoplasma

CB 117
PREVALENCE TRYPANOSOMIASIS INFECTIONS IN ANIMALS IN SELECTED ABATTOIR FROM 3 LOCAL GOVERNMENT AREA OF KADUNA STATE.

[1]Umar Jibrin Maigoro; [1]Akinyemi Olaposi Fajimi; *[1]Usman Onuh Adamu; [1*]Simon Oluwatobi Omotainse; [2]Sa'idu Alhaji Mohammed; [1]Abubakar.Ahamad Lukman;
[1]ANIMAL African Trypanosomiasis Research Department NITR Kaduna Nigeria.
[2]Human African Trypanosomiasis Research Department, NITR Kaduna Nigeria.
*Corresponding Author: usad4ril@gmail.com (08035149652)

Abstract
The prevalence of Trypanosomiasis in trade animals (Camels, Cattle, Goats, and Sheep) slaughtered was investigated at the beginning of the rainy season (May 2019). In four selected abattoir (Zango, Sabo, Kakuri and Kawo) from Three Local Government Areas. (Kaduna South, Kaduna North, and Chukun). A Total of 550 animals (Cattle, Camel, Sheep, & Goats) were sampled. Standard Trypanosomiasis detection methods were performed and the total infection rate was found to be 2.5%. Also Cattle were found to be more infected then the other animals sampled.
Keywords: Animals, Infection Rate Trypanosomiasis, Kaduna Abattoir.

CB 118
IN VITRO STUDIES ON TRYPANOLYTIC ACTIVITY OF AFRICAN HEDGEHOG (*Atelerix alviventris L.)* SERUM AND PLASMA AGAINST *Trypanosoma brucei brucei*

*Abubakar Abdullahi Lema[1,2], Adamu Isyaku[1], Aminu Basher Yusuf [2,3] and Khadija Idris Jere [1]
[1]Biological Science Department, Al-Qalam University, Katsina, Nigeria.
[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
[3]Nigerian Institute for Trypanasomiasis and Research (NITR), Kaduna State Nigeria
[*]Corresponding author: +2348038276718, abubakar.alema@auk.edu.ng

Abstract
Protozoan parasites of the Order Trypanosomatidae infect wide range of multicellular organisms, causing devastating and potentially fatal diseases. There are growing concerns that the parasites are expanding their reservoirs among wild animals, which habours the trypanosomes and withstand the infection, from which tsetse flies transmit the parasites back to humans and livestock. The normal human serum, as well as sera from some primates, has been discovered to have lytic effect on most species of African trypanosomes, similarly the serum of hedgehog is reported to have trypanolytic activity against *T. congolense.* Therefore these studies aim to determine the trypanolytic activity of African hedgehog serum and plasma against *Trypanosoma brucei brucei*. We investigated the serum and plasma prepared from ten adult hedgehogs for the possible presence of trypanoloytic factors and found that the blood of these animals contains factors that rapidly killed trypanosomes even when diluted 1000 times. It is here demonstrated that hedgehog blood has significant trypanoloytic activity against *T.b. burucei*.
Keywords: Trypanolytic factor, African Hedgehog, Trypanosomiasis, *T. b. brucei*, Serum and plasma.

CB 119

EFFECT OF *Ipomoea batatas* (SWEET POTATOES) LEAVES ON GLUCOSE LEVEL ALLOXAN INDUCED DIABETIS RATS

[1]Hauwau S.M., [1]Modibbo, A.A., [2]Saadatu, S.M., [3]Ahmed M.U and [1]Paul M. Clara

[1]Chemical Science Technology Department, Federal Polytechnic Mubi

[2]Biotechnology Department, Modibbo Adama University of Technology, Yola

[3]Biochemistry Department, Adamawa State University, Mubi

Abstract

This study was carried out to investigate the hyperglycaemic effect of *Ipomoea batatas* (sweet potatoes) leaves extract in alloxan-induced diabetic rats. Qualitative phytochemical test was carried out. A total of twenty four rats were divided into six consisting four rats in each group. The groups included normal Control, diabetic control, diabetic treated *Ipomoea batatas* at concentrations of 100mg/kg body weight, 200mg/kg bw and 400mg/kg bw and drug control group (metformin). The qualitative phytochemical screening shows the presence of tannins, terpenoids and flavonoids. After 21 days treatment, it was observed that there was significant reduction in glucose levels in all the treated groups. This study suggests that *Ipomoea batatas* leaves extract possess, a hypoglycaemic effect at 400mg/kg b.w, therefore, it can be used in the management of diabetes mellitus.

Keywords: Diabetes, *Ipomoea batatas*, alloxan

CB 120

PREVALENCE OF *Plasmodium falciparum* AMONG PREGNANT WOMEN ATTENDING AHMADU BELLO UNIVERSITY MEDICAL CENTER, ZARIA, KADUNA STATE, NIGERIA

***Anchau, Z. G[1]., Salisu, I. G[1]. and Ibrahim H.M[2].**

[1]Department of Microbiology, Faculty of Life Sciences, Ahmadu Bello University, Zaria

[2]Department of Pharmacognosy and Drug Development, Faculty of Pharmaceutical sciences, Gombe State University

*Corresponding author: z.garbaa@gmail.com

Abstract

Malaria is a serious disease at pregnancy with fatal consequence for both mother and unborn baby if not properly treated. The study aimed to determine the prevalence of *Plasmodium falciparum* among pregnant women attending Ahmadu Bello University Medical Center, Zaria, Kaduna State, Nigeria. A total of 100 blood samples were collected from pregnant women at their different gestational age attending the centre for antenatal care between April and July, 2017. Rapid diagnostic test (RDT) and thick film stained with Giemsa were used for the detection of the parasite. Structured questionnaires were also administered to the patients to determine possible risk factors associated with malaria. A prevalence of 6% and 13% of *P. falciparum* infection was obtained by RDT and microscopy respectively. Pregnant women of age group 18-22 had the highest prevalence with 6.7% and 33.3% as revealed by RDT and microscopy respectively. The findings of the study showed association of the disease with other risk factors such as gestational age, level of education, therapy, as well as the use of insecticide-treated net. Although the prevalence of *P. falciparum* was low, there is need to screen pregnant women for malaria during their antenatal visit.

Key words: Prevalence, *P. falciparum*, pregnant women, Zaria

CB 121

EFFICACY OF SOME COMMONLY SOLD DISINFECTANTS AGAINST *Pseudomonas aeruginosa* AND *Staphylococcus aureus* ISOLATED FROM HOSPITAL FOMITES.

*Anchau, Z. G[1]., Dennis, J.B.[1] and Ibrahim H.M[2].
[1]Department of Microbiology, Faculty of Life Sciences, Ahmadu Bello University, Zaria
[2]Department of Pharmacognosy and Drug Development, Faculty of Pharmaceutical sciences, Gombe State University,
*Corresponding author: z.garbaa@gmail.com

Abstract
Disinfectant failure could increase microbial load on fomites and predispose patients to nosocomial infections. The aim of this study was to determine the antibacterial activity of some commonly sold disinfectants against pathogenic bacteria isolated from hospital fomites. *Pseudomonas aeruginosa* and *Staphylococcus aureus* were isolated from fomites of Ahmadu Bello University Medical Centre using standard microbiological techniques. The test organisms were used to evaluate the efficacy of three commonly sold disinfectants (Disinfectants A, B and C) using Rideal Walker method. From the study conducted it was observed that disinfectant B was most effective on both organism with a Rideal Walker Coefficient range of 2.00 - 2.85 while disinfectant C had a range between 1-2. However, disinfectant A was not effective against both test organisms. In addition, disinfectant B was effective at higher dilutions than the others. Disinfectants should be evaluated before their application in order to prevent or avoid nosocomial infections.
Key words: Efficacy, disinfectants, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, hospital fomites.

CB 122

EFFECTS OF CARDIAC MUSCLE ANTIOXIDANT STATUS ON SERUM BIOCHEMICAL INDICES OF CARDIAC FUNCTION OF POSTPARTUM RATS ADMINISTERED NATRON

Bello, H.A[a]*., Wali, U[b]., Muhammad, S.A[a]., Abbas, A.Y[a]., Abubakar, M.K[a]., Isezuo, S.A[c]. and Saidu, Y[a].
[a]Department of Biochemistry, [b]Department of Chemical pathology, School of Medical Laboratory Science, [c]Department of Medicine, Usmanu Danfodiyo University, Sokoto
*Corresponding author: email: mejidda.brilliant@gmail.com, phone number 07039783709

Abstract
Natron has been implicated in the pathogenesis of peripartum cardiomyopathy, probably due to oxidative stress. The current research investigated the correlation between antioxidant status of cardiac muscles and biochemical indices of cardiac function of postpartum albino rats administered graded doses of natron. A total of twenty (20) postpartum rats were randomly grouped into four of five rats each. Group A was administered distilled water while groups B, C and D were administered 100, 200 and 300 mg/Kg body weight of natron by oral gavage respectively for 28 days. Twenty-four hours after the last administration, blood samples and cardiac muscles were collected for biochemical analysis using standard techniques. The study showed that natron induced0 oxidative stress by reducing the levels of Se, Cu and Zn but increasing Mn. The activities of glutathione peroxidase and superoxide dismutase, and level of catalase were found to decrease whereas malondialdehyde increased in the cardiac muscles. Natron also stimulated increase in serum levels of myoglobin and lactate dehydrogenase. Significant positive correlations ($p<0.05$) were observed between serum levels of cardiac indices, and malondialdehyde and Mn. The antioxidant enzymes and mineral elements however, gave significant negative correlations ($p<0.05$) with the cardiac function indices. The result of the current study indicated that natron caused oxidative stress in the cardiac muscles which may be responsible for the observed derangement in the serum biochemical indices of cardiac function and therefore may be implicated in the pathogenesis of peripartum cardiomyopathy.

CB 123

HEMATOLOGICAL AND BIOCHEMICAL CHANGES IN HAART AND HAART NAÏVE HIV PATIENTS ATTENDING A SECONDARY HEALTHCARE CENTRE IN NASARAWA STATE, NIGERIA

*Osumanyi, D.I.,Bamidele, T.O. andEnemali, M.O.
Department of Biochemistry and Molecular Biology, Faculty of Natural and Applied Sciences
Nasarawa State University,PMB 1022 Keffi - Nigeria
*Corresponding author: Email/phone no.: osumanyidaniel@gmail.com/+2349062695922

Abstract

Prior to commencing antiretroviral therapy (ART), hematological and biochemical abnormalities such as cytopenia, liver damage and renal injuries are common changes associated with Human Immunodeficiency Virus (HIV) patients. This study investigated the changes in hematological and biochemical parameters of HIV/AIDS patients on ART attending General Hospital,Doma, Nasarawa State, Nigeria. Blood samples were collected from 150 subjects, 70 seropositive patients on HAART, 50 HAART naïve and 30 apparently healthy HIV sero-negative individuals as controls**.** Platelet (PLT), WBC, RBC, Hgb, Neutrophil, Lymphocyte count, AST, ALT, blood urea and creatinine were determined using standard biochemical techniques. The results of the samples analyzed indicated that subjects on HAART showed an insignificant increase in WBC (4.6± 1.25 to 4.85± 1.31), Neu (1.94± 0.54 to 2.02± 0.85), Lym (2.09± 0.80 to 2.17± 0.67) as compared to HAART naïve patients. A significant increase ($p< 0.05$) in hemoglobin concentration on HAART subjects than HAART naïve subjects was observed. Also,a decrease in RBC and PLT on HAART subjects compared to HAART naive with $4.91\pm 1.30*10^3$ u/L and $202.48\pm70.72*10^3$ u/L respectively. Urea and Creatinine showed an increase from 3.01±1.47 to 3.73±1.91 and from 70.23±10.47 to 78.98±14.05 respectively for HAART patients. Other biochemical parameters of HIV patients on HAART found an increase in ALT from 4.44±1.43 to 6.10±3.01 while AST also increased from 16.14±11.74 to 23.38±8.53. In conclusion,the study revealed hematological and biochemical changes in HAART and HAART naïve HIV patients in Nasarawa State, Nigeria and suggests a critical assessment of the control measures in the management of HIV in Nigeria.

Keywords: *HIV, HAART, HAART Naïve, Hematological parameters, Biochemical Assessment,*

CB 124

ASSESSMENT OF PHYSICOCHEMICAL, MICROBIAL AND OXIDATIVE STRESS MARKERS IN BORE HOLE WATER SOURCES AROUND KOGI STATE UNIVERSITY, ANYIGBA.

*Emmanuel Friday Titus[1], Oka Samson Ayodeji [1],Sanni Momoh[2] Obafemi Folake Eyitayo[2]
[1]Dept of Medical Biochemistry,College of Health Sciences, Kogi State University, Anyigba. Kogi state Nigeria
[2]Dept of Biohemistry,Faculty of Natural Sciences, Kogi State University, Anyigba.Nigeria
Corresponding author: Email address: emmfriday@gmail.com, 08069608367

Abstract

The assessment of drinking water from different sources within the vicinity of Kogi State University, Anyigba was conducted. A total of four samples of water were collected, three samples were collected from three sites (the borehole behind the university close to NTA, Anyigba (sample A), the tap from the borehole supplying students in new male hostel (sample B), and the borehole supplying students in Ocheja hostel (sample C) from the study area, while the fourth sample D, was from Idah Avenue, University Staff Quarters. These samples were examined for microbial contamination, some physicochemical parameters, Catalase and super oxide dismutase activity using different Standard methods. From the microbial analysis total coliform count ranged from 0 to 1/125ml which is an indication of contamination. All physicochemical parameters (pH ranged from (6.50-8.10), electrical conductivity (149.40-254.47µs), sulphate (0.08-0.329ppm), phosphate (0.08-0.020ppm), biological oxygen demand (2.75-3.450mg/l), chemical oxygen demand (6.68-8.20mg/l), color (2.088-3.016), turbidity (3.207-4.264NTU), total solid (57.626-78.049ppm), fluoride (0.060-0.098ppm), temperature (26-270C), NO_3(0.043-0.375ppm),

NO_2(0.033-0.049ppm), NH_4(0.433-1.543ppm), total hardness (10.305-22.212mg/l) were found to be below the world Health Organisation permissible limit. Catalase enzyme activity was raised in Albino rats that were given Water from the borehole behind the School close to NTA Anyigba and water obtained from borehole beside new male hostel compared to water obtained from borehole beside Ocheja hostel and from University Staff Quarters. The super oxide dismutase (SOD) activity was raised in sample C compared to other samples. This study shows that microbial contamination and other human activities have a negating influence on the water quality.

Keywords: Borehole Water, Kogi State University, Oxidative Stress, Catalase enzyme.

CB 125
CURRENT PREVALENCE OF TRYPANOSOMIASIS IN TRADE SMALL RUMINATS IN SELECTED ABATTOIR OF KADUNA METROPOLIS

[1]Sa'idu Alhaji Mohammed; [2]Umar Jibrin Maigoro; [2]Akinyemi Olaposi Fajimi; [2]Abubakar.Ahamad Lukman; [2*]Simon Oluwatobi Omotainse; *[2]Usman Onuh Adamu
[1]Human African Trypanosomiasis Research Department, NITR Kaduna Nigeria.
[2]ANIMAL African Trypanosomiasis Research Department, NITR Kaduna Nigeria.
*Corresponding Author, usad4ril@gmail.com (08035149652)

Abstract
The current prevalence of trypanosome in the trade small ruminants at slaughter in Kaduna abattoirs was investigated during the beginning of the rainy season (May 2019). Pasitological and concentration methods were used to detect typansomes in the blood collected A Total of 150 goats and 150 sheep were screened and the packed cell volume were determined. The overall infection rate was 2%. However the Infection in females (1.5%) was higher than in the males (0.5%). Also the overall infection rates in sheep were higher than those in goats. *T. Congolense* was the dominat typonsomes found.

Keywords: Trypanosomiasis, Prevalence, Goats, Rainy Season, Trypanosomiasis and Ruminants.

CB 126
A COMPARATIVE STUDY ON THE ANTI DIABETIC EFFECT OF HOT AND COLD PLANT EXTRACTS OF *Rhizophora racemosa*

Edwin Chukwumah Nwatah and *Emmanuel Ogbadoyi
Department of Biochemistry, Federal University of Technology, Minna
*Corresponding author: emmanuelogbadoyi@gmail.com, +2348034509296

Abstract
This study was designed to compare and evaluate the antidiabetic effects between the hot and cold methanolic extracts of *R. rcaemosa* on wister albino rats. Glucose of 2g/Kg body weight was administered to all group of rats except for the positive control that received normal saline. An oral glucose tolerance test was carried out to ascertain the clearance rate and the result of the mean standard deviation is as follows; hot extract is 5.7mmol/L $\pm$ 0.66, cold extract 4.06mmol/L $\pm$0.74, positive control is 5.83mmol/L $\pm$0.57 and negative control is 4.75mmol/L $\pm$0.56. It could be evaluated from the result shown that the cold extract significantly reduced blood glucose when compared with the standard (Metformin) which has a value of 4.67mmol/L $\pm$0.42 with a statistical $p < 0.05$ value.

CB 127

EPIDEMIOLOGICAL DYNAMICS OF AFRICAN TRYPANOSOMIASIS USING MOLECULAR TOOLS

*Akinseye Olanrewaju Roland, Ale Ebenezer Morayo, Olaleye Olusola
*Nigerian Institute for Trypanosomiasis & Onchocerciasis Research (NITR)
Federal University, Wukari, Taraba state
Corresponding author: akinseyeroland@gmail.com, +2347031828325

Abstract

Molecular epidemiology involves the study of distribution and determinants of infectious diseases in a population which incorporate molecular and other biologic measurements (biomarkers) into epidemiological research. African Trypanosomiasis is caused by the genus Trypanosoma and transmitted by infected tsetse fly bite. Among the most important Neglected Tropical Diseases, sleeping sickness threatens millions of people in 36 countries in sub-Saharan African. In 2009, after continued control efforts, the number of cases reported dropped below 10 000. This decline in number of cases has continued with 1446 new cases reported in 2017. The estimated number of actual cases is below 10 000 and the estimated population at risk is 65 million people. Hence, there is need to determine the actual number of recent affected cases using molecular tools. Molecular epidemiology of African trypanosomiasis implements various molecular tools for epidemiological studies. The tools include Multilocus enzyme electrophoresis, Multilocus sequence typing, Restriction fragment length polymorphism and Multilocus microsatellite typing. These tools have different power of resolution to address key question related to the emergence and spread of disease which is rapidly evolving due to environmental changes, immune-suppression and treatment failure risk factors. Implementation of molecular tools to understand the epidemiological dynamics of African trypanosomiasis will contribute to: efficient disease control; identify species in an outbreak; study prevalence of infection in a population; aid clinical diagnosis and case management; determine population structutre and extent of migration of pathogens and vectors; study the emergence and spread of drug resistance. Hence, the efficient interdisciplinary interaction and research is vital to achieve utmost success in the molecular epidemiology of African trypanosomiasis.

Keywords: Molecular, epidemiology, trypanosomiasis, African, population

CB 128

ANTHROPOGENIC CHARACTERISTIC OF MOSQUITO BREEDING SITES IN RELATION TO LARVAL DENSITY IN WUDIL/ DARKI COMMUNITIES

*BICHI ,S.A, DALHATU,M.M and ABBA, M.A.
Department of Biochemistry, Kano University of Science and Technology Wudil Kano-Nigeria.
*Corresponding author: bichisadiya2@gmail gmail.com +2348037159750

Abstract

Malaria is caused by five species of the genus *Plasmodium* that affect humans: *Plasmodium vivax, P. ovale, P. malariae* and (Singh *et al*., 2004). Parasites are transmitted to humans by the bite of infected female mosquitoes of more than 30 *anopheline species*. Malaria continues to be a major threat in the world; an estimated 3.3 billion people were still at risk of malaria in 2011, most of them living in sub-saharan Africa (WHO,2010). Mosquitoes are the most important vectors of human diseases such as malaria, filariasis, dengue and Japanese encephalitis (Gopalakrishnan *et al.*, 2013). Mosquito larvae were collected from available breeding sites, such as containers, stagnant pools, domestic run-offs, v ehicle

tyres, tanks, reservoirs, and pots. Physicochemical parameters of the water sampels collected from the breeding habitats were analyzed. The result shows that Anopheles mosquitoes were found breeding in all ecological zones of Darki/Wudil. Breeding was predominantly in pools (formed by rain), ponds, cemented reservoirs, overhead tanks, and rice farms. The study shows high larval indices well above critical points. Thus, it is evident that these areas are at very high risk for an outbreak of malarial diseases and water holding containers produced by humans are the main important habitats for anopheles mosquito.

Keywords: Anthropogenic, *Anopheles*, larval density,*Plasmodium.*

CB 129

ENZYMATIC PRODUCTION OF *Sarotherodon Galillaeus* MUSCLE PROTEIN HYDROLYSATES AND ASSESSMENT OF ITS ALPHA-AMYLASE INHIBITORY AND ANTIOXIDANT POTENTIAL.

Abideen Oyinlola AYANGBEMI, Aanuoluwapo Joy JEROME and Oludele Olyemi ODEKANYIN*,
Biochemistry and Molecular Biology Department, Obafemi Awolowo University, Ile-Ife, Nigeria.
* Corresponding Author: dekanyin@oauife.edu.ng, +234806-287-9457

Abstract

The study was carried out to evaluate the antioxidant activity and α-amylase activity inhibitory potential of *Sarotherodon galillaeus* muscle protein hydrolysates. *Sarotherodon galillaeus* muscle protein isolate was hydrolysed with three digestive proteases namely trypsin, chymotrypsin and pepsin. Degree of hydrolysis was determined. The antioxidative potential of the hydrolysates was investigated using DPPH radical scavenging, ferric reducing power, hydrogen peroxide scavenging and metal chelating activity. The ability of the hydrolysates to inhibit the activity of sugar-hydrolysing enzyme was also evaluated. Highest degree of hydrolysis was obtained with pepsin (55.86%) followed by trypsin (47.11%) and chymotrypsin (42.36%) after 6 hrs of hydrolysis. The half maximal inhibitory concentration (IC_{50}) of hydrolysates produced by trypsin, chymotrypsin and pepsin for DPPH radical scavenging activity were 1.26 ± 0.95, 0.98 ± 0.07 and 1.18 ± 0.34 mg/ml respectively. Trypsin-produced hydrolysates displayed highest metal chelating activity and ferric reducing power while hydrolysates obtained with pepsin showed highest hydrogen peroxide scavenging activity. Amylase activity inhibitory potential of all the hydrolysates was low with pepsin-produced hydrolysates shown highest inhibitory effect of 18.46 ± 1.51%. The hydrolysates showed antioxidative potential that can be used in prevention of food oxidation.

CB 130

EVALUATION OF RESISTANCE AND SUSCEPTIBILITY PROFILES OF SOME BACTERIAL PATHOGENS TO SOME FLOUROQUINOLONE ANTIBIOTICS IN KANO, NIGERIA

Mohammed, B. and Ahmad, R. H.
Department of Microbiology, Bayero University, Kano. P. M. B. 3011
Correspondence Author's E-Mail: bshchemiron@yahoo.com
Telephone No; 07012789177

Abstract

Susceptibility profiles of some pathogenic bacteria to some flouroquinolones were evaluated from October-December, 2015 using modified Kirby-Bauer Disc Diffusion Technique. Four flouroquinolones antibiotics; ofloxacin and ciprofloxacin (second generation), levofloxacin (third generation), moxifloxacin (fourth generation) were tested on five bacterial species (*Staphyllococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Enterococcus faecalis* and *Klebsiella pneumoniae*) sourced

from Aminu Kano Teaching Hospital, Kano, Nigeria. Thirty clinical isolates of each bacterial specie were randomly collected from Microbiology Laboratory at Aminu Kano Teaching Hospital, Kano and re-confirmed at Microbiology Laboratory in Bayero University, Kano. The results of the study revealed that 8, 6, 1, 0 (26.7, 20.0, 3.33, 0.00%) isolates of *E. faecalis* isolates were sensitive to levofloxacin, ciprofloxacin, ofloxacin and moxifloxacin respectively, while 22, 17, 14, 22 (73.3, 56.6, 46.6 and 73.3%) were moderately sensitive and 0, 7, 15, 8 (0.00, 23.3, 50.0 and 26.6%) were resistant to the antibiotics. Seven (7), 15, 4, 0 (23.3, 50.0, 13.3 and 0.00%) of *S. aureus* isolates were sensitive to levofloxacin, ciprofloxacin, ofloxacin and moxifloxacin respectively, while 23, 15, 24, 27 (76.6, 50.0, 80.0 and 90.0%) and 0, 0, 2, 3 (0.0, 0.0, 6.66 10.00%) isolates were moderately and resistant to the studied antibiotics. *E. coli* isolates were 96.6% resistant to levofloxacin, *Klebsiella pneumoniae* and *P. aeruginosa* isolates exhibited 76.6 and 50.0% resistance to the antibiotic respectively. There was significant difference in the performance of the four antibiotics used, ciprofloxacin performed better than others (p-value 0.00604). There was no significant difference in the percentages of sensitive bacterial species to the antibiotics used in the research (p-value 0.614), however, *P. aeruginosa* yielded relatively higher number of sensitive isolates. It can be concluded that most of the isolates were moderately sensitive to all the antibiotics employed in this study. It is recommended that routine susceptibility tests should be employed before patients are placed on antibiotics.

Key words: Flouroquinolones modified Kirby-Bauer disc diffusion technique, clinical bacterial isolates, sensitivity and resistance profiles.

CB 131
EFFECT OF DIFFERENT PLASTICIZERS ON THE PROPERTIES OF FILMS PRODUCED FROM BLENDS OF CHITOSAN AND AFRICAN PALMYRA PALM (*BORASSUS AETHIOPUM)* SHOOTS STARCH COMPOSITES.

[1*]Omede Charles, [1,2]Egwim Evans Chidi, [1]O.K Shittu, [1]Ossamulu Ifeanyi Famous, [1]Ezikanyi Godwin Kelechukwu

[1*]Biochemistry Department, Federal University of Technology, PMB 65, Minna, Niger State
[2]Center for genetic Engineering and Biotechnology, Federal University of Technology, *Corresponding Author's Email: omedecharles@gmail.com Mobile No. +2348050770236

Abstract
The concern in environmental waste management and toxicity of petroleum derived plastics is leading to the search for renewable, nontoxic, and biodegradable materials for packaging. Starch is a promising film forming biopolymer with greater mechanical strength when incorporated with chitosan. This study presents the evaluation of the effect of different plasticizer types (glycerol (GLY), sorbitol (SOR), and shea butter (SB) singularly and in combination with varying concentration (0, 15, and 40 w/w %) on films from blends of (chitosan and Borassus *aethiopum* shoot starch composites (CBaS). Solution casting technique was employed for the film preparation. Starch from African Palmyra Palm (Borassus *aethiopum)* shoot has amylose content of about 75%. The best films were formed at 70% starch to 30% chitosan blends. The tensile strength of (CBaS) films decreased irrespective of the plasticizer used, though the elongation at break (E) increased concomitantly with increase in the concentration of the plasticizer types. Change in plasticizer concentration showed a significant increase at ($p<0.05$) in water vapor permeability and gas (O_2 and CO_2) permeability of (GLY), (SB) and (GLY-SB) plasticized films but there was no significant increase in (SOR) plasticized films. Sorbitol plasticized film were found to be more brittle. The films from (CBaS) blends are not transparent with or without plasticizers. This study concludes that the blend of (CBaS) is a promising nontoxic biomaterial for packaging when properly plasticized.

Keywords: Borassus *aethiopum*, Chitosan, Glycerol, Sorbitol and Shea butter.

CB 132
PARTHOLOGICAL EFFECT OF SOME HORMONS ON RATE INFECTED WITH *TRYPANOSOMA BRUCEI BRUCEI.*

Bashir Adamu Kugu*[1], Halima Ali Muhammad[2], Maryam Abdulkadir Kassim[2], Nusaiba Bala Sarkin Gobir[2], Sarah Iwuongo Bala[2] and Zainab Saleh Tamba[3].

Nigerian Institute for Trypanosomiasis Research (NITR). #1 Surame Road, Unguwan Rimi, GRA. P.M.B. 2077, Kaduna state, Nigeria.
*Corresponding author: Mobile Phone: +2348067029512; E-mail: bashkugu@yahoo.com

Abstract

The Pathological effect of some hormons on rate infected with *trypanosoma brucei brucei* was investigated. The rats where divided randomly into two group (Group one and two), Ten in each group. Group two were infected intraperitoneally with the same load of parasites. At the peak of parasitaemia, the rats where sacrificed by human decapitation and blood sample where collected for serum biochemical analysis. The level of Alanine Aminotransferase (ALT) and Aspartate Aminotransferase (ASP) was investigated using Bergmeyer *et. al*. (1978) using a commercial reagent kit. Alkaline phosphatase (ALP) was investigated using McComb and Bowers (1972) with a commercial reagent kit. The blood serum analysis of ALT, ASP and ALP were significantly higher in the infected group. In conclusion, The presence of *trypanosoma brucei brucei* in the albino rats lead to the increased in the normal level of ALT, AST and ALP which is indicating damage to liver, brain, cardiac muscles, hepatocellular damage and generalized degenerative changes in other tissues and organs in trypanosomiasis.

CB 133
SEROPREVALENCE AND RISK FACTORS OF BOVINE BRUCELLOSIS IN NIGER STATE, NIGERIA.

FAROTIMI, Adebayo Tosin*; SHITTU, Oluwatosin Kudirat; MAKUN, Hussaini Anthony
*Biochemistry Department, Federal University of Technology, Minna, Nigeria
farotimi.pg820638@st.futminna.edu.ng +2347032021036

Abstract

Brucellosis is a worldwide zoonosis that is recognized as a major cause of economic losses in livestock due to its primary effect on the reproductive system in affected animals which result into reduction in production and serious threat to human health. In this study seroprevalence of bovine brucellosis were studied in some selected abattoir in Niger State. Rose Bengal Plate Test (RBPT) was used to screen for the presence of the bacteria antibodies, Enzyme Linked Immunosorbent Assay (ELISA) as a confirmatory test and questionnaire survey to assess the level of awareness and risk factors. The study was conducted in 12 randomly selected abattoirs in Niger State from which a total of two hundred and ten blood samples were collected and fifty respondents interviewed. Out of 210 samples, One hundred and six (50.48%) samples were seropositive by RBPT, and seven (6.60%) samples were confirmed positive by ELISA. Thirty eight (53.52%) male samples were tested positive to RBPT, and five (13.16%) were confirmed positive by ELISA. Sixty eight (48.92%) female samples were tested positive to RBPT, and two (2.94%) were confirmed positive by ELISA. The risk associated factor based on respondent from veterinary hospital staffs, abattoir workers and cattle farmers are awareness and acknowledge existence of brucellosis 34 (68%), post-secondary education 13 (26%), inter-keep of other animals with cattle 13 (26%), veterinary based hospital treatment of infected animals 15 (30%), use of Personal Protective Equipment (PPE) 10 (20%) and direct raw milk consumption 23 (46%). The variations in the results of the two tests showed that many of the RBPT test results were falsely positive because of its relatively low specificity. However, the detection of 6.60% seroprevalence indicates that the disease may have remained unabated. Also, the prevalence of disease in abattoir cattle put humans at risk. Therefore, a more specificity test should be used to screen animal before slaughter.

Keywords: Bovine, Brucellosis, ELISA, Rose Bengal, Seroprevalence.

CB 134
INVOLVEMENT OF OXIDATIVE STRESS IN BACTERICIDAL ACTIVITY OF VANILLIC ACID AGAINST *Staphylococcus Aureus*

Folami, S. O., Nurudeen, Q. O. and Falana, M. B.

[1]Department of Biochemistry, Faculty of Life Science, Kebbi State University of Science and Technology, Aliero, Kebbi State, Nigeria
[2]Department of Biological Sciences, Al-Hikmah University, Ilorin, Nigeria
***Corresponding Author, Tel.:** +2347063502938**, E-mail**: Medical4real@gmail.com

Abstract

There is emergence interest in the potential of phenolic compounds of vanillic acid to induced oxidative stress. This study was designed to evaluate possible involvement of oxidative stress in bactericidal activity of vanillic acid against *Staphylococcus aureus*. The antibacterial activities of vanillic acid against *Staphylococcus aureus* was tested by microdilution susceptibility method. Treatment groups were designated into six microbial growth groups as follows; group 1 containing 4.5 mL Broth inoculated with *S. aureus* and 0.5 mL DMSO (serving as control), group 2 containing 4.5 mL Broth inoculated with *S. aureus* and 0.5 mL 2'2-bipyridyl, group 3 containing 4.5 mL Broth inoculated with *S. aureus* and 0.5 mL thiourea, group 4 containing 4.5 mL Broth inoculated with *S. aureus* and 0.5 mL Vanillic acid (100 mg/mL) prepared in DMSO, group 5 containing 4.4 mL Broth inoculated with *S. aureus*, 0.5 mL Vanillic acid and 0.1 mL 2'2-bipyridyl while group 6 contained 4.4 mL broth inoculated with *S. aureus*, 0.5 mL Vanillic acid and 0.1 mL thiourea. Each group was incubated at 37^{o} C for 3 h. Absorbance of the incubation medium at 600 nm was monitored every 30 mins over the 3-h incubation period, as a measure of Colony forming unit (CFU). A time- dependent decrease in the cells of *S. aureus* following exposure to vanillic acid was observed when compared with DMSO. However, the decrease was more profound at the first 60 minutes and became steady at 140 – 180 minutes. Similar dose dependent increase in the activity of superoxide dismutase and catalase were recorded. The non-enzymatic antioxidant glutathione decreased significantly ($p > 0.05$). The level of malondialdehyde and fragmented DNA increased significantly ($p > 0.05$) in the bacterial cells treated with vanillic acid when compared with DMSO treated cells. The CFU of *Staphylococcus aureus* following exposure to vanillic acid increased significantly ($p > 0.05$) in the presence of 2,2 bipyridyl and Fchelator, when compared with treatment with only vanillic acid, suggesting the involvement of hydroxyl radical in the cell death. The available data from this study showed that vanillic acid induced oxidative stress in *Staphylococcus aureus* as evident from elevated levels of superoxide anion radical and antioxidant enzymes.

Key words: Vanillic acid, 2,2 bipyridyl, Fchelator, dimethyl sulfoxide (DMSO), Oxidative stress, *Staphylococcus aureus*

CB 135
SERUM PROTEIN PROFILE OF HIV/HBV CO-INFECTED SUBJECTS ON HAART IN PLATEAU STATE, NIGERIA

*** Chidi U. Igwe, Cosmas O. Ujowundu, Emmanuel E. Ewuga, and Viola A. Onwuliri**

Department of Biochemistry, Federal University of Technology, Owerri
*Corresponding Author: chidi.igwe@futo.edu.ng; igwechidi9@gmail.commailto:emacself@gmail.com; +234 (0) 806 6075 587

Abstract

The study assessed the impact of HIV and HBV mono- and co-infections on serum total protein, albumin, and globulin fractions using standard methods among adult (25 – 64 years old) patients on Highly Active Antiretroviral Therapy (HAART) attending AIDS Preventive Initiative in Nigeria (APIN) Centre, Jos University Teaching Hospital (JUTH), Plateau State from March to October 2016. The cross-sectional study involved 80 subjects; 20 HIV/HBV co-infected, 20 each of HIV and HBV mono-infected controls,

and 20 seronegative controls. Significant ($p<0.05$) increase in serum total protein but a reduction in albumin concentration were observed in the HIV/HBV co-infected group. Similarly, significant ($p<0.05$) increases in alpha-1 and alpha-2 globulin concentrations were observed in the infected groups compare to the seronegative control group. There was no significant ($p>0.05$) increase in beta globulin concentration of the HIV/HBV co-infected group compared with the seronegative control group, while a significant ($p<0.05$) elevation in gamma globulin was observed in the HIV/HBV co-infected compared to the other groups. The study suggests the prognostic importance of alpha and gamma globulin fractions of serum protein in the management of HIV/HBV co-infection.

Key words: Total protein, albumin, globulin, viral infection, hepatitis, co-infection.

CB 136
ANTHROPOGENIC CHARACTERISTIC OF MOSQUITON BREEDING SITES IN RELATION TO LARVAL DENSITY IN WUDIL/ DARKI COMMUNITIES, KANO STATE

BICHI ,S.A, DALHATU,M.M and ABBA, M.A.

Department of Biochemistry, Kano University of Science and TechnologyWudil Kano-Nigeria.
*Correspondence author. bichisadiya2@gmail gmail.com +2348037159750

Abstract

Malaria is caused by five species of the genus *Plasmodium* that affect humans: *Plasmodium vivax, P. ovale, P. malariae* and (Singh *et al*., 2004). Parasites are transmitted to humans by the bite of infected female mosquitoes of more than 30 *anopheline species*. Malaria continues to be a major threat in the world; an estimated 3.3 billion people were still at risk of malaria in 2011, most of them living in sub-saharan Africa (WHO,2010). Mosquitoes are the most important vectors of human diseases such as malaria, filariasis, dengue and Japanese encephalitis (Gopalakrishnan *et al.*, 2013). Mosquito larvae were collected from available breeding sites, such as containers, stagnant pools, domestic run-offs, v ehicle tyres, tanks, reservoirs, and pots. Physicochemical parameters of the water sampels collected from the breeding habitats were analyzed. The result shows that Anopheles mosquitoes were found breeding in all ecological zones of Darki/Wudil. Breeding was predominantly in pools (formed by rain), ponds, cemented reservoirs, overhead tanks, and rice farms. The study shows high larval indices well above critical points. Thus, it is evident that these areas are at very high risk for an outbreak of malarial diseases and water holding containers produced by humans are the main important habitats for anopheles mosquito.

Keywords: Anthropogenic, *Anopheles*, larval density,*Plasmodium*.

CB 137
N-ACETYLCYSTEINE EXHIBIT HYPOLIPIDEMIC EFFECT AGAINST DEXAMETHASONE-INDUCED HYPERLIPIDEMIA IN RATS

Sanusi Bello Mada[a]*, Auwalu Garba[a], Muawiya Musa Abarshi[a], Bashir Musa[a], Hafsat Abdullahi Mohammed[a], Ibrahim Garba[b]

[a] Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
[b] Department of Medical Microbiology, Usmanu Danfodiyo University Sokoto, Nigeria.
[*] Corresponding author's Email address: sanusibellomada@mail.com

Abstract

Liver is a key metabolic organ involved in lipid metabolism and maintenance of cholesterol homeostasis in the body. However, hypercholesterolemia and oxidative stress is linked with fatty liver which is the major risk factor associated with cardiovascular diseases (CVDs). The objective of this study was to investigate the hypolipidemic property of N-acetylcysteine (NAC) in dexamethasone-induced hyperlipidemic rats. Dexamethasone (10mg/kg) was administered on alternate days intraperitoneally for 28 days to induce hyperlipidemia. NAC (50 mg/kg and 100 mg/kg) were daily administered intraperitoneally for 28 days. After 24 h of the last treatment blood and liver samples were collected. The relative body and liver weights, activities of serum ALT, AST, ALP, lipid profile and antioxidant defense markers were measured. The result indicated

that treatment of hyperlipidemic rats with 50 and 100 mg/kg NAC significantly ($p< 0.05$) prevented dexamethosone-induced body weight loss and restored liver weight. In addition, NAC decreased abnormal elevation of hepatic enzymes activities induced by dexamethasone. Moreover, NAC demonstrated hypolipidemic effect as indicated by reversal of serum levels of total cholesterol (TC), triacylglycerol (TAG), high-density lipoprotein-cholesterol (HDL-c), low-density lipoprotein-cholesterol (LDL-c) and atherogenic index (AI). These findings indicated that NAC was able to restore dyslipidemia induced by dexamethasone through improving liver function parameters and augments antioxidant defense systems. Altogether the anti-hyper lipidemic effect exhibited by NAC might have been mediated partly via antioxidant actions and could be beneficial against cardiovascular diseases.

Keywords: Dexamethasone, Oxidative stress, Hyperlipidemia, NAC, anti-hyperlipidemic effect.

CB 138
HOST IMMUNE RESPONSE MECHANISMS AND INTERACTIONS TO MALARIA PARASITE INVASION: AN OVERVIEW

[1*]Muhammad, F.M., [1]Jigam, A.A., [1]Abubakar, A. & [2]Adeniyi, K.A

[1]**Depar**tment of Biochemistry, Federal University of Technology, Minna, Nigeria
[2]Applied Entomology and Parasitology Unit, Department of Animal Biology, Federal University of Technology, Minna, Nigeria
[*]Corresponding author: pharteama@gmail.com +234-8138066989

Abstract

The endemicity of malaria infection in sub-Saharan Africa, in spite of the recent aggressive control measures, has alerted the stakeholders of the need for an integrated approach to curbing the disease. One of such approaches is the need for better understanding of malaria parasite-host interaction and the adaptive immune response to their invasion. It has been well established that different malaria infection stages such as the erythrocytic phase provides a potent stimulus for the production of specific malaria antibodies. Macrophages, cellular effectors and cytokines are involved in the activation of immune responses at different stages of human malaria. Neutrophils, mononuclear phagocytes and natural killer (NK) cells have been shown to increase in number (during malaria infection) and lyse malaria parasite-infected erythrocytes. NK cells also secrete interferons (IFN) that can cause parasiticidal macrophage activation that kill parasite in infected hepatocytes. Other mechanisms by which antibody is effective against parasite include blockade of invasion of red blood cells (RBCs) by merozoites and binding of the antibody to parasite induce molecules on the RBC survival surface, leading to greater clearance of infected RBCs. Additionally, regulatory T-cells may modulate effector CD4+ T-cell responses to malaria infection suppressing protective immune responses but preventing immune-mediated pathology. On the other hand, *Plasmodium* parasite puts selection pressure on human gene frequencies as a way to escape human immune response and thus, alter peptide ligand (APL) antagonism which mediates the immune response from a pro- to an anti-inflammatory T-cell response. Findings from this present review can be exploited in the development of novel anti-malaria drug and vaccine.

Keywords: Malaria infection, Antibody, Cytokines, Neutrophils, immune response

CB 139
ANTI-PARASITE TARGETING WITH AMINO ACID-CAPPED NANOPARTICLES MODULATES MULTIPLE TARGETS IN HOST CELLS

*****Adeyemi Oluyomi Stephen[1, 2] & Kato Kentaro[2]

[*1]Department of Biochemistry, Medicinal Biochemistry and Toxicology Laboratory, Landmark University, Omu-Aran, 251101, Kwara State, Nigeria.
yomibowa@yahoo.com; +2347034507902
[2]National Research Center for Protozoan Diseases, Obihiro University of Agriculture & Veterinary Medicine

Abstract

Toxoplasma gondii is the etiological agent of toxoplasmosis, a common parasitic disease capable of infecting a range of hosts, including nearly one-third of the human population. Current treatment options for toxoplasmosis patients are limited. In consequence, toxoplasmosis represents a large global burden that is further enhanced by the shortcomings of the current therapeutic options. These factors underscore the need for better anti-*T. gondii* agents and/or new treatment approach. In the present study, we sought to find out whether preparing and capping NPs in amino acids, would enhance specificity toward the parasite versus the host cell. The selection of amino acids was premised on the fact that *T. gondii* is auxotrophic for some amino acids. The amino acid-nanoparticles (amino-NPs) were synthesized, purified and characterized following established protocols. Next, we tested to determine the anti-*T. gondii* activity of the amino-NPs using *in vitro* experimental model of infection. Overall, our data show evidence that supports enhanced and excellent selective action against the parasite versus the host cells by amino-NPs. The findings are new and promising, and provide additional support that warrants exploring the prospects of NPs as alternative anti-parasite agents. In addition, the anti-parasite action by amino-NPs indicates that nutritional requirement of parasite may represent a viable target in the development of new and effective anti-parasite agents. Furthermore, data suggest the anti-parasite mechanism of the amino-NPs involves multiple cellular processes including the production of reactive oxygen species (ROS), modulation of hypoxia-inducing factor-1 alpha (HIF-1α) as well as the activation of kynurenine pathway. Taken together, findings highlight further, the prospects of NPs as alternative source of anti-parasite agents.

Keywords: Drug discovery; Infectious Diseases; Mode of action; Nanomedicine

CB 140
DRUG REPURPOSING AND SCREENING OF LIBRARIES OF CHEMICAL COMPOUNDS TO IDENTIFY NEW ANTI-PARASITIC AGENTS

***ADEYEMI** Oluyomi Stephen[1, 3], **ESEOLA** Abiodun Omokehinde[2], **KATO** Kentaro[3]

[*1]Department of Biochemistry, Medicinal Biochemistry, Nanomedicine and Toxicology Laboratory, Landmark University, PMB 1001, Ipetu Road, Omu-Aran-251101, Nigeria.
yomibowa@yahoo.com; +2347034507902
[2]Institute of Inorganic and Analytical Chemistry, Friedrich-Schiller-Universität Jena, Humboldtstraße 8, 07743 Jena, Germany.
[3]National Research Center for Protozoan Diseases, Obihiro University of Agriculture & Veterinary Medicine

Abstract

Toxoplasma gondii is an intracellular parasite and the etiological agent of toxoplasmosis, a common parasitic disease capable of infecting a range of hosts, including nearly one-third of the human population. Available treatment options for toxoplasmosis patients are limited. They include the use of anti-malarial drugs or antibiotics, which often cause significant side effects. Currently, toxoplasmosis constitutes a large global burden that is further enhanced by the shortcomings of available therapeutic options, thus underscoring the urgent need to identify and develop new therapies. Non-biased screening of libraries of

chemical compounds including the repurposing of well-characterized compounds is emerging as viable approach in identifying lead candidates for early drug development against parasitic diseases. As a proof-of-principle screening to identify effective anti-parasitic agents, we evaluated libraries of natural product (503), FDA-approved (640) compounds as well as imidazole derivatives (27) for potential to inhibit *T. gondii* growth. We identified 39 new compounds that potently and selectively restrict the growth of *T. gondii*. The findings are new and promising, and do not only strengthens the prospects of drug repurposing and the screening of wide range of chemical compounds as a viable approach in drug discovery toward effective anti-parasite therapy but also support imidazole-based compounds as alternative source of effective anti-parasitic agents.

Keywords: Drug discovery; Library screening; Medicinal biochemistry; Toxoplasmosis

CB 141
EFFECT OF *Detarium microcarpum STEM BARK* EXTRACT ON A-GLUCOSIDASE AND A-AMYLASE

RN Yakubu*, US Ndidi, DA Ameh, GC Njoku

Department of Biochemistry, Ahmadu Bello University Zaria, Kaduna state, Nigeria
*Corresponding Author: rahinayakub@gmail.com, +2348063218248

Abstract

Reduced activity of α-glucosidase and α-amylase have been reported to steadily lower release of glucose to the blood and in turn control postprandial hyperglycemia. Based on this, the effect of the extracts of *Detarium microcarpum* stem bark on the activity of α-glucosidase and α-amylase was investigated *in vitro* and *in vivo*. Serial extraction of the plant was carried out using maceration technique with hexane, methanol and water. The extracts were then subjected to phytochemical screening and inhibition studies against α-glucosidase and α-amylase. Phytochemical screening of the extracts revealed that the methanolic extract had the highest total polyphenol and total flavonoid content. *In vitro* inhibition studies showed that all the extracts inhibited the enzymes in a dose-dependent manner with the aqueous and methanol extract being the most potent inhibitor of α-glucosidase (IC_{50}: 4.63 ± 1.64 µg/ml; 5.88 ± 0.47) but there was no significant difference ($P>0.05$) between the IC_{50} of the three extracts on α-amylase activity. *In vivo* studies with the methanol extract which employed the use of oral starch and sucrose tolerance test revealed that the extract reduced the blood glucose level of the rats in both tests in a dose dependent manner. The results suggest that extracts from *Detarium microcarpum* stem bark, is a potent inhibitor of α-amylase and α-glucosidase activity and can be used in the management of prediabetes.

Keywords: α-amylase, α-glucosidase, *Detarium microcarpum*. inhibition, phytochemicals.

CB 142
IN VITRO EFFECT OF SOLVENT EXTRACTS OF *Vitex doniana* LEAVES ON A-GLUCOSIDASE AND A-AMYLASE

Rahinat Nimma Yakubu*, Uche Samuel Ndidi, Danladi Amedu Ameh, Godwin C. Njoku

Department of Biochemistry, Ahmadu Bello University Zaria, Kaduna State, Nigeria
*Corresponding Author: rahinayakub@gmail.com, +2348063218248

Abstract

Retarding the action of α-glucosidase and α-amylase has been reported to lower postprandial hyperglycemia. Therefore, this research was aimed at investigating the effect of *Vitex doniana* leave extract on the activity of α-glucosidase and α-amylase. *Vitex doniana* leaves were subjected to hexane, methanol and aqueous extraction using maceration technique. The extracts obtained were subjected to phytochemical screening and inhibition studies against α-glucosidase and α-amylase. The results show that flavonoids, phenols, saponins, carbohydrates and alkaloids were present in all the extracts except for the hexane extract which did not show the presence of phenols, tannins, saponin, triterpenes and

carbohydrates. Further analysis showed that, of the three extracts, the aqueous extract had the highest concentration of flavonoids while the methanol extract had highest concentration of total polyphenol. *In vitro* inhibition studies showed a dose-dependent inhibitory effect on the activity of both enzymes with the methanolic extract having lowest IC_{50} (IC_{50}: 224.80 ± 77.41µg/ml) on α-glucosidase and the hexane and aqueous extract having the lowest IC_{50} (IC_{50}: 283.89 ± 28.87µg/ml; 310.09 ± 29.06 µg/ml respectively) on α-amylase. The results show that the phytochemicals from *Vitex donina*, have inhibitory potentials on α-glucosidase and α-amylase and serves as justification for the use of the plant by rural dwellers in the management of diabetes.

Keywords: alpha amylase, alpha glucosidase, *Vitex doniana*, Inhibition, phytochemicals.

CB 143

EFFECTS OF *Ipomea batatas* PEEL EXTRACT-MEDIATED SILVER, IRON AND SILVER-IRON NANOPARTICLES ON GERMINATION OF *CELOSIA ARGENTEA* SEEDS

***[1]Amadu Kayode Salau, [2]Suaib Olasupo Osineye, [1]Alimat Oyeronke Oyawoye, [1]Taofeekat Omolola Busari, [1]Bolakale, Shadat Adesokan, and [3]Nusrah Bolatito Afolabi-Balogun**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, P.M.B. 4491, Osogbo, Nigeria.

[2]Plant Biochemistry Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, P.M.B. 4491, Osogbo, Nigeria.

[3]Molecular Biology and Genetic Engineering Research Laboratory, Biochemistry Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

***Author for Correspondence:** Salau, A. K. Phone: 08064810736 Email: ka_salaudeen@yahoo.com, ka.salaudeen@gmail.com.

Abstract

This study investigated the influence of different concentrations of Ag, Fe and Ag-FeNPs biologically synthesized using *Ipomea batatas* (L.) peel extract on various growth and biochemical parameters of *Celocia argentea* (L.) seedlings. *C. argentea* seeds were grown hydroponically for 7 days. Ag, Fe and Ag-FeNPs of 0.03, 0.06 and 0.1 μg/L were utilized while water, potato peel extract, Fe_2SO_4 and $AgNO_3$ were used as control. Delayed germination for 24 h was observed for water and $AgNO_3$ controls while others sprouted within 24 h of planting. There was significant decrease in root and shoot length of seedlings treated with AgNPs when compared to other seedlings. Maximum root and shoot length were observed in seedlings treated with Ag-FeNPs. Significant improvement in antioxidant activities of seedlings grown with nanoparticles were concentration-dependent. Malondialdehyde and nitric oxide contents were optimum at 0.1 μg/L Ag-FeNPs and 0.03 μg/L FeNPs, respectively. Nanoparticle-grown seeds had significantly ($p < 0.05$) higher antioxidant enzyme activities in all treatments when compared with the controls. Highest superoxide dismutase and glutathione-*S* transferase activities were observed at 0.06 μg/L FeNPs while catalase activities were highest at 0.06 µg/L AgNPs. Reduced glutathione content was significantly increased in all NPs treatment in comparison to the controls with optimal concentration at 0.1 µg/L AgNPs. Protein content was reduced in all NPs-treated seedlings against the controls. This study has shown that concentration-dependent use of Ag, Fe and Ag-FeNPs can be used to boost overall agricultural yield while overcoming environmental hazard by reducing by-product toxicity.

Keywords: Iron Nanoparticles, Silver Nanoparticles, Silver-iron Nanoparticles, Hydoponically, *Celocia argentea*.

CB 1444

HYPOGLYCEMIC ACTIVITIES OF ETHANOL LEAF EXTRACT OF *FICUSSY COMORUS*L. *(*MORACEAE*)* AND *FAIDHERBIA ALBIDA* (FABACEAE) STEM-BARK IN ALLOXAN-INDUCED HYPERGLYCEMIC ALBINO RATS

Galadima HI[1*], Timothy SY[2], SodipoOA[3], Tata FY[2]

[1]Department of Medicinal Chemistry and Quality Control, National Institute for Pharmaceutical Research and Development Idu, Abuja, Nigeria

[2]Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Maiduguri, Maiduguri,

[3]Department of Clinical Pharmacology and Therapeutics, University of Maiduguri, Maiduguri

*Corresponding Author: E-mail: galadimaisa48@gmail.com: Tel: 08068109818

Abstract

Diabetes is a predominant health challenge with substantial morbidity, mortality, and long-term complications. Many of the conventional remedies are not only expensive but has numerous side effects. These medicinal plants are cheaper, available and has long history of use without authentication of their efficacy. This study was aimed to evaluate the hypoglycemic effects of the two plant extracts on glucose levels of alloxan-induced hyperglycemic rats. Adult albino rats were randomly allocated into 12 groups of five rats each. Group I animals served as normal healthy control received 2 ml/kg of normal saline, group II known as diabetic control received normal saline and alloxan. Group III served as positive control and received alloxan + 0.75 IU/kg of insulin intraperitoneally. Groups IV, V, VI and VII received alloxan and single intraperitoneal dose of 62.5, 125, 250 and 500 mg/kg of ethanol leaf extract of *Ficussy comorus* respectively. Similarly groups' VIII, IX, X and XI received alloxan and 62.5, 125, 250 and 500 mg/kg of ethanol stem bark extract of *Faidherbia albida* respectively. Group XII received a combined dose of FS (250 mg/kg) and FA (250 mg/kg). The blood glucose levels of all the treated animals were determinedat 1, 3, 7 and 24 hours post treatment. There was significant ($P<0.05$) lowering of glucose levels at 7 and 24 hours. The effect of the combined dose of the two extracts at 1, 3 7 and 24 hours was significantly better than that of the individual extract ($P<0.05$). Thus the crude extracts of the leaves of *FS* and *FA* stem bark have synergistic hypoglycemic effects in alloxan induced hyperglycemic rats. This study has amply justified the claim by herbalists in Maiduguri, that the combination of *Ficussy comorus* and *Faidherbia albida*have potent hypoglycemic effects. The hypoglycemic effects of the extracts were evaluated in alloxan induced diabetic albino rats using insulin as a positive control. The results show that the extracts have possessed remarkable antidiabetic effects. The *Ficussy comorus* and *Faidherbia albida* extracts showed a potent hypoglycemic effects in alloxan induced diabetic rats and thus more promising to be further evaluated for bioactive substances for the hypoglycemic activities.

Keywords: Antioxidant, Ficussy comorus, Faidherbia albida, DPPH

CB 145

IMMUNOLOGICAL RESPONSE OF ALBINO RATS IMMUNIZED WITH HEAT INACTIVATED *CANDIDA ALBICANS* FOR THE POSSIBLE PREVENTION OF *CANDIDIASIS*

Ibrahim A.[1], Umar Y.A[1], Suleiman A.B[2], Mohammed S.B[3] and Abdulhamid Y.[4]

[*1]Department of Biological Sciences, Nigerian Defence Academy, Kaduna

[*2]Department of Microbiology, Ahmadu Bello University, Zaria.

[*3]Nigerian Institute of pharmaceutical Research and Development. Idu-Abuja,

[*4]Department of Biology, SPRS, Umaru Musa Yar`adua University PMB 2218, Katsina

Corresponding Author: Abdulhamid Yusuf (abdulyusufk2@gmail.com)

Abstract

Candida albicans is the most common cause of hematogenously disseminated candidiasis in humans. The treatment of candidiasis with the current antifungal drugs of choice such as Fluconzole and Itraconazole have raised issues of toxicity and resistance among others. *Candida albicans* is believed to unmask immunogenic molecules under a control heating. This property was explored to elicit immunological response in winster rats. We present here, the ability of heat-killed *C. albicans* to assess evoke immunological response in rats for the possible prevention of the *candidiasis*. After 7 days of

acclimatization, baselines were taken. A group of male winster rats were immunized subcutaneously on two occasions, 7 days after acclimatization and a booster injection 21 after with 1X 106 Cell/ml of heat-killed *C.albicans* in normal saline. After two weeks, the immunized and positive control were challenged intravenously (caudal) with 106 viable *C. albicans* to assess protection. Another group (Negative control) received sterile normal saline during the same period of study. 72 hours after five animals each from positive and negative controls and immunization group were bled for antibody titres while blood cell differentials and CD4 counts. 4 Animals each from immunization group, positive and negative control were monitored for 28 days after challenge for survival analysis to determine the protective effect of the vaccine. In another independent study, some animals were food pad tested after 3 weeks of immunization with heat-killed *C. albicans* to assess delayed type hypersensitivity (DTH). The immunization group showed a significant production of antibodies WBC, granulocyte, lymphocytes and CD4 counts. Whereas, the positive control recorded a decline in these parameters. Also, 100% of the immunized animals survived after the challenge of 106 viable cells while also 100% of the positive control died. The kidneys of the dead animals also showed a positive growth of *C. albicans*. Animals immunized with heat-killed *C.albicans* developed a significant DTH response. Thus heat-killed *C. albicans* in normal saline provided significant level of protection.

Keywords: Candida albicans; Candidiasis; Immonological response; Immunization; Albino Rat.

CB 146

PREVALENCE OF GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY AMONG HUMAN HAEMOGLOBIN (HB) GENOTYPES IN MAKURDI METROPOLIS, BENUE STATE

ANI, Collins Chijioke̋, OKPE Oche, AGBO Mathias
Department of Biochemistry, University of Agriculture, Makurdi, Nigeria
̋Corresponding author's Email: chijike2005@yahoo.com/ 08068602349

Abstract
Glucose-6-Phosphate Dehydrogenase (G-6-PD) is the key enzyme responsible for the production of reduced form of NADPH, which helps to maintain the level of glutathione. Glutathione in turn is required for the protection of RBC against oxidative damage. The study examined the prevalence of Glucose-6-Phosphate Dehydrogenase (G-6-PD) deficiency among human haemoglobin genotypes in Makurdi metropolis. Seventy two (72) volunteers (33 males and 39 females) which were between 10-55 years were investigated for erythrocyte G-6-PD deficiency by methaemoglobin reduction methods, the cytoc hemical test was used to determined heterozygous G-6-PD status, while cellulose acetate paper electrophoresis was used to determine the haemoglobin genotype. From the results, G-6-PD deficiency was found in 18(25%) of the study population. Of the study population,6(15.38%) of the female volunteer were homozygous, while4(10.26%) were heterozygous for G-6-PD deficiency. Furthermore, 8(24.24%) of the male volunteers were found to be hemizygous for G-6-PD deficiency. The haemoglobin genotypes;HbAA account for 20.93% deficiency in G-6-PD enzyme, while HbAS and HbSS account for 27.78% and 36.36% deficiency respectively. This study presents a relationship between G-6-PD deficiency and human haemoglobin genotypes, thus, G-6-PD deficiency enzyme appears to be inherited through a partially dominant gene which is sex-linked and has variable expressions.

Keyword: Glucose-6-phosphate dehydrogenase, haemoglobin, genotype, enzyme

CB 147

INCREASE IN BLOOD GLUCOSE LEVEL FOLLOWING ORALLY ADMINISTERED ARTESUNATE IN FEMALE WISTAR RATS: A ROLE FOR MAGNESIUM?

[1*]Abdulrahim Halimat Amin.,[2]Salman, Muhammed Toyin.,[2]Feyitimi,Abdul Rauf Aderemi., [2]Omeiza Noah Adeioza.,

[1]Department of Medical Biochemistry, [2]Department of Physiology, Faculty of Basic Medical Sciences, College of Health Sciences, University of Ilorin, Ilorin. Nigeria.

Corresponding Author: * **Tel.:** +2348057921924; **E-mail**:abdulrahim.ha@unilorin.edu.ng

Abstract:

Artesunate is a rapidly acting and potent drug used in the treatment of chloroquine resistant malaria with scanty reports on its nephrotoxicity and hepatotoxicity in rats. The present study aimed at investigating the effects of varying doses of oral artesunate on integrating pathway linking plasma glucose, electrolytes, minerals and some glucose metabolizing enzymes in rats. Fifteen female Wistar rats were randomly divided into 3 groups of 5 rats each. Group one rats received distilled water; groups two and three received 2.90 mg/kg artesunate on the first day and 1.45 mg/kg artesunate from the second day until the fifth day, and 8.70 mg/kg artesunate on the first day and 4.35 mg/kg artesunate from the second day until the fifth day, respectively. The results showed a significant (p<0.05) increase in plasma bicarbonate level in low dose artesunate (LDA) treated rats but a significant (p<0.05) decrease in the creatinine level in a dose dependent manner. In addition, LDA caused significant (p<0.05) decreases in plasma and renal calcium levels, while renal magnesium concentration was significantly (p<0.05) increased. However, plasma phosphorus and total protein were significantly (p<0.05) decreased. Furthermore, the plasma glucose level was significantly (p<0.05) increased. Moreover, the activities of plasma ALT and AST were reduced significantly with both treated rats. The hyperglycemic effect of artesunate observed in this study could be due to increase inplasma magnesium level which favours gluconeogenesis and/ or glycogenolysis; serve as cofactor for glucose metabolizing enzymes in female Wistar rats.

Keywords: Artesunate, Electrolytes, Mineral elements, Glucose metabolism

SUB-THEME

EXPLORING NATURAL PRODUCTS (ENP)

ENP 001
TISSUE CULTURE REQUIREMENTS FOR OPTIMAL PLANT GROWTH: REVIEW

Abdulaziz Rabiu Abdulkadir[1]*, Usman yahaya[1], Aisha yakubu[2]

[1,]Shelterbelt research station, forestry research institute of Nigeria.
[2]Department of general studies, Audu Bako college of agriculture, Danbatta.
*Corresponding author: Tel: +2348133090984 Email: warure089@gmail.com

Abstract
Generally plants are propagated by seeding or stem cuttings; the former has many obstacles which include, seed dormancy, low germination rate and progeny variation in some plant species. While the later may be disturbed by fungal, bacterial, viral and many micoplasmal diseases gained from the soil, air and sometimes insect vectors, this may lead to the declines of its productivity. Thus an alternative method may be through tissue culture. *In vitro* plant culture ultimately depends on composition of the culture medium. However different tissues may have different requirements for satisfactory growth. The use of *In vitro* plant tissue culture is steadily increasing especially in the mass propagation of economically important or elite plants including endangered species to avoid extinction. Each plant may have different composition of culture media thus there is no universal media that can be applicable to all types of organ or plant. Many culture media composes of some or all of the following component such as Macro elements, Micro elements, Vitamins, organic components (eg amino acids), plant growth regulators, Gelling agents (if semi solid).Plant growth regulators or phytohomones is up paramount important, thus it may directly or indirectly affect the plant growth. the activities of phytohomones relay on the concentration used, where at low concentrations it regulate nearest all the physiological and developmental processes in the life cycle of plants. There are five major classes of compounds with plant growth regulatory activities include auxins, cytokinins, gibberellins, abscisic acid and ethylene.

Keywords: Tissue culture, media, phytohomones

ENP 002
PHYTOCHEMICAL SECRENING AND PROXIMATE ANALYSIS OF DIFFERENT PART FROM *Moringa Oleifera* LAM. (MULTIPURPOSE TREE)

Abdulaziz Rabiu Abdulkadir[1*], Alkasim Kabiru Yunusa[2]and MdSarwar Jahan[2]

[1] Shelter belt research station, Kano, forestry research institute of Nigeria
[2]Faculty of Bioresources and Food Industry, Universiti Sultan ZainulAbidin,
Tembila Campus, Besut, Terengganu, Malaysia
*Corresponding author: warure089@gmail.com 08133090984

Abstract
Lack of proper nutrition being one of the most serious problem across the globe, affecting majorly Africa countries where many children died not due to inadequate food but as a result of insufficient nutrient in their diet, that can improve their health status and wellbeing. Many researchers have reported potential of *Moringa oleifera* on supplementing human diet. This research was aimed to study the proximate composition and screen the chemical components of different part from *Moringa oleifera* Lam (Multipurpose tree). Proximate analysis was adapted from the standard methods developed by Association of Official Analytical Chemists (AOAC). The result of the study were found to have percentage moisture content, ash content, Crude protein, crude fibre, crude fat and carbohydrate observed from all the samples used ranges from 8.100±0.004 - 4.000±0.014%, 5.592±0.210 - 9.283±0.135%, 11.702±0.180 - 26.570±1.602%, 21.030±1.992 - 44.267±0.722, 11.824±0.237 - 20.188±0.058 and 8.158 - 31.119% respectively. Different bioactive compounds were observed from different part of the plant used, which include Polyphenol, Flavonoids, Tannins and Saponin. It can be concluded that *Moringa oleifera* can served as a good supplement to our nutrition, due to high content of fibre, protein, fat. However intake of Moringa plant might reduce the risk of many oxidative related problems due to the present of some polyphenols and flavonoid in almost all part of the plant used.

ENP 003
ANTIOXIDANT POTENTIAL FROM DIFFERENT PART OF *Azadirachta indica* (NEEM TREE)

Abdulaziz Rabiu Abdulkadir[1]* Murtala Namadina Muhammad[2]and Mahmoud Dogara Abdulrahman[3]

[1]Shelterbelt research station, forestry research institute of Nigeria (FRIN)
[2]Department of plant biology, Bayero University Kano (BUK).
[3]Department of Biological Science, Faculty of Science, Kaduna State University. Kaduna State.
*Corresponding author: Tel: 08133090984 Email: warure089@gmail.com

Abstract
*Azadirachta indica*is a resourceful medicinal plant, almost all part of the plant is being used in traditional and folklore medicine to treat diseases like fever and to eliminate intestinal worms. This study was aimed to assess antioxidant activity, estimate total phenolics and total flavonoids content, from different part of *Azadirachta indica* crude extract. DPPH radical scavenging and Ferric-reducing antioxidant power assays were applied, to evaluate antioxidant activity, total phenolic compounds of the samples were measured using the Folin–Ciocalteu method, while total flavonoid was achieved using Aluminium chloride ($AlCl_3$) assay. Bark and leaf extract showed high free radical scavenging activity with IC_{50} value of 23.27 and 55.07 (µg/ml) respectively, the lowest activity was observed from seed extract with IC_{50}672.36 (µg/ml). The reducing power of bark extract revealed higher antioxidant activity, followed by leaf and lastly seed extract, with 1668.44±11.10, 1131.78±34.65, and 267.89±50.04 (mM Fe (II)/g) respectively. The phenolic content observed from bark extract 285.77±4.49 (mg GAE/ g) was found to be nine times than that of seed extract with 30.43±1.16 (mM Fe (II)/g), and two times than that of leaf extract 136.45±0.99 (mM Fe (II)/g). The flavonoids content of leaf extract was found to be 77.01±3.11 (mg GAE/g) almost ten times the values observed from seed extract, however bark extract showed lowest flavonoid content 2.21±0.23 (mg GAE/g). The result of this research revealed the potency of *Azadirachta indica* is a good source of natural antioxidant compounds.

Keywords: Antioxidants, Phenolics, Flavonoids**,** *Azadirachta indica*

ENP 004
NUTRITIONAL AND PHARMACOLOGICAL POTENTIALS OF *Moringa oleifera* EPIPHYTE

Isyaku, A.[1*]. Abubakar, S.[1]Sallau, A.A.[2], Kankara, S.S.[3]. and Abdulhamid Y.[4]

[1]Biotechnology Advanced Research Centre, Sheda Science and Technology Complex Abuja, Nigeria.
[2]Chemistry Advanced Research Centre, Sheda Science and Technology Complex Abuja, Nigeria.
[3]Department of Biology, Umaru Musa Yar'adua University, Katsina State.
[4]Department of Biology, SPRS-Umaru Musa Yar'adua University, P.M.B. 2218 Katsina, Katsina State.
*****Corresponding Author Email:isyakuabubakar2@gmail.com

Abstract
Despite the immense progress in the development of modern medicine in the last decades, most people, especially in rural areas, still depend on plants for their nutritional and medicinal needs. Although many studies were conducted on the nutritive and medicinal potentials of *Moringa oleifera*, few studies were reported on its epiphytes. In this study, nutritional, pharmacological and antimicrobial potentials of the ethanolic extract of *M. oleifera* epiphyte leaves is reported. The proximate compositions of the leaves shows the value of moisture content (4.85±0.1), Ash content (10.60±0.00), Carbohydrate (29.82±0.7), Crude protein(11.90±0.5), Crude fibre(30.96±1.1), and Crude lipids(11.87±1.5). The phytochemical analysis of the ethanolic leaves extract reveal the presence of tannins, glycosides, alkaloids, flavonoids, terpenoids, saponins, steroids and colimarin. While pholobatannins and Quinones are absent. The leaves extract shows some degree of antimicrobial activities on *Salmonella typhi, Proteus mirabilis, Pseudomonas aeruginosa* and *Escherichia coli* at 500mg/ml, 250mg/ml and 125mg/ml respectively, while it shows no effect on *klebsiella pneumonia* and *staphylococcus aureus*. The minerals composition analysis(using thermo-scientific, iCE 3000 series, atomic absorption spectrophotometer) shows the presence of nutritive elements such as Calcium(1557.34mg/kg), Magnesium(305.74mg/kg), Iron(104.28mg/kg), Manganese(63.58mg/kg), Copper(41.71mg/kg) and Zinc(12.87mg/kg). While Lead, Cadmium and Chromium are absent.

Keywords: Antimicrobial, Antioxidant, Elemental analysis, *M. oleifera* epiphyte leaves, Proximate composition.

ENP 005

ISOLATION AND STRUCTURAL ELUCIDATION OF NEW CONSTITUENTS FROM THE ROOT EXTRACT OF *Adansonia digitata* (BOMBACACEAE)

[1]MohammedM. [1]Salisu M.[1]Abubakar A. [1]Suleiman B. and [1]Dahiru I.

[1]National Research Institute for Chemical Technology P.M.B.1052, Zaria, Nigeria.
Corresponding Author: +2348064395057 Email address: contactdrmusa@gmail.com

Abstract

The powdered root material of the plant *Adansonia digitata* was subjected to cold maceration using methanol. The extract was subsequently partitioned in between water and solvents of different polarity. The concentrated chloroform (15g) partitioned fraction was subjected to vacuum –liquid chromatography (VLC)using a step gradient of 10% Et OAC in n-hexane followed by a final methanol wash to afford 18 fractions. Fraction 9 (243mg;eluted with 90% Et OAC in n-hexane)using dichloromethane yielded 12 sub fractions (F_1-F_{I2}) .Fraction 7 and 8 were pooled together on the basis of their TLC profile to obtain (42mg) and (39mg) which was further re-subjected to preparative TLC using (Toluene- Et OAE –ACOH,28:70:2) to afford compound 1 (18mg) and 2 (21mg).Their structures were elucidated mainly by using FTIR, FABMS, high resolution (1D and 2D) spectroscopic and chemical analysis. It has been demonstrated that compound 1 is determined as $3^{'}$, $4^{'}$, dihydrophenyl methoxyethene while compound 2 as 1, 3, 8 trihydroxydec-9-ene-4, 6 diyne on the basis of comparism with reference data.

Keywords: *Adansonia digitata*, New Constituents, Root, Bombacaceae, Spectral (1D and 2D).

ENP 006

ISOLATION AND STRUCTURE ELUCIDATION OF SESQUITERPENES FROM THE SEED AND ROOT EXTRACT OF *Anona muricata* (ANONACEAE)

[1]MohammedM. [1]Suleiman B.,[1]Dahiru I., [1]Salisu M. and [1]Abubakar A.

National Research Institute for Chemical Technology P.M.B.1052, Zaria, Nigeria.
Corresponding Author: +2348064395057 Email address: contactdrmusa@gmail.com

Abstract:

The air dried powdered seed material of *A. muricata* was exhaustively subjected to extraction using methanol 100% and the extract was further re –subjected to VLC using silica gel and eluted with solvent of various polarity which produced 14 major fractions (F_1-F_{14}). Fraction (F-9) was further subjected to a repeated gel filtration to afford compound 1 (32mg).Th eair dried powdered root material of *A. muricata* was exhaustively subjected to extraction using methanol 100% at room temperature. The combined methanol extract was subsequently partitioned with n-hexane, chloroform, Ethylacetate and n-butanol. The chloroform ($CHCl_3$) soluble fraction was subjected to column chromatography over silica gel with n-haxane / EtoAC (8:0 – 0:1) as eluent to give fractions B_{1-10}. Fraction B_4 was re-subjected to repeated column chromatography using sephadex LH_{20} with MeOH /$CHCl_3$(3:1) to give compound 2 (28mg).Their structures were elucidated mainly by using FTIR, FABMS, high resolution (1D and 2D) spectroscopy and chemical analysis. It has been demonstrated that compound 1 is determined as rel - 1β,3α, 6β – trihydroxyeudesm – 4 – ene while compound 2 was determined as4-(15) – eudesmene 1β, 5α – diol.

Keywords: *Anona muricata*, Sesquiterpenes, Seed, Root, Anonaceae, Spectral data(1D and2D)

ENP 007
PHYTOCHEMICAL AND ANTIMICROBIAL STUDY ON THE LEAF EXTRACT OF *Parkia biglobosa* (FABACEAE)

[1]Mohammed M*. [1]Salisu M.[1]Abubakar A. [1]Suleiman B. and [1]Dahiru I.

[1]National Research Institute for Chemical Technology, P.M.B1052 Zaria, Nigeria.
Corresponding Author: +2348064395057 Email address: contactdrmusa@gmail.com

Abstract

Leaf of *Parkia biglobosa* has been used as traditional medicine for the treatment of menstrual pain, wound, gonorrhea, control of diarrhea and dysentery. The leaf was extracted by cold maceration in methanol. The concentrated methanol extract was subsequently partitioned with petroleum ether, chloroform, ethylacetate and n-butanol. Agar well Diffusion method was used to determine the antimicrobial activities of the extracts against *Staphylococcus aureaus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiela pneumoniea, Salmmnella typhi*, *Streptococcus pyogenes*, *Candida krusei*, *Candida tropicalis*, and *Candida albican* at different concentrations. Antimicrobial sensitivity test indicated that, the extract inhibited the growth of all microorganisms to varying degrees except *Pseudomonas aeruginosa* and *Candida krusei* respectively. The *in vitro* antimicrobial screening revealed that, the extracts exhibited diverse activities against different microbes with zones of concentrations ranging from 2.5mg/ml-5mg/ml. The plant extract was found to contain flavonoids, terpenoids, saponins, tannins and cardiac glycosides which may be responsible for its antimicrobial properties. The result justifies the traditional use of the plant leaf in the treatment of menstrual pain, sexual transmitted diseases, wounds healing, control of dysentery and diarrhea.

Key Words: *Parkia biglobosa*, Fabaceae, Phytochemistry, Antimicrobial activity, Agar diffusion

ENP 008
CHARACTERIZATION OF IPOLAMIIDE FROM THE LEAF EXTRACT OF *Parkia biglobosa* (FABACEAE)

[1]MohammedM*.[1]Abubakar A.[1]Suleiman B.,[1]Dahiru I. and [1]Salisu M.

[1]National Research Institute for Chemical Technology, P.M.B. 1052, Zaria – Nigeria.
Corresponding Author: +2348064395057 Email address: contactdrmusa@gmail.com

Abstract:

This research work was aimed at isolating and structural elucidation of the compound from the leaf extract of *Parkia biglobosa* using standard phytochemical and spectroscopic techniques. The grounded powdered material of the leaves was extracted and partitioned using various solvent of different polarity. Column chromatography, n-BuoH soluble fraction of the methanol leaf extract of *Parkia biglobosa* was run using silica gel and subsequently pooled fractions from various portions were purified using sephadex LH_{20} to obtain compound 1. Pure isolate of compound 1 was subjected to analysis using FTIR, FABMS,(1D and 2D) NMR. Compound 1was determined as an Iridoid glucoside Cyclopenta [C] pyran-4-Carboxylic acid, 1-(β-D glucopyranosyloxy)-1, 4A, 5,6,7,7A Hexahydro-4A, 7- dihydroxy-7- methyl-, Methyl Ester, (1S, 4AR,7S, 7AR)(Ipolamiide), mp 218-220^{o}c, $C_{17}H_{27}O_{12,}$ $[M]^{+}$424(EIMS) on the basis of spectral analysis and Comparism with reference data.

Keywords*: Parkia biglobosa,* leaf, Ipolamiide, Fabaceae, Spectral data (1D and2D)

ENP 009
VEGETABLES ARE POTENTIAL SOURCE OF ANTIOXIDANTS

***Dandare A[1], Abubakar AL[1], Rabiu S[1], Magaji UF[2]**

[1]Department of Biochemistry, Usmanu Danfodiyo University Sokoto
[2]Department of Biochemistry and Molecular Biology, Federal University Birnin Kebbi
E-mail: Abdullahi.dandare@udusok.edu.ng Mobile:+2348067677806

Abtract
Overproduction of oxidants can cause oxidative damage to biomolecules such as lipids, proteins, DNA, and ultimately resulting to ageing associated with many chronic diseases including a the rosclerosis, cancer, diabetics, rheumatoid arthritis, cardiovascular diseases and other degenerative diseases in humans. Antioxidants are known to counter the cellular destructive effect of oxidant, thereby preventing or slow down the progress of oxidative stress related disorders. This study was designed to evaluate the antioxidant potentials of some fresh vegetables consumed in Sokoto, Nigeria. Antioxidant vitamins, minerals and phytochemicals were analyzed using standard methods. Total antioxidant activity was measured spectrophotometrically using 2,2-diphenyl-1-picrylhydrazyl (DPPH) in five different vegetables *Corchorusolitorius* (Jute mallow), *Moringa oliefera* (Moringa), *Telfairia occidentalis* (Fluted pumpkin) and *Spinaciaoleracea* (Spinach). Phytochemical analyses revealed significant amount of flavonoids (6.53±0.03 to 10.36±0.68 g%) and Tannins (0.52±0.02 to 1.08±0.03 mg/ml) in all the vegetable analyzed. High vitamin C concentration was observed in fluted pumpkin (401.97±0.38 µMol/L) and spinach with least (169.08±0.12 µMol/L). The concentration of vitamin E in fluted pumpkin was higher (5.5folds) than that of other vegetables analysed. Appreciable quantity of Cr, Zn, Cu and Mn were detected in fluted pumpkin, jute mallow, spinach and moringa. It was also observed that all the vegetables investigated exhibited at least 80 % DPPH inhibition at 1.0mg/mL and maximum total antioxidant activity was exhibited by jute mallow. This study is an evident that the vegetables tested have strong antioxidative potentials and could be useful in prevention or delaying the harmful effect of oxidative stress.

Key words: Antioxidant, Biomolecules, Degenerative diseases, Oxidant, Vegetables.

ENP 010
DETECTION OF JATROPHA MOSAIC INDIAN VIRUS (JMIV) ON JATROPHA PLANT (*Jatropha curcas*)

[1*]Abdullahi Mohammad., [3]Abarshi Muhammad Muawiyya.,[1]Bello Ibrahim., [2]Maruthi M. N., [2]Seal E Susan., [1]Ahmad Muhammad., [1]Abdurrahman Siraj Abubakar.

[1]National Biotechnology Development Agency, Bioresources Development Centre, Katsina State
[2]Natural Resource Institute (NRI) University of Greenwich at Medway Central Avenue Chatham Maritime Kent ME4 4TB, United Kingdom)
[3]Department of Biochemistry, Ahmadu Bello University Zaria
*Corresponding Author: abdullahby11@gmail.com, 08162784144; 07065977971

Abstract
Jatropha plant is a major crop for biofuel production in countries such as India. The recent increase in the cultivation of Jatropha has resulted in the manifestation of pest and disease attacks on the crop, including jatropha mosaic Indian virus (JMIV) which is a member of the genus Begomovirus (family Geminiviridae). Jatropha leaves were collected from Bangalore, South India showing mosaic symptoms, malformation of leaves and chloric specks. Total DNA was extracted from infected leaves and the extracted DNA was subjected to PCR to amplify JMIV DNA using degenerate primers and subsequently with begomovirus- specific primers for both the DNA-A (JMIV-A 970F and JMIV-A 970R) and DNA – B (JMIV-B 970F and JMIV-B 970R). The PCR products obtained with degerate primers were ~ 530bp which further confirmed the association of a begomovirus with jatropha. Furthermore PCR products in the amplification of both full-length DNA-A and DNA-B components of JMIV were successful for the first time which produces ~ 2.8 kb on both the genome.

Key words: Jatropha Mosaic Indian virus (JMIV), core coat protein, polymerase chain reaction, Ultra Violet light

ENP 011
CARBAPENEM RESISTANT ENTEROBACTERIACEAE: AN EMERGING THREAT TO PUBLIC HEALTH

[*1]Abdulmalik Yakubu, [2] SitiMarwanisAnua.[1]Bahau'ddeen Salisu,and[1]Dr. Bashir Abdulkadir

[1]Department of Microbiology, Umaru Musa Yar'adua University Katsina,
[2]Environmental and Occupational Health Programme, School of Health Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan.
*Corresponding author: abdulmalik.yakubu@umyu.edu.ng Phone number:08060124090

Abstract

The problem of antibiotic resistance among Carbapenem producing Enterobacteriaceae has reached alarming levels. Carbapenem resistant Enterobacteriaceae are not a problem limited to individual facilities. They can also affect entire communities and nations. The fact that CRE are resistant to antibiobitcs normally used in treatment of serious bacterial infections makes the challenge they pose even more formidable. Carbapenem-resistant Enterobacteriaceae (CRE) infections lead tohigh morbidity and mortality. Many of these Multi drug resistant pathogens are now present in the population where they affect susceptible individuals. Infections with CRE is common among immune compromised and severely ill patients .As a result, preventing both CRE transmission and CRE infections have become important public health issues.

Key words: Carbapenem, resistant, Enterobacteriaceae, Public health

ENP 012
OVERVIEW OF BIOMOLECULAR COMPUTATING SYSTEMS AND THEIR OPERATIONAL MECHANISMS

AbdulsamadAdamuAliyu[1] and Ibrahim Hamza Kankia[2]

[1] Directorate of ICT. Umaru Musa Yar'adua University Katsina-Nigeria
[2]Department of Biochemistry, Umaru Musa Yar'adua University Katsina-Nigeria
Corresponding author: abdulsamad.adamu@umyu.edu.ng

Abstract

Biomolecular computing is one of the fields of Bioinformatics that deals with biochemical computations of molecules; biomolecular computation is used in activity monitoring and studying processes of behaviors and life style of biological organisms. The systems used for biomolecular computing are designed using what IT experts refers to as "special purpose application software/programs (SPAS), these systems provides a platforms or interface that brings together three inter disciplinary fields of; computational science, biological/biochemical sciences and engineering/technologies. The computer science field develops and designs the application software that processes and computes the data or information provided by the biological or biochemical sector, biochemists use ssuch systems in studying and processing biological materialsor molecules like deoxyribonucleic acid (DNA). While the engineering sector designs and manufacture the machines, devices or tools that run the biomolecular systems. This research reviews the most common biomolecular computing systems used todayin the area of Bioinformatics for the purpose of research, clinical and medical applications, the review includes impacts of the systems for solving difficult combinatorial problems of biological materials, the structural pattern of the systems, the systems user friendliness, and level of results reliability provided by the systems. The research finally provided recommendations to users based on the available data from experts and the user certifications.

Key Words: Bioinformatics, Biomolecular computing, Special purpose application software.

ENP 013

PHYTOCHEMICAL SCREENING AND ANTI-INFLAMMATORY ACTIVITY OF CRUDE METHANOLIC LEAF EXTRACT OF *Acacia nilotica* (LINN.)

Abubakar Abdulhamid*[1],Ibrahim Sani[1], Ibrahim Hamza Kankia[2] and Isah Musa Fakai[1]

[1]Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Kebbi State,
[2]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina.
* Corresponding author: abuaugie132@yahoo.com

Abstract:
Inflammation is increasingly found to be involved in the development of several chronic diseases such as arteriosclerosis, obesity, diabetes, neurodegenerative diseases and even cancer. Although steroidal anti-inflammatory drugs and NSAIDs are currently used to treat acute inflammation, these drugs have not been entirely successful in curing chronic inflammatory disorders while such compounds are accompanied by unexpected side effects. Therefore, there is an urgent need to find safer anti-inflammatory compounds. The aim of this study was to screen for the presence of phytochemicals and to evaluate anti-inflammatory activity of the methanolic leaves extract of *Acacia nilotica*. Phytochemical screening was done using standard methods while the anti-imflammatory activity of the extract was done using formalin induced hind paw edema model. The results for the phytochemical secreening showed the presence of tannins, alkaloids, anthraquinones, flavonoids and saponins in the methanolic leaves extract of *Acacia nilotica*. Cardiac glycosides, glycosides and steroids were not detected in extract. The results for the anti-imflammatory activity of the extract at the doses of 150 and 300 and 600 mg/kg, significantly ($p<0.05$) inhibited formalin induced paw edema in a time and dose dependent manner. The findings of the study suggested that *Acacia nilotica* leaf has strong anti-inflammatory effects, justifiying the traditional use of this plant. The result of the present study signifies the potential of *Acacia nilotica* leaf as a source of therapeutic agents, which may provide leads in the ongoing search for anti-imflammatory agents from plants.

Keywords: *Acacia nilotica,* anti-imflammatory activity, phytochemicals, methanolic and extract.

ENP 014

EVALUATION OF *IN VITRO* ANTIBACTERIAL ACTIVITY OF CRUDE LEAF EXTRACTS OF *Cassia tora*

Abubakar Abdulhamid*[1],Ibrahim Sani[1] and Okwuogori Chibuzor Noble[1]

[1]Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Kebbi State
* Corresponding author:abuaugie132@yahoo.com

Abstract
Infectious diseases caused by bacteria, fungi, parasites and viruses are still a major threat to public health. Their impact is particularly large in developing countries due to the relative unavailability of medicines and the emergence of widespread drug resistance. This has lead to the search of new antimicrobial agents mainly among plant extracts. Hence, there is need to carry out scientific research to confirm the potency of plant extracts**.** Preliminary phytochemical screening was done on ethanol and petroleum ether extracts of *Cassia tora* leaves using standard methods while the antibacterial activity was done using disc diffusion method. The results for the phytochemical secreening showed the presence of tannins, alkaloids, anthraquinones, flavonoids and steroids except for saponins which were not detected in both extract. The results for the antibacterial activity of the ethanol and petroleum ether extracts showed varying degree of inhibitory potential against the tested bacteria. However, ethanolic extract showed a higher degree of inhibition compared to petroleum ether extract. For the ethanol extract, the lowest minimum zone of inhibition (9.00±1.73mm) was observed against *Shigella dysenteriae* while the highest zone of inhibition (15.67±1.15mm) was observed against *Escherichia coli*. For the petroleum ether extract, the lowest zone of inhibition (3.67±0.58mm) was observed against *Salmonella typhi* while the highest zone of inhibition (12.00±1.00mm) was observed against *Staphylococcus aureus*. The result of the present study signifies the potential of *Cassia tora* leaf as a source of therapeutic agents, which may provide leads in the ongoing search for antimicrobial agents from plants.

Keywords: *Cassia tora,* antibacterial activity, phytochemicals, ethanolic extract and zone of inhibition.

ENP 015

BIOGENIC SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF *Psidium guajava* LEAF EXTRACT-MEDIATED SILVER NANO PARTICLES

***[1]Amadu Kayode Salau, [1]Alimat Oyeronke Oyawoye, [2]Aminat Olajumoke Lawal and [3] Afolabi-Balogun, N. B.**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

[2]Microbiology Laboratory, Fountain University, PMB 4491, Osogbo, Nigeria.

[3]Molecular Biology and Genetic Engineering Research Laboratory, Biochemistry Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

Abstract

The present study investigated the use of *Cola millenii* for the synthesis of silver nano particles. Silver nano particles were synthesized biologically from silver nitrate solution and aqueous extract of *C. millenii* leaves, followed by identification of the silver nano particles by UV-Visible spectrophotometry and Fourier Transform Infra-Red (FTIR) spectroscopy as well as antimicrobial analysis of the silver nanoparticles. The UV-Vis absorption spectra of silver nanoparticles showed an absorbance peak at 447.5 nm, while the FTIR bands peaked at 3450.77, 1627.97 and 1384.94 cm^{-1}, showing the involvement of proteins and phenolic compounds in reduction, capping and stabilization of the silver ions and silver nano particles. The nano particles exhibited antimicrobial activity against *Escherichia coli*only with 0.4 mm zone of inhibition at 100 µl, but ineffective against and *Staphylococcus aureus, Aspergillus niger* and *A. flavus.* These results indicate that silver nanoparticles can be synthesized from *C. millenii* leaf extracts in an eco-friendly, cheap, and less toxic environment. These silver nanoparticles can also be screened further for biomedical and numerous other applications.

ENP 016

EFFECT OF VARYING EXTRACT VOLUMES ON ABSORBANCE SPECTRA OF SILVER NANOPARTICLES SYNTHESIZED FROM WATERMELON RIND EXTRACT

***[1,2] Amadu Kayode Salau, [2]Sadiya Abubakar, [2]Ishaq Ahmad, [2]Hassan Abubakar Salihu and [2]Ahmad Muhammad Ibrahim**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

[2]Department of Biochemistry, Kano University of Science and Technology, Wudil, Nigeria

Abstract

The light absorbance, light-scattering, energy dispersive, biological, physical and toxicological properties of nano particles are known to be affected by their sizes, shapes, agglomeration and methods of synthesis. The present study was designed to synthesize silver nano particles from aqueous extract of watermelon rinds and to investigate the effect of extract volume on light absorbance by the synthesized nano particles. Silver nitrate (2 mM; 20 ml) was reacted with 2, 4, 8 and 16 ml of the watermelon extract followed by UV/Visible spectrophotometry and Fourier Transform Infrared (FTIR) Spectroscopic analysis. At 2, 4, 8 and 16 ml of the watermelon extract, the UV/Visible absorbance values were 1.88, 10.50, 10.60 and 10.93, respectively and the peak/maximum wavelengths were 340.00, 340.00, 355.88 and 375.00 nm, respectively. FTIR spectra revealed peaks at 1640 cm^{-1} for all volumes and also 3339, 3324, 3324 and 3320 cm^{-1} at 2, 4, 8 and 16 ml of the watermelon extract, respectively showing the presence of polyphenolic compounds, in the process synthesis of the silver nano particles. The results have shown that the absorbance values and peak wavelengths are dependent on the varying extract volume at constant volume and molar concentration of silver nitrate. Further studies involving characterization and adjusting of silver nitrate are required for optimization of the synthetic conditions.

ENP 017

IN VITRO FREE RADICAL ACTIVITY OF SILVER NANO PARTICLES SYNTHESIZED FROM *Anogeissus leiocarpus* ROOT BARK EXTRACT

***[1]Salau, A. K., [1]Mercy Olukoya, [2]Suaib Olasupo Osineye and [3]Simiat Modupe Ogunbode**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

[2]Plant Biochemistry Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

[3]Agricultural and Nutritional Biochemistry Research Laboratory, Biochemistry and NutritionUnit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

Abstract

Silver nanoparticles were synthesized using a one-pot biogenic method involving silver nitrate solution and *Anogeissus leiocarpus* root bark extract. This green method of synthesis of silver nanoparticles relies on the ability of components of *A. leiocarpus* root bark extract to act as reducing, capping and stabilizing agents for the nanoparticles. Aqueous extract of *A. leiocarpus* root barks was reacted with 1 mM silver nitrate at ambient temperature which resulted in a colour change indicating the formation of silver nanoparticles. The synthesized silver nanoparticles were subjected to UV-Visible spectrophotometry and Fourier Transform Infra-Red (FTIR) Spectroscopyfor identification followed by free radical scavenging and ferric ion reducing activities at 0.2 to 1.0 mg/ml. The UV-Vis spectra showed peak at 480.5 nm and the FTIR spectroscopic analysis showed absorbance bands at 3423.76, 1627.97 and 1384.94 cm^{-1}.The nanoparticles also scavenged 2, 2-diphenyl-1-picrylhydrazyl radicals up to 67.8% at 0.6 mg/ml and also reduced ferric ions in solution. This study has shown that silver nanoparticles can be synthesized from aqueous *A. leiocarpus* root bark extract and the nanoparticles also exhibited free radical scavenging and ferric ion reducing activities. Further studies should focus on various other applications of these cheap and affordable nanoparticles.

ENP 018

LIGHT ABSORBANCE OF SWEET POTATO PEEL EXTRACT-MEDIATED SILVER NANOPARTICLES AT DIFFERENT MOLAR CONCENTRATION OF SILVER IONS

***[1,2] Amadu Kayode Salau,[2]Yahaya Ado, [2]Yunusa Yakubu, [3]Tajudeen Alowonle Owolarafe and [2]Abdulmumin Mikail Tasiu**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, PMB 4491, Osogbo, Nigeria.

[2]Department of Biochemistry, Kano University of Science and Technology, Wudil, Nigeria

[3]Department of Biochemistry and Forensic Science, Nigeria Police Academy, Wudil, Nigeria

Abstract

Nanotechnology has assumed a new dimension with the introduction of green methods of biological synthesis of metallic and non-metallic nanoparticles. Among the metallic nanoparticles, silver nanoparticles have unique applications in various fields and household products and have also been synthesized biogenically using plant extracts. In this study, we synthesized silver nanoparticles from aqueous extract of sweet potato peels and subjected the synthesized nanoparticles to UV/Visible spectrophotometry and Fourier Transform Infrared (FTIR) Spectroscopic analysis. To 0.5 ml of the sweet potato peel extract, 20 ml of 0.5, 1.0 and 2.0 M of silver nitrate was added to form silver nanoparticles. UV/Visible absorbance spectrum shows increase in absorbance values (0.40, 0.65 and 0.69 at 0.5, 1.0 and 2.0 M silver nitrate, respectively) and peak wavelengths (440.72, 442.52 and 451.16 nm at 0.5, 1.0 and 2.0 M silver nitrate, respectively) with increasing molar concentration of silver ions. FTIR spectra showed peaks at 1640 $cm^{-1}$for all concentrations and also 3324, 3324 and 3320 cm^{-1} at 0.5, 1.0 and 2.0 M silver nitrate, respectively indicating the involvement of hydroxyl and unsaturated bonds, probably from polyphenolic compounds, in the reduction, capping and stabilization of the silver ions to silver nanoparticles. This study has shown that increase in molar concentration of silver nitrate caused increased nanoparticle density and probable size differences affecting absorbance maxima. Further studies involving a wider range of silver nitrate concentrations and more characterization techniques will give a clearer picture of its effect on size and other properties of silver nanoparticles.

ENP 019

PHYTOCHEMICAL ANALYSIS AND ANTI-DERMATOPHYTIC EVALUATION OF *FICUS SYCOMORUS* L. (MORACEAE).

Mansir Lawal[1], Umar Lawal[1], Aliyu Habib[2]

[1]Department of Biology, Umaru Musa Yar'adua University Katsina, PMB 2218, Katsina State Nigeria.
[2]School of Pre-degree and Remedial Studies, Umaru Musa Yaradua University Katsina.
Corresponding Author: aliyu.habib@umyu.edu.ng 08069098408, 08034962714

Abstract

This study was conducted to carry out phytochemical analysis and anti-dermatophytic evaluation of *Ficussyco morus* L. (Moraceae).The preliminary phytochemical screening of *Ficussyco morus* L. revealed that the leaves and stem-bark contain secondary metabolites such as tannins, flavonoids, alkaloids, saponins, reducing sugar and steroids (only found in the leaves extract). The GC-MS assay showed that the most prevailing compound in the methanolic stem-bark extract was 2,9, Diazabicyclo (4,4,0) decane-3,10 dione,cis with peak area percent of 88.79%. While in the methanolic leaves extract was Acetic acid with peak area percent of 30.21%. The anti-dermatophytic assay of the extracts against *Microsporum canis* and *Tricophyton tonsurans* showed that the extracts inhibited the fungi with zones of inhibitions ranging from 6.33±0.47 to 24.33±0.47mm. The zones of inhibition decreased with decrease in the concentration of the extracts. Methanolic leaves extract showed high inhibitory zones while the methanolic stem-bark extract exhibited lower zones. There was statistically significant difference between the extracts at ($p<0.01$).The least anti-dermatophytic activity was observed in the stem-bark extract in *T. tonsurans* with zone of inhibition of 6.33±0.4 at 25mg/ml while the highest anti-dermatophytic activity was observed in the leaves extract in *M. canis* with zone of inhibition of 24.33±0.47 at 100mg/m

ENP 020

ACUTE ORAL TOXICITY AND ANTIPYRETIC ACTIVITY OF METHANOLIC LEAVES EXTRACT OF *Securidica lungipedunculata*in ALBINO RATS

Ukwuani-Kwaja A. N. and *Abdullahi A.

Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Kebbi State
*Email: aminuabdullahi09@gmail.com

Abstract

Decoctions of *Securidaca longepedunculata* is used in traditional medicine for treatment of pyrexia in the north-west, Nigeria. Acute oral toxicity and antipyretic effects of methanolic leaves extract of *S. longepedunculata* was investigated using up and down procedure and baker's yeast-induced pyrexia methods in rats respectively. Rectal temperatures of all rats were recorded immediately before the administration of the extract or vehicle or standard drug and again at 1 hour interval for 6 hours using digital thermometer respectively. The result reveal that the LD_{50} of *S. longepedunculata* leaves was greater than 5000mg/kg as no mortality was recorded after acute oral administration. Also the result showed that treatment with graded doses of *S. longepedunculata* leaves (100, 200 and 400mg/kg) and paracetamol (150mg/kg) significantly ($P<0.05$) decreased the rectal temperature of rats in a time and dose-dependent manner respectively. Onset of antipyretic activity was recorded in *S. longepedunculata*(400mg/kg) treated rats at 1^{st} to 6^{th} hourpost extract administration which was comparable to paracetamol as there was no significant difference ($p>0.05$). Phytochemical screening of *S. longepedunculata* leaves revealed the presence of saponins, steriods, terpenoids, flavonoids, tannins and phlobotannins. In conclusion, this finding support and validates the use of *S. longepedunculata* in traditional treatment of pyrexia.

Key words: *Securidaca longepedunculata*, Antipyretic activity, Methanolic Extract, Rectal Temperature

ENP 021

EFFECT OF AQUEOUS EXTRACT OF *Helixanthera parasitica* LEAVES IN NORMAL ORGAN FUNCTION AND ALLOXAN INDUCED DIABETIC RAT

***Usman Aminu, Yaradua Aliyu Ibrahim, Matazu, Nasirudden Umar, Nasir Abdullahi and Abubakar Mansur**

Department of Biochemistry, Umaru Musa Yar'adua University, P. M. B. 2218, Katsina

Author for correspondence usman.aminu@umyu.edu.ng +2348067062441

Abstract

The objective of this research work is to investigate some biochemical parameters in the liver and kidney of alloxan-induced diabetic rats treated with *Helixanthera parasitica* leaf aqueous extract. Alloxan-induced diabetic rats (150mg/kg) were administered orally with *Helixanthera parasitica* leaf aqueous extract (200 mg/kg) for twenty one days after which some biochemical indices in the serum, liver and kidney were measured and compared with the control. The results shows that serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), serum urea, direct bilirubin and creatinine of untreated diabetic group were significantly higher ($p<0.05$) when compared with the normal control group and extract treated group, It can be concluded that administration of aqueous leaf extract of *Helixanthera parasitica* to diabetic rats did not have any adverse effect on the liver and kidney functions indices in rats, instead it ameliorate the adverse effects of diabetes complications.

Key words: Biochemical parameters, Diabetic, *Helixanthera parasitica*

ENP 022

PHYTOCHEMICAL COMPOSITION AND *INVITRO* A-AMYLASE INHIBITION OF METHANOL LEAF EXTRACTS OF *Anarcadium occidentales, Huntaria umbellata, Parkia biglobosa, Psidium guajava and Vitellaria paradoxa*

***Abubakar Asmau Niwoye, Abubakar Ndaman Saidu, Helmina Olufunmilayo Akanya and Evans Chidi Egwim**

Department of Biochemistry, Federal University of Technology, Minna, Niger State, Nigeria

Email: asmaubeam@yahoo.com , phone no: +2348037302979

Abstract

This study investigated both qualitative and quantitative phytoconstituents of the methanol leaf extracts of *Anarcadium occidentales, Huntaria umbellata, parkia biglobosa, psidium guajava and vitellaria paradoxa* and their inhibitory effect on α-amylase enzyme. Dinitrosalicylic (DNS) method was adopted for α-amylase inhibition assay while phytochemical screening was carried out on the extracts by standard methods. Preliminary qualitative pytochemical screening showed the presence of Anthraquinones, Flavonoids, Tannins, Steroids, Alkaloids, phenols, and Saponins in all the plant extracts, as well as reducing sugars with the exception of *Hunteria umbellata* extracts. Phlobatannins was not detected in all the plants extracts.The concentration ofphenolsranges from 184.368±0.23 mg/g to 120.241±0.01 mg/g in *Anacardium occidentales* extract and *Hunteria umbellata* extract respectively. However, among the selected plants, *Hunteria umbellata* extract had the highest concentration of Alkaloids (76.76±0.01 mg/g) *Parkia biglobosa* extracthad the highest tanins content (137.55±0.05 mg/g) and *Vitellaria paradoxa* extractcontains more saponins (188.50±0.01 mg/g) as compared to other plant . Flavonoids concentration was higher in *Parkia biglobosa* extract(458.06±0.06 mg/g) while *Psidium guajava* extracts had (84.28±0.02 mg/g). The ability to inhibit α- amylase activity by the standard drug (Acarbose) and all the selected plant extracts increased as their concentration increases. Acarbose had a significant ($p<0.05$) higher activity than all the extracts with IC_{50} of (76.34± 0.12 ug/ml). *Anarcadium occidentales* extracthad a better activity and thus a lower IC_{50} of (171.1±0.13 ug/ml) among all the plants while *Hunteria umbellata* extracthad the least activity with IC_{50} of (191.0 ± 0.12) However no significant ($p<0.05$) was observed when compared to the remaining extracts. This result suggests that the methanol leaf extract of the studied plants possesses some hypoglycemic potentials.

Key words: phytoconstituents *Invitro,* α-amylase, Acarbose *Anarcadium occidentales, Huntaria umbellata, parkia biglobosa, psidium guajava and vitellaria paradoxa*

ENP 023
IN VIVO ANTIOXIDANT PROPERTIES OF FREE AND BOUND PHENOLIC EXTRACT OF FOUR SELECTED NIGERIAN VEGETABLES

[1*]Daniel Augustine Innalegwu and [1]Evans Egwin Chidi

[1]Department of Biochemistry, Federal University of Technology, Minna, Niger State.
Corresponding author: a.daniel@futminna.edu.ng; +2347032867209

Abstract
Polyphenols have attracted the interest of researchers because of their antioxidant capacity. The study is aimed at investigating the antioxidant properties of free and bound phenols of methanol extracts of *Celosia argentia, Corchorus olitorius, Amaranthus hydridus* and *Jatropha tajorensis*. Total flavonoids and phenolic contents of the extracts was determined using spectrophotometric method while the antioxidant activity of crude extract, free and bound phenols (FP and BP) was determined using 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity. The phenolic contents ranged from264.43±4.47 mg/100g in *J. tajorensis* to 431.98±4.90 mg/100g in *C. argentia* while the flavonoid contents ranged between 35.90±4.89 mg/100g in *C. olitorius* to 292.67±8.39 mg/100g in *A. hydridus.* The DPPH scavenging activity of the crude, free and bound phenolic extracts of the vegetables gave an IC_{50} of 383.52±1.05, 114.66±3.24 and 279.06±4.51 µg/mL for crude, FP and BP of *J. tajorensis* respectively, 331.29±1.33, 109.74±3.86 and 195.89±5.12 µg/mL for crude, FP and BP of *C. argentia* respectively, 379.46±3.11, 180.34±3.12 and 227.50±4.34 µg/mL for crude, FP and BP of *C. olitorius* respectively and 136.34±2.05, 135.47±1.88, 193.95±3.56 µg/mL for *A. hydridus* respectively which are significantly different ($p<0.05$) with the standard (Ascorbic acid) with an IC_{50} of 12.66±3.33 µg/mL. From the result obtained, it is rational to attribute the wide usage of the sevege tables in folkloric medicine to its high phenolic content. Hence, information from this study could be exploited in the global fight against degenerative diseases, whose etiology has been linked to oxidative stress.

Keywords: Polyphenols, antioxidants, Free phenols, Bound phenols, Degenerative diseases

ENP 024
ANTI-ULCER ACTIVITY OF PODS OF *Acacia nilotica* Linn. IN WISTAR RATS

Abdulazeez, Azeemat Titilola[1]. and Balogun, Elizabeth Abidemi[2]

[1*]Department of Biological Sciences, Faculty of Pure and Applied Sciences Al-Hikmah University, Ilorin.
[2]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin.
*azeemahtitilola@alhikmah.edu.ng; Tel: 08069338480

Abstract
Acacia nilotica plant is a popular indigenous plant used to treat gastrointestinal disorder. The antiulcer activities of aqueous extract of *Acacia nilotica* pod (AEANP) was evaluated in acute (ethanol and indomethacin) ulcer models in Wistar rats. The ulcer-preventive property was assessed using ethanol while ulcer-healing property was assessed using indomethacin. Two sets of rats were used. Each were randomly grouped into six (n=6); distilled water (control); ulcerogen (Indomethacin or ethanol); Reference drug (10 mg/kg bw); the remaining three groups for the ulcer prevention set were pretreated with graded dose (12.5, 25 and 50 mg/kg bw of AEANP) for seven days before ulcer induction with 95% ethanol while ulcer healing set had ulcer induced using indomethacin (10 mg/kg bw for three days) confirmed before post-treatment for seven days with 12.5, 25 and 50 mg/kg bw of AEANP. The highest dose of AEANP (50 mg/kg bw) gave 70.25% ulcer healing which is comparable to the healing caused by the reference drug; ranitidine (71.32%) while it gave a 42.86% ulcer inhibition.AEANP (50 mg/kg bw) significantly ($p < 0.05$) reduced gastric volume; increased gastric mucin and gastric acidity in both ethanol and indomethacin-ulcerated rats. AEANP also showed high antioxidant and anti-inflammatory activities in both ulcer models. AEANP thus has antiulcerogenic property that could be elicited by its antioxidant and gastric mucus protection property.

Key words: *Acacia nilotica*, ulcer, anti-ulcer, antioxidant, mucin.

ENP 025

PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL ACTIVITY OF VERNONIA AMYGDALINA AGAINST SOME CLINICAL ISOLATES

[1]Muhammad, D., [1]Bashir ,A and [2]Ado, A

[1]Department of Microbiology, Umaru Musa Yaradua University, Katsina
[2]Department of Microbiology, Federal University, Dutsinma
*Correspondence: adoaminuaa@gmail.com

Abstract

This study evaluates phytochemical profile and antimicrobial activity of *V .amygdalina* against some clinical isolates, with a view to determine this plant potential for use in the folklore medicine. Phytochemical screening, biochemical and agar diffusion standard procedures were employed. Four phytochemicals namely: Alkaloid, flavonoid, saponins and tannins were found in *V. amygdalina* leave extract with absence of Cardiac glycosides. *V. amygdalina* ethanol leave extract was found promising against Pseudomonads aeruginosa and Staphylococcus aureus at both 25, 50 and 100 mg/ml. No activity was shown against Candida albicans at all the tested concentrations. It was also found promising against both S.aureus and Paeruginosa with similar MIC of 50mg/ml and MBC of 25mg/ml. These findings suggest potential of *V. amygdalina* leave extract in the management of infection due to *P. aeruginosa* and *S. aureus*.

Key words: phytochemical screening, Vernonia amygdalina, Folklore medicine, Resistant, antimicrobial activity

ENP 026

AN OVERVIEW ON THE HEALING POTENTIALS OF *Musa sapientm* (BANANA) IN THE TREATMENT OF GASTRIC ULCER DISEASE

Isah U., Abdulkadir B., Ibrahim R. Alamjir and Ahmad M. A.
[1] Department of Microbiology Umaru Musa Yaradua University Katsina
Corresponding Author: isahusman260@gmail.com (+2348030560631)

Abstract

Gastric ulcer is a localized area of erosion in the stomach lining, resulting in abdominal pain, possible bleeding, and other gastrointestinal symptoms. The most common cause of gastric ulcer is a stomach infection associated with the *Helicobacter pylori (H. pylori)* bacteria. The management of gastric ulcer disease and its complications remain a surgical challenge. Therefore the evolution of newly discovered antiulcer drugs from medicinal plant is an attractive area, because several chemicals with anti-ulcer effect have been found in these plants, and they have shown a promising potentials in the treatment of disease. *Musa sapientum* (Family: Musaceae), known as banana, is a familiar tropical fruit, is a treelike perennial herb that grows 5-9 m in height, with tuberous rhizome, hard, long pseudo-stem. The inflorescence is big with a reddish-brown bract, and it is eaten as vegetables, and the ripe fruits are sweet. Some studies reported that pectin and phosphatidylcholine in green banana strengthens the mucous-phospholipid layer that protects the gastric mucosa. Other studies highlight reported that leucocyanidin, a natural flavonoid from the unripe banana (Musa sapientum) pulp, protects the gastric mucosa from erosions. The present study is aim at reviewing the relevant studies on bioactive compounds in *Musa sapient* with their healing potentials.

Key Words: *Musa sapientum*, gastric, ulcer, *Helicobacter pylor i*and leucocyanidin.

ENP 027

PREVALENCE OF GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY AMONG HUMAN HAEMOGLOBIN (HB) GENOTYPES IN MAKURDI METROPOLIS, BENUE STATE

ANI, Collins Chijiokě, OKPE Oche, AGBO Mathias

Department of Biochemistry, University of Agriculture, Makurdi, Nigeria
*Corresponding author's Email: chijike2005@yahoo.com/ 08068602349

Abstract

Glucose-6-Phosphate Dehydrogenase (G-6-PD) is the key enzyme responsible for the production of reduced form of NADPH, which helps to maintain the level of glutathione. Glutathione in turn is required for the protection of RBC against oxidative damage. The study examined the prevalence of Glucose-6-Phosphate Dehydrogenase (G-6-PD) deficiency among human haemoglobin genotypes in Makurdi metropolis. Seventy two (72) volunteers (33 males and 39 females) which were between 10-55 years were investigated for erythrocyte G-6-PD deficiency by methaemoglobin reduction methods, the cytochemical test was used to determined heterozygous G-6-PD status, while cellulose acetate paper electrophoresis was used to determine the haemoglobin genotype. From the results, G-6-PD deficiency was found in 18(25%) of the study population. Of the study population,6 (15.38%) of the female volunteer were homozygous, while4(10.26%) were heterozygous for G-6-PD deficiency. Furthermore, 8(24.24%) of the male volunteers were found to be hemizygous for G-6-PD deficiency. The haemoglobin genotypes; HbAA account for 20.93% deficiency in G-6-PD enzyme, while HbAS and HbSS account for 27.78% and 36.36% deficiency respectively. This study presents a relationship between G-6-PD deficiency and human haemoglobin genotypes, thus, G-6-PD deficiency enzyme appears to be inherited through a partially dominant gene which is sex-linked and has variable expressions.

Keyword: Glucose-6-phosphate dehydrogenase, haemoglobin, genotype, enzyme

ENP 028

IDENTIFICATION AND MOLECULAR DOCKING OF CANDIDATE INHIBITORY LIGANDS FROM *Acacia albida* AGAINST *Trypanosma brucei* PHOSPHOGLYCERATE KINASE.

P. E Joshua, V.N Ogugua, *S. Cosmas, O.A Durojaye

Biochemistry Department, Univarsity of Nigeria, NSUKKA
*Corresponding Author: cos242@yahoo.com

Abstract

Trypanosoma brucei is a species of parasitic kinetoplastid belonging to the genus *Trypanosoma*. The parasite causes a vector-borne disease of vertebrate animals, including humans, carried by genera of tsetse fly in sub-Saharan Africa. African trypanosomes compartmentalize glycolysis in the glycosome. During growth in the mammalian bloodstream, trypanosomes possess only a rudimentary mitochondrion, and the first seven glycolytic enzymes, including phosphoglycerate kinase, are located in the glycosome. Previous studies have revealed that the stem bark extracts of *A. albida* were active against *Trypanosoma* species and the quantitative analysis of phytochemical constituents of the aqueous extracts contained in the plant parts, e.g flavonoids revealed that the stem barks and leaves of *A. albida* contained relatively high amount of all the phytochemicals quantified. The detected flavonoids in the ethanol extracts of *Acacia*

albida are Epigallocatechin, Rutin, kaempferol-3-O rutinoside and quercetin. An extensive bioinformatics study was carried out on the amino acid sequence of *T.brucei* PGK, which was obtained from the NCBI database. This includes a comparative genomic study on the parasitic enzyme and its human homolog, physiochemical analysis of the parasitic enzyme and the antigenicity site prediction. The ClustalW software was used in predicting the percentage sequence identity while the physiochemical characteristics were predicted using the expasy online server. Four *A. albida* flavonoids were docked against the *T. brucei* PGK using the AutodockVina software and an in-silico structure-activity relationship study to determine the druglikeness of each candidate ligand was carried out using the Swiss ADME online server. The physiochemical analysis of *T.brucei* PGK (accession number: P07378.1) showed it is a stable enzyme with an instability index value of 32.77 and a theoretical pI of 9.25. The half-life (in vitro) in mammalian reticulocytes was estimated to be 30 hours while the percentage sequence identity with the human homolog is 46.25%. The binding energy of Epigallocatechin, Rutin, kaempferol-3-O rutinoside and quercetin were -7.8, -7.7, -7.3 and -7.6Kcal/mol respectively. All the substituents exhibited a high binding energy with the parasitic enzyme but only quercetin has a high gastrointestinal absorption rate and it also has a zero violation for the lipinski's rule. Considering the pharmacokinetics of each flavonoids, the results showed quercetin might be the most ideal therapeutic option against *T. brucei* PGK in the development of drugs against trypanosomiasis. Extensive structure-activity relationship study is therefore recommended against the human PGK to confirm its suitability as an ideal drug.

Keywords: Docking; Flavonoids; Pharmacokinetics; Drug likeness; Quercetin.

ENP 029
EFFECT OF COOKING ON NUTRIENT CONTENTS OF PREPARED DIETS CONSUMED AROUND KANO STATE-NIGERIA

[*1]Dangambo Maryam Abdulkadir, [1]Alhassan Adamu Jibril, [1]Atiku Muhammad Kano and [1]Abubakar Hafiz, [1]Ramatu Iya Idris.

[1]: Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano
[*]: corresponding author e-mail; madangambo.bch@buk.edu.ng, phone number; 08065575796.

Abstract
Food processing involves various processes/steps taken to make food edible and it varies not only with nature of the recipe but ethnicity. It may have effect(s) on the nutrient and non-nutrient content of the prepared diets. The effect of cooking on nutrient contents of prepared diets and their ingredients/recipe consumed around kano state-Nigeria was studied. The recipe and a fraction of prepared diets were dried and grounded into powder for the analysis. Proximate, minerals, vitamins and antinutrients contents of the samples were determined using standard methods. The evaluated carbohydrates and energy content of the prepared diets are significantly higher ($P<0.05$) compared to estimate from the total recipe (EFTR) used except in *danwake*. The EFTR protein, Fat, fiber, ash and moisture were significantly higher ($P<0.05$) compared to that of prepared diets except for Fiber in *danwake*. All the EFTR mineral contents of prepared diets were significantly higher ($P<0.05$) compared to that of prepared diets except for Cr and K in rice and beans and TMW SWKS respectively. The EFTR anti-nutrient were significantly higher ($P<0.05$) compared to that of prepared diets except for Tannins, C. glycosides and phytates in *danwake* and rice and beans. The findings of this study show that effect of cookingon nutritional content of prepared diets varies with the nutrient.

Key words: proximate, minerals, , antinutrients, prepared diets, estimate from the total recipe (EFTR).

ENP 030

EVALUATION OF THE ANTIPLASMODIAL ACTIVITY OF THE CHLOROFORM LEAF EXTRACT OF *Eucalyptus camaldulensis* IN EXPERIMENTAL MICE.

Dr. Ishaya Yohanna Longdet, Mary M. Mankilik and Idoko Edward David*

Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Plateau State, Nigeria.
Email: Idoko.unijosbch@gmail.com Phone number: 08145444688

Abstract

Malaria outbreak has been a case of concern for quite a long time now. With the ever increasing resistance to the available standard antimalarial drugs, there is need for the development of more antimalarial drugs, hence, the purpose of this research study which was to evaluate the antiplasmodial activity of the chloroform leaf extract of *Eucalyptus camaldulens* at various dosage concentrations in vivo compared to chloroquine treatment using experimental mice. The research was carried out using fifteen mice which were intraperitoneally infected with chloroquine sensitive *Plasmodium berghei* strain and shared into 5 equal groups. Groups A, B and C mice were infected andt reated with 100, 200 and 300 mg extract/kg body weight of mouse respectively while group D was infected and treated with 25mg chloroquine /kg body weight (positive control), and group E was infected but no treatment (negative control). The phytochemical constituents of the plant extract were evaluated. The Phytochemical screening gave alkaloids, flavonoids, tannins, terpenes and steroids, balsam, phenol, resins, and cardiac glycosides. In addition, the extract indicated a dose dependent decrease in the level of parasitaemia when compared to the negative control group. Meanwhile, the 300mg/kg extract and 25mg/kg chloroquine reduced the level of the parasite significantly ($P<0.05$) compared to the negative control group. Therefore, the chloroform leaf extract of *Eucalyptus camaldulens* presented a dose dependent antiplasmodial activity by reducing the level of *Plasmodium* infection in mice and so could serve as a possible source of antimalarial compounds.

ENP 031

GANGLION NICOTINIC ACETYLCHOLINE RECEPTOR EFFECTS OF YELLOW PEPPER EXTRACTS

[1]Lande L. Dazi*.,[2]UgochiNjoku, [3]MiriamIshuwa[3]FredNwodo and [1]Gero Mohammed

[1]National Research Institute for Chemical Technology, Zaria, Nigeria
[2]Department of Biochemistry, university of Nigeria, Nsuka – Nigeria
[3]Biological Sciences Department, University of Mkar Mkar- Nigeria.
*E-mail: dazilande99@gmail.com

Abstract

Intra venous injections of the chloroform and methanol extracts (CME) of yellow pepper, *Capsicum annum* produced a biphasic pharmacological response on the blood pressure of anaesthetised rats. The response comprised an initial fall in blood pressure and an after- rise in pressure as did adrenaline. The response was abolished by combined adrenoceptor blockade with phentolamine and propranotol In- vitro, CME contracted the field stimulated guinea pig ileum in a manner blockable with hexamethorium, a ganglion nicotinic acetylcholine blocker. In the absence of adrenoceptor antagonists, the blood pressure effect was susceptible to hexamethonium. Ganglion n Ach receptor activity may account for the many beneficial and adverse effect of pepper.

ENP 032
AN ASSESSMENT OF THE IMPACT OF KETOGENIC DIET ON WEIGHT, SOME BIOCHEMICALAND HAEMATOLIGICAL PARAMETERS IN WISTAR RATS

[1]Diretkinan Jonah Vwar*, [1]Mariam Solomon, [1]Titilayo Omolara Johnson
[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Nigeria
Author for correspondence: *Email*:diretvwar@gmail.com; *Tel:* +234-7036608881

Abstract
An increasing number of Nigerians are embracing the controversial ketogenic diet (KD) which has shown to be quite effective in reducing body weight and the risk factors for various chronic diseases. The study assessed the impact of locally sourced ketogenic food materials in Jos, Nigeria, on weight, some haematological and biochemical parameters in albino rats. The proximate nutrient composition of KDs was determined using standard procedures while elemental analysis was determined using Atomic Absorption spectrometry. Wistar rats were fed hyper-calorie diets for rapid weight gain prior to treatment with KD(s) and normal laboratory feed (control). Weight, some biochemical and haematological parameters were measured to evaluate the suitability of formulated diet as tool for weight management. Furthermore, toxicological assessment of the intestine was carried out to determine safety of the diets. Analysis of data was done using analysis of variance. The results showed significant weight loss expressed in grams by Awara/African spinach (A/S): 183.13±13.70 to 176.63±15.68, Fish/Cucumber (F/C): 181.58±13.70 to 175.73±15.68 for day 20 to 30 of experiments. Also, the effects of treatments on total cholesterol and total protein were significant for A/S (1.48±0.09mmol/l, 66.70±2.64g/l) and F/C (1.90±0.09mmol/l, 64.25±2.64g/l).Results for haemoglobin, A/S: 123.67±4.0 g/l, F/C: 121.33±4.0 g/l, was significant. Toxicological results showed little structural changes in the small intestine. This study reveals that, weight management is achievable with the formulated KD(s) available and affordable.

Keywords: ketogenic diet, weight management, toxicological assessment

ENP 033
ANTI-PLASMODIAL ACTIVITY AND TOXICOLOGICAL STUDIES OF METHANOL EXTRACT OF *Ficus sycomorus*

Abbas Abdullahi Yahya*[1],GireiAbubakar Muhammad[1], Ladan Muhtari Jangebe[1], Achor Muhammad[2], Onu Andrew[1],Saidu Yusuf[1] and Bilbis Lawal Suleman[1]

[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria.
[2]Department of Pharmaceutics and Pharmaceutical Microbiology, Faculty of Pharmaceutical Sciences, UsmanuD anfodiyo University, P.M.B. 2346, Sokoto, Nigeria.
*Author of correspondence Email:ayabbas2002@yahoo.com Phone: +2348035052927

Abstract
Malaria has been reported to be one of the most debilitating illnesses of all time and is the most common parasitic disease in sub-Saharan Africa. This study examined the anti-plasmodial activity and toxicological profile of *Ficus sycomorus*. Phytochemical analysis was carried out using standard analytical methods. Methanol extracts of leave, fruits, stem-bark and roots of *Ficus sycomorus* were screened for *in vitro* anti-plasmodial activity using *Plasmodium falciparum*. Methanol root extract was partition with organic solvents and the extracts were further screened for *in vitro* anti-plasmodial activity. *In vivo* anti-plasmodial activity of the saturated butanol extract was carried out on *Plasmodium berghei* infected mice. Acute and sub-chronic toxicity studies of the methanol root extract in albino rats were carried out using OCED guidelines. The phytochemical screening of the stem-bark and root revealed the presence of saponins, alkaloids, tannins, glycosides, cardiac glycosides, steroids, saponins glycosides, balsams, and Anthraquinones. The *in vitro* results showed that the stem-bark and roots extracts are the most potent with IC_{50} 20.4µg. The *in vivo* results showed50.6%, 80.8% growth inhibition for mice in group 2(20% LD_{50}) and 3(40% LD_{50}) and 100% inhibition for group 4(60% LD_{50}) and 5(80% LD_{50}) mice. The LD_{50} for the extract was greater than 5000mg/kg body weight and the sub-chronic results did not indicate significant effect on the hepatic and renal function indices. The study revealed that *Ficus sycomorus* has both *in vitro* and *in vivo* anti-plasmodial properties and is non-toxic.

ENP 034
NEUROPROTECTIVE EFFECT OF ALPHA LIPOIC ACID IN ALBINO RATS INDUCED WITH TRAUMATIC BRAIN INJURY

Abbas Abdullahi Yahya*[1], Ibrahim Bulama[2], Jinjir Ismail[3], Saidu Yusuf[1], Bilbis Lawal Suleman[1] and Suleiman Nasiru[4]

[1]Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Sokoto, Nigeria
[2]Department of Veterinary Physiology and Biochemistry University of Maiduguri, Maiduguri,
[3]Department of Surgery, Usmanu Danfodiyo University Sokoto, Sokoto, Nigeria
[4]Department of Veterinary Physiology and Biochemistry, Usmanu Danfodiyo University Sokoto,
*Author of correspondence Email:ayabbas2002@yahoo.com Phone: +2348035052927

Abstract
Traumatic brain injury(TBI) is one of the major cause of mortality and disability and antioxidants play an important role in the pathogenesis of the disease. This work investigated the neuroprotective effect of alpha lipoic acid (ALA) against induced traumatic brain injury in albino rats. TBI was induced by weight drop method using acceleration impact device. Twenty five (25) rats were randomly assigned to one of five (5) groups and TBI was induced in the first four groups: group I received 22.5mg/kg of ALA, group II received 45mg/kg ALA, group III received 67.5mg/kg ALA, group IV was induced with TBI but not treated and group V served as negative control. Treatment started 30minute after induction and continued for 14 days. Modified neurological severity score was conducted to score the rats after induction. Antioxidants enzymes (SOD, CAT and GPX) and lipid peroxidation marker malondialdehide(MDA) were assayed. ALA administration significantly ($P<0.05$) elevated the levels of SOD, CAT and GPX and decreased the concentration of MDA in a dose dependant manner. From these results, ALA demonstrated a neuroprotective effect by enhancing antioxidants enzymes and inhibiting lipid peroxidation.

ENP 035
EFFECT OF LEAF EXTRACTS OF *Cassia sieberiana* ON KIDNEY FUNCTION INDICES OF ALLOXAN-INDUCED DIABETIC RATS

Tijjani Salihu Shinkafi*[1], Musa Abbas[1], Maryam Bashir Dodo[1], Suleiman Ahmed Isa[1] and Ibrahim Hamza Kankia[2]

[1]Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Nigeria
[2]Department of Biochemistry, Umar Musa Yar'adua University, Katsina, Nigeria
Corresponding author email: tijjani.salihu@udusok.edu.ng

Abstract
Phytochemical *Cassia sieberiana* constituents evaluate the effect of aqueous, methanolic and ethylacetate extracts of *Cassia sieberiana* leaves on kidney function indices of alloxan-induced diabetic rats. Rats were rendered diabetic by injecting with alloxan 150mg/kg body weight intraperitoneally. Rats were grouped in six. Group I and II served as normal and diabetic control respectively. Group III, IV and V were orally administered with 300 mg/kg body weight of aqueous, methanolic and ethylacetate respectively. Lastly, Group VI was given metformin 150 mg/kg body weight orally, a standard antidiabetic drug. Treatment lasted for 14 days with 4 animals in each group. Phytochemical analysis of *C. sieberiana* revealed the presence of alkaloids, flavonoids, tannins, balsams, steroids, cardiac glycoside, volatile oil and saponins glycoside but saponins and anthraquinones are absent. The tannins and alkaloids were found to have higher percentage yield than saponins and glycosides. Kidney function indices such as urea, creatinine, uric acid, and electrolytes were evaluated. Urea, creatinine and potassium show a significant ($p<0.05$) reduction in all the treated groups compared to that of diabetic control. The results from the study suggest that *C. sieberiana*extracts could be used in the treatment of diabetes owing to its hypoglycemic effect.

Keywords: Diabetes, *C sieberiana*, Phytochemicals, Kidney indices

ENP 036

INCREASED DOSAGE OF ETHANOL EXTRACT OF *TELFAIRIA OCCIDENTALIS* SEED CONFERS SOME EFFECTS ON THE QUALITATIVE AND QUANTITATIVE PROPERTIES OF SPERM IN WISTAR ALBINO RATS

Edet, Emmanuel Effiong*[a], Nwankwo, N. P.[a],Nneoyi-Egbe, Ada F.[a], Ibeneme, Chidimma Emmanuel[a].

[a]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar,
*Corresponding Author: Email: emmaneffiongedet@yahoo.com. *Phone:* 08035835055

Abstract

The effect of increased dosage of ethanolic extract of *Telfairia occidentalis* seed on qualitative and quantitative properties of sperm in Wistar albino rats. The acute toxicity effect of ethanol extract of *Telfairia occidental* seed on mice was studied using the Lorke's method. The effect of increased dosage of ethanol extract of *T. occidentalis* seed on sperm analysis of Wistar albino rats was also investigated. Fourteen matured male Wistar albino rats 200-250g each were divided into three groups. Group A(control)received no extract, while Group B and C received 400mg/kg and 1000mg/kg body weight of *T. occidentalis* seed extracts. The result showed that *T. occidentalis* seed extract may be good for human consumption at higher doses; however, excess doses should be avoided. There was little or no effect ($p > 0.05$) on sperm count, pH, motility and viability in the animal fed groups. However, abnormalities such as head and middle piece defect were detected on the sperm cells of the rat fed groups with the highest effect ($p<0.05$) at 1000mg/kg body weight (b. wt.) fed group. This showed that *T. occidentalis* seed extracts could be incorporated in the formulation of male fertility drugs. Holistic measures should be taken in respect of observed sperm head and middle piece defects at high doses.

Key Words: *T. occidentalis* seed, acute toxicity, infertility, semen parameters, doses, LD_{50}.

ENP 037

COMPARATIVE STUDIES OF THE HAEMATINIC PROPERTY AND HEPATOPROTECTIVE EFFECT OF AQUEOUS SEED EXTRACT OF *TELFAIRIAOCCIDENTALIS* AND *CUCURBITAPEPO* ON PHENYLHYDRAZINE-INDUCED ANAEMIC RATS.

Edet, Emmanuel Effiong[a*], Evogor, Esther[a], Okwe, J. I.[a], Nneoyi-Egbe, Ada F.[a]

[a]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar,
**Corresponding Author*: Email: emmaneffiongedet@yahoo.com. *Phone:* 08035835055

Abstract

The preponderance of malaria in Nigeria and Africa in general is one of the major causes of anaemia in the region. *Telfairia occidentalis* and *Cucurbita pepo* are medicinal plants that have been used in the treatment of anaemia. This study compared the haematinic properties and hepatoprotecive effect of the aqueous seed extract of *Telfairia occidentalis* and *Cucurbita pepo* on phenylhydrazine-induced anaemic rats. A total of 60 rats were used in this study. They were divided into 30 rats for each of the plants and each 30 were further divided into five (5) groups of six (6) animals. Anaemia was induced by intraperitoneal administration of phenylhydrazine. The anaemic groups were treated with either the aqueous extract of *Telfairia occidentalis* or that of *Cucurbita pepo*, their effects were compared to the standard drug, astymin. The result of this study showed that the low dose (300mg/kg and 139mg/kg) and high dose (600mg/kg and 150.9mg/kg) of *Telfairia occidentalis* and *Cucurbita pepo* respectively caused an increase ($p<0.05$) in haemoglobin concentration, PCV, RBC count and WBC count from day 4 to 8 in the anaemic group with *Telfairia occidentalis* having a higher effect. At low dose and high dose, *Telfairiaoccidentalis*and *Cucurbita pepo* significantly lowered the levels of ALT, AST and ALP when compared to the anaemic group. The decrease was more in *Telfairia occidentalis*. *Telfairia occidentalis* seed demonstrated to be more potent in the treatment of anaemia and has higher hepatoprotective property than *Cucurbita pepo.*

Keywords: Anaemia, Astymin, *Telfairia occidentalis, Curcubita pepo.*

ENP 038

EFFECTS OF QUAIL *(coturnix japonica)* EGG DIET ON BOTH THE BLOOD SUGAR AND THE LIPID PROFILE OF ALLOXAN INDUCED DIABETIC ALBINO RATS

***Umera, Arinze Emmanuel, Ejezie, Fidelis Ebele, Ibegbu, Madu Daniel**

Department of Medical Biochemistry, Faculty of Basic Medical Sciences, College of Medicine, University of Nigeria, Enugu Campus (UNEC), Enugu, Nigeria
*emmanuelumera83@gmail.com +234(0)8036451003, +234(0)8057654711

Abstract
Quail eggs have been found useful in folk medicine in treatment of some diseases, but its consumption is not as common as chicken eggs amongst humans. This study was aimed at determining the dietary effects of quail eggs on blood sugar and lipid profile of alloxan induced diabetic rats. Quail egg samples were analysed for its various nutritional compositions using the Association of Official Analytic Chemistry (AOAC) methods. Quail eggs were administered to thirty-six (36) alloxan induced diabetic rats, which were divided into nine (9) different groups of four (4) rats each per group at varied doses for a duration of seven (7), fourteen (14) and twenty-one (21) days. Their blood sugar and lipid profile were determined using standard methods. Proximate analysis showed that quail egg is a good source of protein, lipid and has high moisture content while it has minimal ash and carbohydrate contents. Rats treated with two (2) raw quail eggs showed the highest blood glucose lowering capacity and weight gain when compared with the insulin treated rats. Evaluation of the blood glucose at intervals (day 7, day 14, and day 21) showed that quail eggs could serve for mid-term and long term treatment of diabetes, but did not have any significant effects on the serum lipid profile of diabetic rats. It could be concluded that intake of quail egg diets either alone or as part of a therapeutic regime, could have beneficial effect in the prevention and management of diabetes mellitus.

Key words: Quail eggs, Diabetes, blood sugar, lipid profile

ENP 039

EFFECT OF FRESH AND THERMOXIDISED PALM OIL – BASED DIET ON THE EXPRESSION OF KEY GENES OF LIPID METABOLISM IN OFFSPRINGS OF WISTAR RATS

Godwin E. Egbung*[1], Item J. Atangwho[1], Margaret A. Agiang[1], Josephine E.Egbung[1]and Solomon O. Rotimi[2]

[1]Department of Biochemistry, University of Calabar, P.M.B 1115, Calabar, Nigeria.
[2]Department of Biochemistry, Covenant University, Ota, Ogun State, Nigeria.
*Correspondence: eneji.egbung@Unical.edu.ng, eneji6@gmail.com

Abstract
The expression of key genes of lipid metabolism in offsprings of rats exposed to fresh and thermoxidised palm oil-diet was studied. Three groups of 4 rats each of offsprings obtained fromparent rats fed normal rat chow,4% fresh palm oil and 4% thermoxidised palm oil diets for 8 weeks. The offsprings were maintained on normal rat chow for 28 days following withdrawal from the parents. At the end of the 28-day feeding period, the offsprings were sacrificed and livers were harvested, preserved in RNA later for gene expression studies using reverse transcriptase polymerase chain reaction. Results indicated a significant decrease($p<0.05$) fold change in Acetyl coenzyme A carboxylase mRNA expression in the offsprings of Wistar rats fed fresh and thermoxidised palm oil diets relative to the controls. The same pattern were observed in Aryl hydrocarbon receptor and Scavenger receptor class B member 1 mRNA expressions. Moreover, 3-hydroxy 3-methyl glutaryl coenzyme A reductase and Lecithin cholesterol acyltransferase mRNA expression were decreased ($p<0.05$) in rats fed fresh palm oil based-diet relative to the control. This later change was not observed in the thermoxidised diet fed group.Fresh and thermoxidised palm oil based diet is likely to regulate the key enzymes of lipid metabolism.

Keywords: Aryl hydrocarbon receptor, palm oil, polymerase chain reaction and Scavenger receptor class B member 1

ENP 040
NEPHROTOXIC TENDENCY AND GC-MS FINGERPRINTS OF THE ETHANOLIC EXTRACTS OF *Capsicum annuum*

FA Sulaiman[1], BO Yusuf[1], SA Omar[1], OS Adeyemi[2], HT Muritala[1], MJ Adisa[3], AA Olopade[1], FI Babajamu[1], AT Jimba[1], AL Babatunde[1], BA Adeniyi[1], BR Opaleye[1], RF Maimako[2], OK Bello[1]

[1]Department of Biochemistry, University of Ilorin, P.M.B 1515, Ilorin, Kwara State, Nigeria.
[2]Medicinal Biochemistry, Nano medicine and Toxicology Laboratory, Department of Biological Sciences, College of Sciences & Engineering, Landmark University, Kwara State.
[3]Department of Chemistry, Ibrahim Badamosi Babangida University, Lapai, Niger State, Nigeria.
Correspondence: Tel: +23480321227200, Email: Faoziyat20022002@yahoo.com

Abstract

In the present study, we evaluated the toxicological effects of the ethanolic extracts of the *Capsicum annuum* leaves (CAL), root (CAR) and stem (CAS) in rats. Male Wistar rats divided into four groups were given 200 mg/kg body weight extracts of CAL, CAR and CAS daily for 28 days while the control group received distilled water only. Biochemical determinations were carried out to assess the effect of experimental treatments. Results showed that administration of ethanolic extracts of CAL, CAR and CAS did alter the liver function indices but not in a clear-cut manner to suggest hepatotoxicity. The CAR and CAS extracts decreased ($p<0.05$) the rat serum albumin levels compared with the control. In contrast, CAL extracts raised ($p<0.05$) the rat serum albumin level relative to the control. The plant extract administration raised rat serum bilirubin level compared with the control. Further, the extracts caused reduction ($p<0.05$) in rat serum TAG levels compared with the control. The CAL, CAR and CAS extracts did not significantly affect the rat serum creatinine level but caused significant elevation of rat serum urea compared with the control. The GC-MS of the ethanolic extract of *Capsicum annuum*r evealed the presence of 9 compounds which included aditerpene phytol (25.52%) as the major component. Taken together, findings do not only support the cardio-protective potential of *C. annuum* extracts but implicate the nephrotoxic tendency of the plant extracts probably if repeatedly consumed.

Keywords: Herbs; Medicinal plants; Phytoconstituents; Spices; Toxicity

ENP 041
PHYTOCHEMICAL CONSTITUENTS AND ANTITRYPANOSOMAL POTENTIAL OF *Waltheria indica AND Abrus precatorius.*

***F.M.Madaki[1], A.Y. Kabiru[2], E.O. Ogbadoyi[3], A. Mann[4]A. Abubakar[5], A.D. Innalegwu[6]and B.Lawal[7]**

[1,2.3,5,6&7]Department of Biochemistry, Federal University of Technology, Minna, Niger State.
[4]Department of Chemistry, Federal University of Technology, Minna, Niger State.
Corresponding Author Address: E-mail: nmmadaki@gmail,com

Abstract

African Trypanosomiasis also known as sleeping sickness threatens millions of people in sub-saharan Africa especially the poor populace.Available trypanocides are faced with the problem of toxicity, adverse reaction, complex administration and cost.The study was designed to determine the phytochemical compositions and Antitrypanosomal activities of methanol extracts of *Waltheria indica and Abrusprecatorius* in *Trypanosoma briceibrucei*i nfected mice.Phytochemical screening revealed the

presence of flavonoids (988.92±5.49), phenols (270.38±4.10), tannins (12.54±1.21), saponins (237.50±30.00),alkaloids (29.32±0.33) in *Waltheria indica*m ethanol extract while *Abrus precatorius* methanol extract was found to contain flavonoids (60.97±3.20), phenols (121.95±11.36), tannins(129.12±9.30), saponins (202.25±9.25),alkaloids(9.69±0.34).The acute toxicity study of methanol extracts of *Waltheria indica* and *Abrus precatorius* had LD_{50}>5000 mg/kgbw. The % suppression of trypanosomes in circulation were 25%, 48.1%, 56.9%and 25%, 55.6%, 61.3% at 200, 400 and 600 mg/kgbw for *Waltheria indica* and *Abrus precatorius* respectively. However, the % suppression obtained with the two extracts were significantly lower than what was observed with the group treated with standard drug Berenil (100%) but survived longer than the untreated group. The result of this study shows that the two plant may contain phyto constituents with the potentials to suppress parasite proliferation in experimental animals trypanosomiasis.

Keywords: Trypanosomiasis. Phytochemical constituents, Antitrypanosomal activity *Waltheria indica* and *Abrus precatorius*

ENP 042
HOST IMMUNE RESPONSE MECHANISMS AND INTERACTIONS TO MALARIA PARASITE INVASION: AN OVERVIEW

[1*]Muhammad, F.M., [1]Jigam, A.A., [1]Abubakar, A.&[2]Adeniyi, K.A

[1]Department of Biochemistry, Federal University of Technology, Minna, Nigeria
[2]Applied Entomology and Parasitology Unit, Department of Animal Biology, Federal University of Technology, Minna, Nigeria
[*]Corresponding author: pharteama@gmail.com +234-8138066989

Abstract
The endemicity of malaria infection in sub-Saharan Africa, in spite of the recent aggressive control measures, has alerted the stakeholders of the need for an integrated approach to curbing the disease. One of such approaches is the need for better understanding of malaria parasite-host interaction and the adaptive immune response to their invasion. It has been well established that different malaria infection stages such as the erythrocytic phase provides a potent stimulus for the production of specific malaria antibodies. Macrophages, cellular effectors and cytokines are involved in the activation of immune responses at different stages of human malaria. Neutrophils, mononuclear phagocytes and natural killer (NK) cells have been shown to increase in number (during malaria infection) and lyse malaria parasite-infected erythrocytes. NK cells also secrete interferons (IFN) that can cause parasitic idalmacrophage activation that kill parasite in infected hepatocytes. Other mechanisms by which antibody is effective against parasite include blockade of invasion of red blood cells (RBCs) by merozoites and binding of the antibody to parasite induce molecules on the RBC survival surface, leading to greater clearance of infected RBCs. Additionally, regulatory T-cells may modulate effector CD4+ T-cell responses to malaria infection suppressing protective immune responses but preventing immune-mediated pathology. On the other hand, *Plasmodium* parasite puts selection pressure on human gene frequencies as a way to escape human immune response and thus, alter peptide ligand (APL) antagonism which mediates the immune response from a pro- to an anti-inflammatory T-cell response. Findings from this present review can be exploited in the development of novel anti-malaria drug and vaccine.

Keywords: Malaria infection, Antibody, Cytokines, Neutrophils, immune response

ENP 043

MOLECULAR DETECTION OF TRYPANOSOMA SPECIES INFECTING CATTLE IN YOLA, ADAMAWA STATE, NIGERIA.

Buba F., Abdulsalami MS., Umar YA., Yakubu M and Alhaji I.
Department of Biological Sciences, Nigerian Defence Academy, Kaduna, Nigeria.
Corresponding author: phone: +2348036666468, E-mail:Fauziyabuba@yahoo.com

Abstract
Trypanosomosis resulting from infection by different trypanosome species remain the most important animal disease resulting in economic loses worth millions of naira annually. This situation may be aggravated with increased trans-border movement of humans and animals associated with the activities of "Boko Haram" terrorist and rustling coupled with poor disease surveillance by relevant government agencies. To determine trypanosome species infecting cattle in Yola, North Eastern Nigeria, 250 blood samples were collected randomly from100 male and 150 female cattle brought in for slaughter at Yola Central abattoir. Blood samples collected were screened for trypanosomes by amplifying the 18rDNA gene using species specific primers. The resultant PCR products were analyzed in 2% agarose gel electrophoresis and visualized by staining with ethidium bromide. *Trypanosoma vivax*, *T. congolense* and *T. brucei* were detected in 15.2% of the sampled animals. Mixed infection with either trypanosome species were also detected. Infection with trypanosome was found to be significantly higher in females (9.6%) than in males (5.6%) ($P<0.05$). However, infection in the different breeds of cattle encountered did not show any significant difference ($P>0.05$),although Gaudare Gudali recorded the highest infection rate of 4.8%, followed by Adamawa Gudali (4.0%), White Fulani (4.0%) and Red Bororo (2.4%). The implications of this findings is discussed in relation to livestock production in Adamawa State.

ENP 044

DIETARY PATTERN AND RISK OF DYSLIPIDEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC IN KADUNA SOUTH, KADUNA STATE, NIGERIA

Sherifat Misbah Adeniran[1], Oluwafemi Abiodun Adepoju[2*], Ijeoma Okolo[2] and Dorcas Bolatito James[2]

[1]Department of Nutrition and Dietetics, Kaduna State Polytechnic, Kaduna, Nigeria
[2]Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria
*Corresponding Author: Email: femiadepoju10@gmail.com, Tel: +2348067488479

Abstract
Pregnancy greatly increases demand for metabolic fuels because of the growth and development of the foetus. This study assessed the dietary pattern and risk of dyslipidemia among pregnant women attending antenatal clinic in Kaduna South, Kaduna State, Nigeria. Across-sectional study was carried out in four selected health centres in Kaduna South using both quantitative and qualitative approaches.One hundred and thirty (130) pregnant women (15-40 years) whose consents were sought for were assessed. The socio demographic characteristics revealed that 37% of the pregnant women were between ages 21 and 25 years, 68%were Hausas, 77% have secondary level education and 67% received monthly income between ₦5,000 - ₦10,000. Those in their first, second and third trimester are 2%, 92% and 6% respectively. The dietary patterns of the pregnant women showed that they consumed fruits, vegetable soup and sauce (32.6%); meat, fish and poultry food (25.0%); pastas and processed foods (22.5%); milk and its products (40.2%) and food containing fats and oil (54.9%) at least once in a day. All the respondents have TC concentration (5.73 ± 1.13) above the optimal level, 126 have optimal HDLc (3.37 ± 0.80), 115 have optimal LDLc (1.76 ± 0.90) while 31have optimal TG (1.30 ± 0.26) concentration. Respondents with TG levels in the borderline and high risk are 53 (1.93 ± 0.14) and 46 (2.74 ± 0.45) respectively. This study concluded that poor dietary pattern may predispose pregnant women to dyslipidemia.

Keywords: pregnancy, dyslipidemia, dietary pattern, antenatal

ENP 045

PHYTOCHEMICAL CONSTITUTE AND FREE RADICAL SCAVENGING POTENTIAL OF HERBAL AND MEDICINAL PLANT EXTRACTS

Gero, M*.,Sule, A.M.
National Research Institute for Chemical Technology, Zaria, Nigeria
*E-mail: gerob2005@yahoo.com

Abstract
The objective of the present study was to evaluate the phytochemical constitution and antioxidant activity of methanolic extract of dried leaves of four medicinally important herbs *Ocimum sanctum, Menthaspicata, Trigonellafoenum-graecum* and *Spinaciaoleracea* utilized in our routine diet along with one medicinal important tree *Gmelinaarborea.* Qualitative analysis of phytochemical constituents' *viz.* tannins, phlobatannins, saponins, flavonoids, steroids, alkaloids, quinones**,** coumarin, terpenoids and cardiac glycosides and quantitative analysis of total phenolics, alkaloids, saponins and flavonoids were performed by the well-known tests protocol available in the literature. The phytochemical screening revealed the extract richness in Tannins, Phlobatannin, Saponins, Flavonoids, Steroids and Alkaloids. Quantitative analysis of phenolics, alkaloids, saponins and flavonoids had revealed that *Menthaspicata* possessed maximum phenolic (18.41 %), *Gmelinaarborea* highest alkaloids (5.66%) and flavonoids (22.80 %) and *Trigonellafoenum-graecum* highest saponin (50.12 %) contents. Antioxidant activity was determined by DPPH radical scavenging and reducing power assays. IC50 values obtained by DPPH activity for *Menthaspicata* crude extract was found to be 170µg/ml and reducing power was found to be maximum (1.92) at 1mg/ml concentration. The results suggest that *Menthaspicata* has promising antioxidant activity and could serve as potential source of natural antioxidants.

Keywords: Free Radical Scavenging Activity, *Gmelinaarborea*, Reactive Oxygen Species, DPPH, Total Phenolic Content, BHT

ENP 046

IN VITRO AND *IN VIVO* ANTI-TRYPANOSOMAL POTENTIALS OF *Afrormosia laxiflora* AGAINST *Trypanosoma brucei brucei*

Chechet, Gloria Dada*, Apeh Daniel, Yahaya Joseph, Emmanuel Sadiq and Nathan Habila
Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
*Corresponding Email: daglo2000@yahoo.com Phone Number: +2348094608793

Abstract
Animal African trypanosomiasis (AAT) also known as Nagana is a resurgent disease in Africa. Medicinal plants are being used in less developed countries for the treatment of various diseases including trypanosomiasis, due to the high cost of currently available drugs. Most of these plants have been useful sources of treatment of various diseases based on information obtained from folk medicine but have not been scientifically certified. We investigated the *in vitro* and *in vivo* anti-trypanosomal potentials of methanol extract of *Aformorsia laxiflora* against *T. b. brucei*. Phytochemical analysis of the plant showed the presence of saponins, alkaloids, flavonoids, antraquinones, resins, tanins and steriods/terpenoids. The toxicity of methanol extract of the plant was above 5000mg/kg body weight. Parasitaemia was monitored daily while Packed Cell Volume was determined at three time points (days 1, 4 and 7) during the course of the infection. The plant showed promising trypanocidal potential *in vitro* against the parasite at concentrations of 10, 15 and 25mg/ml. At these concentrations, the extract immobilized the parasites within 55mins post-incubation. The plant demonstrated prophylactic activity against the parasite *in vivo* at a dose of 500mg/Kg body weight where a delayed pre-patent period (6 days post-infection), extended survival (14 days post-infection) and significant ($P<0.05$) reduction in the parasite burden confirmed by an absence of anemia (PCV 47.00±0.8 %) was observed when compared to the infected untreated control group. Based on these observations, it was therefore deduced that the methanol extract of leaves of *A. laxiflora* possessed the ability to ameliorate the burden of the disease and could be a plausible candidate for drug development against the disease.

Key words: *Trypanosoma brucei brucei*, *Afromosia laxiflora,* anti-trypanosomal, *in vitro*, *in vivo*

ENP 047

DIESEL-DEGRADING *Pantoeaagglomerans* STRAIN HMYP-4REDUCED HEXAVALENT MOLYBDENUM TO MOLYBDENUM-BLUE

Hafeez Muhammad Yakasai*, Abba Babandi, Dayyabu Shehu, MurtalaYa'u, Kamaluddeen Babagana and Jamila Ahmed Mashi.

Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano,
*Corresponding author: hmyakasai.bch@buk.edu.ng, +234(0)8034966925

Abstract

Molybdenum has recently been considered as an emerging pollutant for its extreme toxicity to spermatogenesis in some organisms. Bacterial molybdate reduction to colloidal molybdenum blue (Mo-blue) forms the basis for its bioremediation. Molybdenum-reducing *Pantoeaagglomerans* strain HMYP-4 was screened for its potential to degrade hydrocarbons and as well reduce toxic molybdenum to Mo-blue. Strain HMYP-4 was able to survive and grows well on diesel, however, the use of diesel as electron donor source does not support Mo-blue production. Glucose was the best electron donor source facilitating molybdate reduction, followed by sucrose, fructose, galactose and citrate respectively. Molybdate reductionto Mo-blue was optimal at pH between 6.0 and 6.5, temperature between 25 and 35^{o}C, molybdate concentration between 40 and 60 mM and a critical phosphate concentration between 3.5 and 5.0mM. The reduction process in this strain was inhibited by heavy metals such as copper (ii), mercury (ii) and silver (i). The bacterium was able to grow and detoxify multiple toxicants, a novel feat that is important in bioremediation.

Keywords: *Molybdenum, pollution, toxicity, Pantoeaagglomerans, bioremediation*

ENP 048

PHYTOCHEMICAL ANALYSIS AND ANTIOXIDANT ACTIVITY OF AQUEOUS AND METHANOLIC LEAFS EXTRACTS OF *MENTHA PIPERITA* (PEPPERMINT LEAFS)

Muktar Hafsat Sani and Kabir Ibrahim Matazu
Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
*Corresponding Author: hafsatmuktar001@gmail.com

Abstract

Plants are a potential source of medicine, though in a circle form, have been used from the immemorial time to have a remedy for various ailments. Phytochemicals (from the Greek word phyto, meaning plant) are biologically active, naturally occurring chemical compounds founds in plants, which provide health benefits for human further than those attributed to macronutrients and micronutrients The phytochemicals content (qualitative and quantitative), antioxidant activity of aqueous and methanolic leaf extract of locally available menthapiperita, was determined. The result of the phytochemical screening revealed the presence of saponins, flavonoids, steroids, tannins, glycosides, alkaloids in both the aqueous and methanolic leaf extract. Anthraquinones was found to be absent in both the aqueous and methanolic leaf exteact. The leaf extract of mint leaves was analyzed quantitatively and was found to contain flavonoids (15.68%), saponins (5.09%) and alkaloids (3.82%). Three vitamins; A,C,E, were found to be present in different concentrations in the aqueous and methanolic leaf extract of *menthapiperita*. Aqueous vitamin A (3.92 mg/ml), methanolic vitamin A (1.92 mg/ml), Aqueous vitamin C (13.38 mg/ml), methanolic

vitamin C (8.20 mg/ml), Aqueous vitamin E (0.89 mg/ml) methanolic vitamin E (0.91 mg/ml). The hydrogen peroxide scavenging activity of both the aqueous and methanolic leaf extract of peppermint was evaluated. The percentage inhibition (% inhibition) at various concentration (200-400 µg/ml) were determined. The percentage inhibition of the aqueous leaf extract were (7.50% at 200 µg/ml), (9.29% at 300 µg/ml), (10.37% at 400 µg/ml). The percentage inhibition of the methanolic leaf extract were (1.84% at 200 µg/ml), (3.63% at 300 µg/ml), (7.48% at 400 µg/ml). The reducing abilities of both the aqueous and methanolic leaf extract were evaluated and compared with Ascorbic acid at different concentrations. The reducing abilities of the aqueous leaf extract were (7.69% at 200 µg/ml), (20.12% at 300 µg/ml), (43.29% at 400 µg/ml) and the methanolic leaf extract reducing abilities were (7.85% at 200 µg/ml), (21.60% at 300 µg/ml), (43.29% at 400 µg/ml) respectively. *Menthapiperita* were found to be a rich source of secondary metabolites, both the methanolic and aqueous extracts of *Menthapiperita* were found to possess glycosides, saponins, flavonoids, tannins, steroids, alkaloids and phenols. The plants also contain vitamins which include vitamin A, C, E, and also have antioxidant activity.

ENP 049

IDENTIFICATION OF SINGLE NEUCLEOTIDE POLYMORPHISMS IN EXTRACELLULAR SUPEROXIDE DISMUTASE 3 GENE IN TYPE 2 DIABETES MELLITUS PATIENTS IN KANO

Halliru Abdullahi Hassan.*[1] and Nasiru Abdullahi[2].
Department of Medical Laboratory Science, College of Health Science BUK [1],
Department of Biochemistry, College of Health Science BUK[2].
Corresponding and Lead Author:halliruh@yahoo.com

Abstract
The aim of the study is to identify single nucleotide polymorphism (SNP) in the extra-cellular superoxide dismutase 3 (EC-SOD3) genes. The SOD3 spans between 24,795,463-24,800,842 base pairs on chromosome 4, this includes the 3[l]Utr region were the mutations were detected. The total base pair for the gene was 723 with 240 amino acid sequence. Amplification was done to amplify a segment of the gene including its 3' untranslated region with a product of 432 basepairs. A CCT and TTT were identified respectively as C/T and T/C. They were identified in the utr region 3[l] of the gene just 81 base pairs from the stop codon of the gene, the mutant or variant are CTT and TCT respectively. Fourty (40) Type 2 Diabetes Mellitus (T2DM) patients and ten (10) control subjects were recruited from Murtala Muhammad Specialist Hospital. Susceptibility of the SNP to type 2 diabetes mellitus was studied and its complications among Kano population (Nigeria) were assessed. DNA was extracted from peripheral blood samples obtained from sample subjects and genotyping was done using PCR-based direct DNA sequencing. Biochemical parameters were also assessed in subjects studied. Evaluation of clinical parameters of diabetic patients showed that patients with these variants have higher fasting blood glucose, serum lipid profiles and BMI compared to controls. The two variants rs number were checked in ensemble SNP database for identification of mutation but no record was seen, this indicate mutations have not been identified or announced.

Keywords: Extracellular superoxide dismutase, SNP, type 2 diabetes mellitus.

ENP 050

RESISTANCE TO CHROMIUM, COPPER AND ZINC AMONG FUNGI ISOLATED FROM SITES CONTAMINATED WITH TEXTILE EFFLUENT IN KANO STATE, NIGERIA

Mohammed, H.A[1]*., Musa H[2].,Sule, A.M[1]., Madugu, I.A.
[1]Environmental Technology Division, National Research Institute for Chemical Technology- Zaria,
[2]Nigeria Institute for Trypanosomiasis Research, Kaduna State, Nigeria
* Corresponding author email: hauwa3014@gmail.com.

Abstract
Research work was carried out to assess the capacity of strains of fungi isolated from raw textile and partially treated effluent, discharge point, up and down Stream of Challawa River to resist and grow in the presence of Chromium (Cr), Copper (Cu) and Zinc (Zn) invitro. Fungi belonging to the genera *Aspergillus*, *Penicillium*, *Chrysosporium*, *Microsporum*, *Trichoderma and Rhizopus* species were isolated from the study sites and were screened to access their capacity to tolerate and resist chromium, copper and zinc at concentrations of 20 and 30ppm by inoculating each of them into duplicate flasks containing 50ml of potato dextrose broth (PDB) supplemented with 20 and 30ppm of Cr, Cu and Zn. A control was also set up by inoculating each of the isolate into the same medium without the heavy metals. All inoculated flasks were aerobically incubated at 28^{o}C on a rotator shaker for 7days. *Chrysosporium* sp had the highest tolerance index of 0.445 (zinc) which was closely followed by *Aspergillus niger* with a tolerance index of 0.325 (chromium) while Trichoderma sp had the least tolerance index of 0.153 (zinc). The ability of fungi to tolerate and resist heavy metals present in textile effluent further prove the fact that filamentous fungi (molds) could serve as good candidate organisms for bioremediation processes in the removal of heavy metals from sites contaminated with industrial effluent containing heavy metals.

Key Words: Fungi, Textile effluent, Heavy metals, Resistance, Tolerance and Bioremediation

ENP 051

DETERMINATION TOTAL ASCORBIC ACID (VITAMIN C) CONCENTRATION IN FRESH AND BOILED CABBAGE, LETTUCE, MORINGA AND SPINACH LEAVES.

Hauwa Usman Garba[1], Akilu Sada Abdullahi[1]
[1,2] Department of biochemistry, Umaru Musa Yar'adua University, Katsina.
akilu.sada@umyu.edu.ng, 0803 630 6019

Abstract
Leaf vegetables are cultivated in large quantity and consumed daily in Nigeria and also worldwide. They are consumed in their fresh form or after processing. Ascorbic acid is the most abundant antioxidant in plants, because it is produced in excess by the plants during stress and to scavenge free radicals released during photosynthesis. Intake of vitamin c by humans is absolutely essential because it cannot be synthesized by the body and it participates in many important cellular processes such as, collagen synthesis, modulation of cell growth, synthesis of neuro-transmitters and certain hormones and also antioxidant activity. Vitamin C has also been shown to curb oxidative damage which has been implicated in cardiovascular diseases, age-related macular degeneration and cancer. In this research, the total ascorbic acid (ascorbic acid + dehydroascorbic acid) concentration of fresh and boiled cabbage, lettuce, moringa and spinach leaves was analyzed and changes were measured. The study shows that fresh moringa leaves had the highest total ascorbic acid concentration with 54.63mg/100g while boiled lettuce leaves had the lowest with 16.63mg/100g. However, spinach leaves exhibited the highest vitamin c retention capacity after boiling for 3 minutes as only 7.46% of total vitamin c was lost. The study shows that boiling method of processing tends to cause total ascorbic acid loss in leaf vegetables and it is more beneficial to consume these vegetables in their fresh forms rather than boiled for adequate vitamin c intake.

Keywords: Ascorbic acid, Antioxidant, Leaf vegetables, Retention capacity.

ENP 052
NUTRITIONAL VALUE OF CHAPATI PRODUCED FROM THREE WHEAT VARIETIES

Laminu Hauwa Hajjagana*[1], Modu Sheriff[1], Ameh Deborah Onyemowo[1], Garald Maimuna[1], Nicholas Paul[1]
[1]Department of Biochemistry, University of Maiduguri, Borno State ,Nigeria.
Corresponding Author E-mail:hauwaalamin@yahoo.com 07032017344

Abstract
Chapati was prepared from three varieties of wheat Atila GanAtila, Cetia and Seri M82. Standard laboratory procedures were used for analysis. The results showed that the chapati prepared from Atila Gan Atila had significantly P≤0.05 higher protein (9.48±0.03 %) and fiber (5.74±0.15 %) contents and a significantly P≤0.05 lower metabolisable energy (347.36±0.07 %) while the chapati prepared from Seri M82 had the lowest protein (7.76±0.14 %) and fiber (4.56±0.03 %) contents and a significantly P≤0.05 higher metabolisable energy (357.22±0.33 %). All the three chapatis showed significant P≤0.05 reduction in the level of antinutrients: phytic acid and tannins. Significant P≤0.05increases in *in vitro* protein digestibilities and *in vitro* carbohydrate digestibilities were exhibited by the chapatis. Chapati prepared from the three wheat varieties did not show any significant P > 0.05 difference in the levels of iron,magnesium and calcium while Atila Gan Atilachapati exhibited the highest level of phosphorus (481.33±0.11 %). The results of the sensory evaluation showed that the chapati prepared from Atila Gan Atila (7.8 ± 0.75 %) was preferred followed by that produced from Cetia (5.5 ± 0.99) and Seri M82 (5.5 ± 1.34). The results showed that the chapati prepared from AtilaGanAtila is superior to that prepared from Cetia and Seri M82.

Key Words: Protein, Carbohydrates, *In vitro*, Digestibility, Antinutrients, Fiber

ENP 053
EVALUATION OF THE PROTECTIVE EFFECTS OF DIFFERENT LEVELS OF *Canariumschwein furthii* OIL SUPPLEMENTATION IN N-METHYL-N-NITROSOUREA INDUCED OXIDATIVE STRESS IN MALE WISTAR RATS

Ikenna S. Onyeka[1] *, S.E Atawodi[2] and A.J NOK[3]
[1] Department of Integrated Science, Federal College of Education Zaria, Nigeria
[2] Biochemistry Department, Ahmadu Bello University, Zaria, Nigeria
[3] Biochemistry Department, Ahmadu Bello University, Zaria, Nigeria
E-mail: ikcolasis@yahoo.com; Tel: +234(0)8023838070

Abstract
Male wistar rats divided into groups of seven each were used to evaluate the protective effect of *Canariumschwein furthii* pulp oil supplementation at 2.5%, 5% and 10% levels on N-methyl- N-nitrosourea (MNU) induced oxidative stress in some major organs. Following ten (10) weeks of 72 hourly MNU treatment with concomitant feeding on *Canariumschwein furthii* oil supplemented diets, it was observed that a significant($p<0.05$)decrease in lipid peroxidation with increase in catalase (CAT) and superoxide dismutase (SOD) activities in the 10 % *C.schwein furthii* oil supplemented diet group. The findings of this study suggest that *Canariumschwein furthii* oil at 10% supplementation level is able to provide a protective effect against oxidative stress associated with exposure to environmental chemical carcinogens.

Keywords: Diet Supplementation, *Canariumschwein furthii*. Oil N-methyl-N- nitrosourea (MNU), Oxidative stress, antioxidant effect

ENP 054

EVALUATION OF IN VITRO RADICAL SCAVENGING ACTIVITIES AND ESTIMATION OF TOTAL PHENOLIC AND TOTAL FLAVONOIDS CONTENTS OF METHANOL LEAF EXTRACTS OF *Acacia nilotica, Moringa oleifera* and *Senna singueana*

Galadima HI.,[1*] Kirim R. A[1]., Timothy SY.,[2] Tata FY[2]

[1]Department of Medicinal Chemistry and Quality Control, National Institute for Pharmaceutical Research and Development Idu, Abuja, Nigeria

[2]Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Maiduguri, Maiduguri,

[*]Galadima HI galadimaisa48@gmail.com Tel: 08068109818

Abstract

Excessive production and accumulation of free radicals in the body contribute to oxidative stress related diseases likes Alzheimer's, diabetes, hypertension, cancers and inflammatory diseases due to damages to proteins, DNA, and lipids This study was aimed at evaluating the in-vitro antioxidant activities and estimation of total phenolic and flavonoids contents of methanol extracts of three local medicinal plants. The methanol leaf extracts of the plants were prepared and tested for their radical scavenging activity using DPPH (1, 1-diphenyl-2-picrylhydrazyl), quercetin was used as the reference drug with standard antioxidant activity. Total phenolic and flavonoids contents of the extracts were also determined using Folin-Ciocalteu and aluminium chloride method respectively. The results obtained revealed that all the samples possess strong DPPH radical scavenging activity which were dose dependent. The methanol leaf extracts of *Acacia nilotica, Moringa oleifera, Senna singueana* and quercetin (standard) had IC_{50} values of 35.51, 37.10, 82.41 and 6.57 µg/mL respectively. The total phenolic content of *Acacia nilotica, Moringa oleifera*and *Senna singueana* extracts were 145.60, 138.8, 98.2 mg GAE/g of dried extract, respectively. The total Flavonoids content were82.4, 68.7 and 59.6 mg quercetin equivalent per gram of extracts of *Acacia nilotica, Moringa oleifera* and *Senna singueana* respectively. The present study showed that the plants extracts have potent antioxidants activities and can be further explored for their possible use as a natural source of antioxidants. The observed antioxidant activities of the extracts was due to the presence of high content of phenolic and flavonoid.

Keywords: *Senna singueana, Acacia nilotica, Moringaoleifera,* radical scavenging activity, DPPH

ENP 055

ISOLATION AND IDENTIFICATION OF FUNGI ASSOCIATED WITH SPOILT VEGETABLES (Tomato, Pepper) IN DUBAI MARKET WITHIN CENTRAL MARKET KATSINA STATE, NIGERIA

Sani Aliyu* and Isah Yahaya

Department of Microbiology, Umaru Musa Yar'adua University, Katsina, Katsina State Nigeria

*Corresponding author: aliyu.sani@umyu.edu.ng GSM: 08068986670.

Abstract

Vegetables contains large amount of water which makes them more susceptible to spoilage by the action of various microorganisms. This makes the storage of these vegetables difficult and its transportation. Vegetables are a prevalent used both in raw form as salad, for garnishing various food items and added for taste in various cooked item. Further vegetables are a rich source of vitamins specifically diet A as it carries its precursor β-carotene which could be very critical for vision. It is also a wealthy supply of minerals which makes it a critical thing of food. This study was done to find out the organisms which make vegetables more susceptible to spoilage. The study was carried out to isolate the fungi associated with spoiled vegetables sold in Dubai market within central market Katsina. The organisms were identified on the basis of their colonial and microscopic characteristics as *Penicillium spp, Rhizopus spp, Aspergillus spp* and *Alternaria spp, Aspergillus spp, Mucor spp,* and *Rhizophus spp. Aspergillus spp,*

penecillium spp, fusarium spp, mucor spp were observed to have the highest frequency of occurrence, it occured in almost all the sample. The presence of the organisms is a public health risk because of the diseases known to be caused by them. It is therefore imperative that adequate hygienic practices must be put in place during the storage and handling of vegetables. Spoilt vegetables must also not be consumed as they contain a teaming population of bacteria and fungi, some of which are pathogenic to humans.

ENP 056

In-Vivo Antioxidant Activities of Okra-based Antidiabetic Nutraceutical Formulation from *Abelmoschus esculentus* (L.) Moench (Ex-maradi Variety) on Alloxan-induced Diabetic Rats

[1*]Ibrahim KabirMatazu;[1] Muhammad Ismaila;[1]Nasiruddeen Umar Matazu; [1]Ibrahim Aliyu Yaradua; [1]NasirAbdullahi; [1]Hamza Ibrahim Kankia; [1]Suleiman Zainab Abubakar; [2]Lawal SalisuBilbis[1]Usman Aminu and [2]Yahaya Abdullahi Abbas

[1]Department of Biochemistry, Umaru Musa Yaradua University, Katsina, Katsina State.
[2]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria.
*Author of Correspondence: 08036129790; kimatazu@yahoo.com

Abstract

The anti-hyperglycemic effect of the developed okra-based antidiabetic nutraceutical formulation from *Abelmoschus esculentus* (Ex-maradiVariety) has been assessed by its functional properties viz: Antioxidant Capacity, Water Adsorption Capacity, Oil Adsorption Capacity, Glucose Adsorption Capacity, Glucose Dialysis, and Glucose Dialysis Retardation Index in our previous *In-vitro* studies. This study was aimed to evaluate the *In-vivo*antioxidant activities of the developed nutraceutical on hyperglycemia-induced oxidative stress in albino rats. Diabetes was induced by intra-peritoneal administration of a single dose of (150 mg/kg b.w) Alloxan. The rats were randomly divided into five groups of six rats each. The Normal control and the Diabetic control groups were orally treated with normal saline (10 ml/kg); the Metformin control group was orally treated with Metformin (100 mg/kg) while the Test groups (FX_1) and (FX_2) were orally treated with 100 and 200 mg/kg b.w of the formulation respectively. All the groups were treated for 21 days. The effects of the treatments on serum glucose andglycated hemoglobin levels as well as the oxidative stress markers: [Superoxide Dismutase (SOD), Catalase (CAT), Reduced Glutathione (GSH) and Malondialdehyde (MDA)] were studied to evaluate the antioxidant activities. Administration of FX_1 and FX_2 to the respective test groups resulted in significant ($P<0.05$) reduction in serum glucose and glycated hemoglobin levels with improvements in antioxidant enzymes activity compared to the diabetic control group. This study suggests that the Okra-based nutraceutical formulation can ameliorate oxidative stress in diabetic rats and further supports the previous findings and the use of the formulation for the management of diabetes mellitus.

Key Words: *Abelmoschus esculentus*, Diabetes Mellitus, Glycated hemoglobin, Antioxidants, Nutraceutical formulation.

ENP 057

NEPHRO-PROTECTIVE EFFECT OF *Cyperus esculentus* (TIGER NUT) ON GENTAMYCIN-INDUCED NEPHROTOXICITY IN MALE ALBINO RATS

[1*]MuhammadIsmaila; [1]Ibrahim KabirMatazu;[1]Hamza Ibrahim Kankia, [1]Nasir Rufa'i;[1]Isah Nura; [1]Lawal Usman; [1]Ya'u Amina; [1]Abubakar Aminu; [1]Abubakar Mannir Rawayau and [2]Muhammed AbdullahiUbana

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina State, Nigeria.
[2]Department of Biochemistry and Molecular Biology, Nasarawa State University, Keffi, Nasarawa State,
*Author of Correspondence: ismaila.muhammad@umyu.edu.ng; 08065547740

Abstract

Acute Renal Failure (ARF) is a syndrome characterized by rapid onset of renal dysfunction and sudden increase in metabolic waste-product in the blood. *Cyperus esculentus (*Tiger nut) are sweet almond-like tubers which are highly appreciated for their health benefits and nutritive values. This study was aimed to investigate the nephroprotective activity of aqueous extract of *Cyperus esculentus* (CE) tuberson gentamicin-induced nephrotoxicity in male albino rats. Acute renal failure was induced in the rats by intraperitoneal injection of 150mg/kg b.w gentamycine for seven consecutive days. Rats were randomly divided into five groups of five rats each: The Normal control and the Gentamycine control groups were treated orally with10 ml/kgb.w distilled water; the Drug control group was treated orally with 100mg/kg Metformin while the Test groups (CE_{200} and CE_{400}) were orally treated with 200 and 400mg/kg b.w *Cyperus esculentus* extract. All treatments were given once per day for seven consecutive days. Serum Creatinine, Urea, Uric acid, Electrolytes (Na^- and K^+), Antioxidant markers(CAT, SOD, GSH and MDA) as well as the histopathological examinations of the kidneys were evaluated to assess the nephro-protective effect of the extract. Administration of CE_{200} and CE_{400} resulted in significant ($P<0.05$) reduction in serum Creatinine, Urea,Uric acid and Electrolytes concentration with improvements in the antioxidant enzymes activities compared to the Gentamycine control group. The aqueous extract of *Cyperus esculentus* tuberscould contain pharmacologically active compounds with potent nephro-protective activity that may serve as good source for development of new nephro-protective agent.

Key words: Acute renal failure, Gentamycine, *Cyperus esculentus*, Nephroprotection, Antioxidants.

ENP 058

EVALUATION OF NITRIC OXIDE SYNTHASE ACTIVITY, LIVER AND RENAL FUNCTIONS IN FRUCTOSE-INDUCED METABOLIC SYNDROME

[*]Dallatu MK[1], Bunza JM[1], Suleiman N[2], Suleiman H[1] and Rumah SS[1]

Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, UDU, Sokoto[1]
Department of Biochemistry, Faculty of Veterinary Medicine, UDU, Sokoto[2]
*Corresponding Author: muhammad.dallatu@udusok.edu.ng, +2348065457656

Abstract

Metabolic Syndrome (MS) encompasses cluster of risk factors for cardiovascular diseases which include obesity, dyslipidaemia, obesity, hypertension, and hyperglycaemia. Increased fructose consumption is closely related to the incidence of obesity which may be due to fructose not being able to stimulate the secretion of insulin. Twenty (20) Albino Westar rats, weighing 100-120g, divided into control (10 rats) and fructose drinking water (FDW) (10 rats) groups were used in the study. MS was induced by consumption of 10% FDW for 8 weeks. Body Mass Index (BMI), Fasting Blood Glucose (FBG), Lipid Profile, Liver and Renal functions were assessed by standard techniques. The mean BMI, FBG, Total Cholesterol, LDL-cholesterol, VLDL-cholesterol, Triglycerides and Atherogenic Index in FDW group are significantly higher ($p<0.05$) than corresponding values in the controls while HDL-cholesterol though the difference is not significant ($p>0.05$) values are slightly lower in FDW group compared to controls. The mean plasma Urea and Creatinine Values were higher ($p<0.05$) in FDW group than Controls. Mean plasma Total Protein and Albumin levels were lower ($p<0.05$) in FDW group than in controls. The mean plasma activities of Aspartate Transaminase and Alanine Transaminase were higher ($p<0.05$) in FDW group than Controls while Nitric Oxide Synthase (NOS) activity was lower ($p<0.05$) in FDW group than controls. Administration of 10% FDW produced biochemical changes characteristics of MS which affect NOS activity, liver and renal functions.

Keywords: Metabolic syndrome, fructose, kidney, liver

ENP 059

EFFECT OF ADMINISTRATION OF DIFFERENT SOLVENTS EXTRACT OF *Persea americana* LEAF ON ALLOXAN INDUCED DIABETIC RATS

Jamila Ahmed Mashi[a*], Muhammad AtikuKano[a],DayyabuShehu[a], RamatuIyaIdris[a], Amina Muhammad Said[a], Maryam Abdulkadir Dangambo[a], Kamaluddeen Babagana[a], Murtala Yau[a] and Abba Babandi[a]

Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
Corresponding Author: Jamashi.bch@buk.edu.ng

Abstract
Diabetes has become a global health burden and its management without side effects is still a challenge which leads to an increase in search for herbal anti-hyperglycaemic agents. This study was aimed at evaluating the hypoglycaemic potentials of different solvent extracts of leaf of *Perseaamericana* in alloxan induced-diabetic Rats. Phytochemical analysis of hexane, chloroform, ethyl acetate and butanol extract of *P.americana* leaf revealed the presence of saponins, flavonoids, tannins, alkaloids, cardiac glycosides, triterpenoids and catechins with significant levels of total flavonoids (72.6±2.2) and phenolics (121.9±3.1) found in ethyl acetate extract. The hypoglycemic studies using ethyl acetate extract showed the greatest efficacy when compared with other extracts. The result of the study showed reduction in fasting blood glucose (54.6%), increased insulin level with concomitant reversal of body weight lost, polydipsia and polyphagia in alloxan induced-diabetic rats administered with200mg/kg of ethyl acetate extract. The hypoglycaemic potential of *P. americana* leaf observed in this study may be associated with total flavonoids and phenolics with antioxidant activities via insulin modulation and thus, could served as a potential candidate in developing drugs to manage diabetes mellitus and its complications.

Keywords: Diabetes, *Perseaamericana,* Phytochemicals, Insulin, Alloxan

ENP 060

EFFECT OF ADMINISTRATION OF DIFFERENT SOLVENTS EXTRACT OF *Persea americana* LEAF ON ALLOXAN INDUCED DIABETIC RATS

Jamila Ahmed Mashi[a*], Muhammad Atiku Kano[a], DayyabuShehu[a], Ramatu Iya Idris[a], Amina Muhammad Said[a], Maryam Abdulkadir Dangambo[a], Kamaluddeen Babagana[a], Murtala Yau[a] and Abba Babandi[a]

Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano,
Jmahmed.bch@buk.edu.ng

Abstract
Diabetes has become a global health burden and its management without side effects is still a challenge which leads to an increase in search for herbal anti-hyperglycaemic agents. This study was aimed at evaluating the hypoglycaemic potentials of different solvent extracts of leaf of *P erseaamericana* in alloxan induced-diabetic Rats. Phytochemical analysis of hexane, chloroform, ethyl acetate and butanol extract of *P. americana* leaf revealed the presence of saponins, flavonoids, tannins, alkaloids, cardiac glycosides, triterpenoids and catechins with significant levels of total flavonoids (72.6±2.2) and phenolics (121.9±3.1) found in ethyl acetate extract. The hypoglycemic studies using ethyl acetate extract showed the greatest efficacy when compared with other extracts. The result of the study showed reduction in fasting blood glucose (54.6%), increased insulin level with concomitant reversal of body weight lost, polydipsia and polyphagia in alloxan induced-diabetic rats administered with 200mg/kg of ethyl acetate extract. The hypoglycaemic potential of *P. americana* leaf observed in this study may be associated with total flavonoids and phenolics with antioxidant activities via insulin modulation and thus, could served as a potential candidate in developing drugs to manage diabetes mellitus and its complications.
Keywords: Diabetes, *Persea americana,* Phytochemicals, Insulin, Alloxan

ENP 061

EVALUATION OF ANTIOXIDANTPOTENTIALS OF LEAVES, STEM BARK AND ROOTS OF THREE COMMON NIGERIAN MEDICINAL PLANTS BY DPPH FREE RADICAL SCAVENGING ACTIVITY

Dickson Achimugu MUSA,[1*]Jonathan IBRAHIM,[2]Exodus Ugbedeojo BABA[3]and OkwesiliFred Chiletugo Nwodo[4]

[1]Department of Biochemistry, IBB University, Lapai
[2]Department of Biochemistry, Federal University of Technology, Minna
[3]Department of Biochemistry, Kogi State University, Anyigba
[4]Department of Biochemistry, University of Nigeria, Nsukka

Abstract

Chronic diseases arising from oxidative damages by free radicals continue to pose serious health challenge. Researches into plants with antioxidant properties are also increasing. This investigation is aimed at evaluating the antioxidant properties of methanol and aqueous extracts of different parts of *Eucalyptus camaldulensis*, *Nauclea latifolia*and *Ficus capensis* by DPPH free radical scavenging activity. The methanol extracts produced higher antioxidant effect than the aqueous extracts. The leaf extracts of the three plants had the highest antioxidant effect compared to the stem bark and roots. With an IC_{50} of 76.91µg/ml (*E. camaldulensis*), 97.72µg/ml (*N. latifolia*) and 91.6µg/ml (*F. capensis*), the antioxidant effects of the plants compares favourably with that of Vitamin C which is a standard antioxidant. *E. camaldulensis*, *N. latifolia* and *F. capensis* could therefore be considered as promising sources of antioxidants of plant origin. This investigation therefore providesa pharmacological basis for their ethnomedical application as their antioxidant properties may contribute to their usefulness in the treatment and management of several ailments and infective disorders.

Key words:*E. camaldulensis*, *N. latifolia*,*F. capensis*, antioxidant, ethnomedicine

ENP 062

EFFECT OF LAYERS OF FERMENTING SUBSTRATEON THE PHYSICAL, CHEMICAL AND MICROBIOLOGICAL QUALITIES OFFERMENTED AFRICAN LOCUST BEANS (*Daddawa*)

***Kabir Abdullahi Bindawa and Sulaiman Sani Kankara**

Department of Biology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, P.M.B., 2218 Katsina, Katsina State, Nigeria.

***Correspondence:** kabir.abdullahi@umyu.edu.ng(+2348065995423)

Abstract

Nutritional, organoleptic and chemical qualities of fermented African Locust Bean Seeds (ALBS), locally known as *Daddawa* is influenced by so many factors include fermenting substrates thickness. In this study, effect of the layers of fermenting substrate on the chemical, organoleptic, and nutritional qualities of the product was investigated. A depulped, hydrothermally boiled, dehulled, and parboiled good seeds of African Locust Beans (ALBS) was placed in clean absorbent plastic containers of about 25cm long and fermented aerobically without stirring at 37^0C and 120% relative humidity in an incubator for two days (48 hours) by random microbial inoculums. The fermented product were separated at 0-5, 5-10, 10-15, 15-20cm layers depth from top to bottom and analyzed for chemical, organoleptic and nutritional properties. The result shows a statistically significant ($P<0.0001$) and organoleptically important variations in the different layers of the fermented substrate thickness on the product chemical, sensory and nutritional changes. Only substrates fermented within 0-5cm thickness was organoleptically accepted and nutritionally high. Therefore, aerobic fermentation of ALBS is recommended less than 5cm of the substrate thickness.

Key words: Effective substrate thickness; Fermentation; African Locust Bean Seeds; Improved qualities.

ENP 063

FERMENTATION METABOLITES AFFECT PHYSICAL AND ORGANOLEPTIC QUALITIES OF FERMENTED AFRICAN LOCUST BEAN (*Parkiabiglobosa*) SEEDS

***Sulaiman Sani Kankara and Kabir Abdullahi Bindawa**

Department of Biology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, P.M.B., 2218 Katsina, Katsina State, Nigeria.
***Correspondence:** sulaiman.kankara@umyu.edu.ng (+2349036935227)

Abstract
Effect of metabolites produced during fermentation of African Locust Bean Seeds (ALBS) on the qualities of the product is investigated in this study. A qualitative test was designed to find out the effect of some metabolites (ammonia, ethanol, and water vapor) on the physical qualities of fermented African locust bean seeds (FALBS). Five (5) grams each of positive control (well fermented product of ALBS) and negative control (unfermented product of ALBS) were treated each with 20mls of distilled water, concentrated ammonia or absolute ethanol. The resultant mixtures were physically and organoleptically assessed. The result shows that the expression of physical and organoleptic quality attributes of FALBS involves chemical interactions between the substrate constituents and the produced metabolites during fermentation**.** Produced metabolites were found to affect and influence the physical and organoleptic qualities of the FALBS. Further study aimed at investigating the effect of other produced compounds is recommended.

Key words: Quality Determinants; Fermented African Locust Beans Seeds; Qualitative test.

ENP 064

APIGENIN DOWNREGULATES HER4 THROUGH INHIBITION OF NRF2 SIGNALLING PATHWAY LEADING TO REDUCED OVARIAN CANCER PROLIFERATION

[1*]Ibrahim Hamza Kankia, [2]Hilal Shahid Khalil, and [2]Yusuf Deeni.

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]School of Science, Engineering and Technology, Abertay University, Dundee DD1 1HG, UK
*Author of Correspondence: ibrahim.hamza@umyu.edu.ng; +2348066225056

Abstract
Apigenin, found in many plants, is a natural product belonging to the flavone class that is the aglycone of several naturally occurring glycosides. It has been shown to inhibit cancer cell migration and invasion in in vitro cancer cells and in vivo animal models. Nuclear factor (NRF2) and HER family regulate the normal cellular proliferation and maintenance and determining the cancer initiation and progression. Over expression of both HER4, which is a member of EGFR family and NRF2 are reported in ovarian cancer and studies have implicated both NRF2 and HER family in resistance of numerous cancers to chemotherapeutic agents. Human ovarian cancer cell lines, OVCAR3 and OVCAR4 were maintained in RPMI 1640 media supplemented with 10% foetal bovine serum (FBS) and 1% pen/strep in 5% CO_2 and incubated at 37°C. Before experimental treatments, cells were grown for 24 h in RPMI 1640 media and then treated with either tert-Butylhydroquinone (tBHQ; Sigma) or Apigenin (Carbosynth) to a final concentration as required with media. Following this, Dual luciferase assay, cytotoxicity assay, ROS detection, Glutathione assay and immune blotting were performed in this study. **:**It demonstrated that Apigenin inhibited the NRF2 activity, which led to down regulation of HER4 protein expression and decreased cell growth of OVCAR3 and OVCAR4 cells. Additional investigation revealed that Apigenin could lead to transcriptional inhibition of HER4 promoter activity by inhibiting the NRF2 activity in the

HER4 promoter region. Furthermore, inhibition of NRF2 led to increase in ROS level and depletion of total glutathione in all the cell lines. Taken together, these data suggest that Apigenin may inhibit the cell growth of ovarian cancer cells through NRF2-mediated down regulation of HER4 expression and could be a novel avenue Apigenin induced NRF2 inhibition, which lead to inhibition of cancer cell growth.

Key words: Apigenin, NRF2, HER4, Glutathione, ROS, Cytotoxicity

ENP 065

ANTICANCER EFFECT OF AFRICAN *Moringa oleifera* LEAVES IN OVARIAN CANCER

[1*]Ibrahim Hamza Kankia, [2]Buhari Yusuf Shinkafi

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria

[2]Department of Biology, Umaru Musa Yar'adua University, Katsina, Nigeria

*Author of Correspondence: ibrahim.hamza@umyu.edu.ng; +2348066225056

Abstract

Unsuccessful approach towards treating cancer triggers the frequent emergence of less response to treatment or therapeutic resistance. This has increased the interest of researchers towards exploring other alternative remedies including traditional herbs, to discover and develop anticancer drugs. Plant-based therapies are getting more popular for the management and treatment of diseases including cancers particularly in the developing countries not only due to their lower cost but also fewer side effects compared to conventional drugs. Traditional plant are known to possess various biological and pharmacological activities hence are regarded as promising pharmacological agents which are relatively non-toxic and so have no significant side effects. The main aim of this research was to investigate the anticancer effects of crude extracts of *Moringa oleifera.*The dried powdered was exhaustively extracted with ethanol, water, and methanol successively and the phenolic and antioxidant contents was estimated using phytochemical analysis at different concentrations of 100mg/L, 500mg/L and 1000mg/L. The cell cytotoxicity assay was determined using the extracts to which human ovarian adeno carcinoma cell lines OVCAR3 and OVCAR4 was treated at doses of 0.03125, 0.0625, 0.125, 0.25, 0.5 and 1.0 mg/ml for 72 h. Reactive oxygen species (ROS) was determined using H_2DCFDA assay, total NRF2 protein expression was determined using western blot. Phytochemical analysis revealed that the phenolic contents in all the extracts are proportional to the antioxidant capacity. Moreover, ethanol and methanol extracts increased the cytotoxicity towards both OVCAR3 and OVCAR4 by 90% and at doses of 1mg/ml. ROS analysis revealed both ethanol and methanolextracts induced ROS and treatment of cells with N-acetyl cysteine (NAC) reversed cytotoxicty and reduced the ROS induced by extracts at 1mg/ml in all the cell lines, proving an ROS dependent cell death in ethanol and methanol extracts treatments. The anticancer activity of these extracts could be attributed to possible presence of phytochemicalsin high concentration. Both ethanoland methanol extracts were found to inhibit NRF2 expression even at low concentration. The results suggest that ethanol and methanol extracts have a promising while water extract have a partial anticancer activity even at higher doses, but all the extracts are capable of increasing cytotoxicity in all the cell lines

Keywords: *Moringa oleifera*; extracts; cytotoxic activity; NRF2; ROS, NAC

ENP 066
XANTHOHUMOL REDUCES MCF7 PROLIFERATION THROUGH INHIBITION OF NRF2 PATHWAY

[1*]Ibrahim Hamza Kankia, [2]Hilal Shahid Khalil, [1]Muhammad Ismail, [1]Zainab Suleiman, [1]Salahuddeen Ya'u, [3]Abdulhamid Yusuf and [2]Yusuf Deeni.

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]School of Science, Engineering and Technology, Abertay University, Dundee DD1 1HG, UK
[3]SPRS Unit, Umaru Musa Yar'adua University, Katsina, Nigeria
*Author of Correspondence: ibrahim.hamza@umyu.edu.ng; +2348066225056

Abstract
Nuclear factor (NRF2) and HER family regulate the normal cellular proliferation and maintenance and determining the cancer initiation and progression. Over expression of NRF2 is reported in breast cancer and studies have implicated NRF2 in resistance of numerous cancers to chemotherapeutic agents. Xanthohumol is a bioactive flavanoid Antioxidant molecule found in the flowering Hops plant. It has recently been shown to induce growth inhibition and apoptosis of human liver cancer Human breast cancer cell linesMCF7 was maintained in RPMI 1640 media supplemented with 10% foetal bovine serum (FBS) and 1% pen/strep in 5% CO_2 and incubated at 37°C. Before experimental treatments, cells were grown for 24 h in RPMI 1640 media and then treated with either tert-Butylhydroquinone (tBHQ; Sigma) or xanthohumol (Carbosynth) to a final concentration as required with media. Following this, cytotoxicity assay, ROS detection, Glutathione assay and immunoblotting were performed in this study. We demonstrated that xanthohumol inhibited the NRF2 activity, which led to decreased cell growth of MCF7 cells. Furthermore, inhibition of NRF2 led to increase in ROS level and depletion of total glutathione in MCF7 cells. Taken together, these data suggest that Xanthohumol may inhibit the cell growth of breast cancer cells through inhibition of NRF2 and could be a novel avenue xanthohumol induced NRF2 inhibition, which lead to inhibition of cancer cell growth.

Key word: Xanthohumol, Cytotoxicity, NRF2, Glutathione, ROS

ENP 067
KAEMPFEROL UPREGULATES HER1 EXPRESSION VIA NRF2-MEDIATED ACTIVATION LEADING TO INCREASE IN NORMAL BREAST CELL PROLIFERATION

Ibrahim Hamza Kankia*[1], Hilal Shahid Khalil[2] and Yusuf Deeni[2]

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]School of Science, Engineering and Technology, Abertay University, Dundee DD1 1HG, UK
Corresponding Author: ibrahim.hamza@umyu.edu.ng: +2348066225056

Abstract
Kaempferol enhances the increased in normal breast cell growth through NRF2 activation, although the exact mechanism of this activation is still unclear. The HER1 is one of the members of EGFR family which regulate the normal cellular proliferation, differentiation and maintenance. These receptors dimerize upon ligand binding, leading to activation of their tyrosine kinase domain. This subsequently led to the phosphorylation of their tyrosine residues in the intracellular domain. Nuclear factor (NRF2) is a transcription factor that regulates the expression of a battery of many genes including cytoprotective and detoxifying genes. Abnormal expression of both HER1 and NRF2 are reported in tumour initiation and studies have implicated both NRF2 and HER family in numerous cancers. In this study, we demonstrated that kaempferol activated the NRF2 activity, which led to maintenance of HER1 protein expression and increased in cell growth of MCF10 cells. Additional investigation revealed that kaempferol could lead to transcriptional activation of HER1 promoter activity by activating the NRF2 activity in the HER1 promoter region. Furthermore, activation of NRF2 by kaempferol led to increase in total glutathione and other enzymes such as HO-1 and pAKT in the cell line used. Taken together, these data suggest that kaempferol may activate the cell proliferation of normal breast cells through NRF2-mediated activation of HER1 expression and could be a novel avenue that kaempferol induced NRF2 activation, which lead to increase normal breast cell growth.

Key word: Kaempferol; NRF2; HER1; Glutathione; MCF10; Cell growth

ENP 068
PHYTOCHEMICAL AND ANTIMICROBIAL SCREENING OF THE STEM BARK EXTRACTS OF *Combretum ghasalense* Engl. & Diels (COMBRETACEAE)

Yakubu Manasseh Bidam*, Mohammad Rukaiya Saidu and Kantoma Dogara

Department of Applied Science, Kaduna Polytechnic, Kaduna Nigeria
*Corresponding Author's E-mail: bidam.shinku@gmail.com; +2327038468021

Abstract
The petroleum ether, ethyl acetate and methanol extracts of the stem bark of *Combretum ghasalense* Engl. & Diels were screened for antimicrobial activity and their chemical constituents. The phytochemical studies showed that it contained phenolic compounds, terpenoids, alkaloids, saponins, steroids, cardiac glycoside and tannins. Antimicrobial activity carried out revealed that the petroleum ether had zone of inhibition range of between **18-23 mm**, while ethyl acetate and methanol had **24-29mm** and **23-27mm** respectively. The result of the minimum inhibitory concentration also showed that the petroleum ether extract had MIC of between **5-10 mg/ml**, ethyl acetate and methanol had **2.5 – 5 mg/ml** respectively. The minimum bactericidal/ fungicidal concentration revealed a concentration range of **10-20 mg/ml** for petroleum ether **5-10 mg/ml** for ethyl acetate and **5-20 mg/ml** for methanol. The result presented the therapeutic activity of the plant part used and can therefore be used to remedy some of the common diseases for which the pathogens used in this work are the causative agents. Work is in progress to isolate some plant constituents that are responsible for the activity of this plant.

Key words: *Methicillin resistant staphylococcus aureus (MRSA),Combretum ghasalense*, secondary metabolites, antimicrobial.

ENP 069
EFFECT OF AQUEOUS EXTRACT OF*Vernoniaa mygdalina* ON LIPID PROFILE OF TESTOSTERONE AND ESTRADIOL INDUCED BENIGN PROSTATIC HYPERPLASIA IN ADULT MALE RATS

Ugwu Melvin Nnaemeka*[1], Eteng, Mbeh Ubana[2], Dasofunjo, Kayode[1] and Ujong Peter Ujong[1]

[1]Department of Medical Biochemistry, Faculty of Basic Medical Sciences, Cross River University of Technology, Okuku Campus, Nigeria
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar, Calabar Nigeria Correspondence to: E-mail: melvincrux@yahoo.com. Phone: +2348038728570

Abstract
Plant extracts belong to the most popular drugs in the medical management of lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia/benign prostatic enlargement. We investigated the effect aqueous extract of *Vernoniaa mygdalina* (VA) on lipid profile of BPH. BPH was induced in male rats weighing 250-350gthrough exogenous administration of testosterone and estradiol by subcutaneous injection. A total of 30 rats were divided into five groups. One group was used as a control and the other groups received subcutaneous injections of the hormones for 3 weeks to induce BPH. Groups 1 and 2 were treated with different doses of VA extracts and group 3 received finasteride, while group 4 was left untreated, group 5 served as normal control. After forty-five days of treatment with VA extract, the rats were sacrificed. Blood was collected by cardiac puncture and the sera centrifuged and used for the determination of lipid profile. The prostate were harvested and weighed. Treatment with extract caused a significant decrease in the size of the enlarged prostate ($p<0.05$) when compared with the BPH control group. The level of cholesterol and LDL-C were significantly reduced when compared to the BPH control. There was a significant change in HDL concentration in all groups treated when compared to BPH control group. The significant reduction of cholesterol, LDL and increase in HDL supported by reduced prostate weight suggest that the extract hold potentials for amelioration of alteration in lipid metabolism as a result of induction of BPH in rats.

Keywords: Testosterone, estradiol, cholesterol, TG, HDL and LDL-C

ENP 070

NATURAL PRODUCTS; HISTORY, SOURCES, APPLICATION AND LIMITATIONS

Mohammed Rabiu Haruna[1]* and Ishaq Shehu[2]

[1]Department of Biological Science, Federal University, Dutsin-ma, Katsina State, Nigeria
[2]Department of Microbiology, Faculty of Sciences, Federal University, Dutsin-ma, Katsina State, Nigeria
*Corresponding author email: mrharuna@fudutsinma.edu.ng; H/P: 08063171004

Abstract
Plants and animals produce enormous variety of natural products with highly diverse structures and functions. These natural products are either sourced from plants or animals and could either be primary metabolites necessary for growth and development or secondary metabolites required for defense against predators in the case of animals or herbivory in the case of plants. This paper provides an overview of natural products, their histories, classification, application and limitations. The compounds particularly secondary metabolites are classified into three different groups base on their biosynthetic origin: Flavonoids and allied phenolic and polyphenolic compounds, Terpenoids, Nitrogen containing alkaloids and Sulphur-containing compounds.

Keywords: Natural products, Primary Metabolites, Secondary Metabolites, Drugs development, Extinction.

ENP 071

EXTRACTION, CHARACTERIZATION, FATTY ACIDS PROFILE AND EVALUATION OF ANTIOXIDANT POTENTIAL OF *Nymphaea lotus* and *Nymphaea pubescens* SEED OILS

***Mukhtar Aliyu[1], Nura Lawal[1],Idris Aliyu Kankara[2]and Imam Abdullahi Abdulkadir[3].**

[1]Department of Biochemistry & Molecular Biology, Federal University, Dutsin-ma, Katsina state-Nigeria
[2]Department of Science Laboratory Technology, Federal Polytechnic, Kauran-Namoda, Zamfara State
[3]Department of Biochemistry, Bayero University, Kano State-Nigeria
Corresponding Author: maliyu1@fudutsinma.edu.ng, +2348162441723

Abstract
The research work is aimed at evaluating nutritional qualities and economic significance of wild and underutilized plant seeds. *Nymphaea lotus* and *Nymphaea pubescens* seed oils were extracted using soxhlet extraction with hexane. The physicochemical properties (pH, density, acid value, iodine value, peroxide value and saponification value) showed that *N. pubescens* seed oil is of high quality.Gas chromatography coupled mass spectrometry analysis of the *N. lotus* seed oil showed that linoleic (13.01%), palmitoleic (4.46), arachidic (9.01%) and stearic (12.45%) acids were the major fatty acids whereas oleic (37.85), palmitic (23.57%) and stearic (5.71%) were the major fatty acids detected in *N. pubescens* seed oil. The order of the effectiveness of free radical scavenging and reducing capabilities of the oils were found to be *N. lotus* seed oil > ascorbic acid> palm oil >*N. pubescens* seed oil >groundnut oil. Compared with commonly consumed vegetable oils (palm oil and groundnut oil),the results showed that *N. pubescens* seed oils have qualities comparable to those of commonly consumed oils (palm oil and groundnut oil) and may therefore have great nutritional and industrial potentials whereas *N. lotus* seed oil is not suitable for human consumption due to its saturated nature but may find other applications in industries.

Key words: *Nymphaea lotus*, *Nymphaea pubescens*, seed oils, physicochemical properties, Fatty acid

ENP 072

INVITRO MEMBRANE PROTECTIVE EFFECT OF METHANOLIC EXTRACT OF VARIOUS PARTS OF A*geratum conyzoides* L. ON HUMAN SICKLE CELLS

Ibrahim M.D, Atawodi S. E. &Sallau, A. B.

Biochemistry Department, Faculty of Life Sciences, Ahmadu Bello University, Zaria

Abstract

Heamolytic anaemia induced by membrane damage which is a charecterictics hallmark of sickle cell anaemia is one of the major targets for the management of sickle cell anaemia in both orthadox and folklore medicine. A*geratumconyzoides* is one of the plants reported to be used in traditional medicine for management of sickle cell anaemia. Prelimnary phytochemical investigation were carried out according to the standard protocols. The ability of the methanolic extract of .*A. conyzoides* to protect the sickle red blood against induced lysis wasspectrophotometrically evaluated *in vitro.* Preliminary phytochemical screening of crude extracts of leaf, stem and root of *Ageratum conyzoides* tested positve for the presence of phytochemicals such as alkaloids, flavonoids, tannins, cardiac glycosides, saponins, steroids and triterpenes. The leaf extract caused significant($P<0.05$) membrane protection with the value of24.13±0.47%at 2.5mg/ml concentration, while the stem extract produced a significant($P<0.05$) protective effect with the value of 29.13±0.47% at 2.5mg/ml.The root also gave a significant ($P<0.05$) membraneprotective effect of40.73±1.04% at 2.5mg/ml. These findings clearly indicate that various parts of *A. conyzoides* (leaf, stem and root) exhibit membrane protection roles, thus justifying the use of this plant in traditional settings for the management of sickle cell anaemia

Keywords: *Ageratum conyzoides, In vitro,* Red Blood Cells, Membrane protection, Sickle Cell Anaemia.

ENP 073

DOUBLE JEOPARDY: PREPONDERANCE OF IMPAIRED GLUCOSE HOMEOSTASIS AND OVERWEIGHT/OBESITY AMONG ADULT FEMALES IN IKWO, EBONYI STATE

Chukwunonso E.C.C. Ejike*, Getrude N. Onyeji, Maryqueen Odoh, Chika M Nwali, Fidelia O Ivoke, Augustine V Ubaezuonu, Adaugo Q Ugo, Amarachi M Okorie, Chinedu D Adikaibe, Cecelia N Agwu, Amarachi L Ogbonna

Department of Medical Biochemistry, Faculty of Basic Medical Sciences, College of Medicine, Alex Ekwueme Federal University, Ndudu-Alike, Ebonyi State, Nigeria
Correspondence: nonsoejikeecc@yahoo.com; +234(0)803 606 6777

Abstract

The nutrition transition being faced by most economically developing countries has resulted in the double burden of diseases in such countries, yet chronic diseases are rarely studied in rural areas, where the majority of the population live. The prevalence and dynamics of diabetes/prediabetes and overweight/obesity was therefore studied in a population of adults in Ikwo LGA, Ebonyi State, Nigeria. Standard internationally accepted methods were used for this cross-sectional population study. A total of 720 subjects (53.1% males) were serially recruited and studied. Diabetes was found in 4.0% of the subjects (3.0% for males and 5.0% for females) while 7.1% of the population (6.5% for males and 7.6% for females) were pre-diabetic. About 20% of the entire population (and a quarter of the females) were overweight/obese; yet, 11.7% of them (10.7% males; 12.6% females) were thin. The modal age range for those who were diabetic or overweight/obese was 26-40 years irrespective of sex. Blood glucose concentration was found to be significantly correlated only with BMI ($r = +0.116$; $P < 0.01$). The preponderance of both diabetes/prediabetes and overweight/obesity in women as seen in this study is indeed a double jeopardy, requiring urgent interventions.

Keywords: diabetes, glycaemia, obesity, overweight, prediabetes

ENP 074
COMPARATIVE PHYTOCHEMICAL SCREENING OF LEAF, STEM BARK AND ROOT BARK OF *Guiera senegalensis* J.F. G melfor ANTIOXIDANT PROPERTY

Nuraddeen Sani[1], Sulaiman Sani Kankara[2] and Abubakar Bello[2]

[1]Government College Senior Day Wing Katsina, P.M.B 2009 Katsina State, Nigeria.
[2]Centre for Biodiversity and Conservation, Biology Department, Umaru Musa University, Katsina
Corresponding author:08107627949, annurfat2009@gmail.com
Department of Biology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, P.M.B 2218 Katsina State, Nigeria

Abstract
Phenolics and flavonoids are important antioxidant phytochemicals that occur naturally in plants and helps to protects humans against diseases. Several ethnobotanical studies reported the folkloric use of *Guiera senegalensisis* for the management of diseases associated with oxidative stress. Despite this documentation, little empirical studies were conducted to validate the folkloric use *G. senegalensisis.* In this study, the phenolic, flavonoid content and antioxidant properties of *G.senegalensis* were investigated to justify its folkloric use. Phenolic and flavonoid contents were respectively assessed by evaluating Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) while antioxidant activity was determined using 2,2'- diphenyl-1- picrylhydrazyl (DPPH) assay. The root bark showed the highest phenolic content of 163.80 ± 0.82 mg/g, while the leaf showed the highest flavonoid content of 188.78±0.21mg/g. The root bark of *G. senegalensis* showed highest radical scavenging activity with IC_{50} value of 122.40µg/ml. The IC_{50} value of standard ascorbic acid was 67.60µg/ml. These findings empirically supported the folkloric use of *G. senegalensisis* in the management of ailments associated with oxidative stress. Studies on the influence of other cultural practices on the medicinal properties of *G. senegalensis*is recommended.

ENP 075
IN VIVO AND *IN VITRO* EVALUATION OF THE ANTIPLASMODIAL ACTIVITY OF DICHLOROMETHANE EXTRACT of *Phyllanthus nivosus* LEAF

Titilayo Omolara Johnson[1], *Obidah Timothy Yamma[1], Mariam Danladi Solomon[1]

[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos, Nigeria,
*Corresponding Author- obidahtimothy@gmail.com, +2347066595867

Abstract
The wide spread resistance of malaria parasites to conventional anti-malarials have stimulated the search for new drug entities especially those with new modes of action. The anti-plasmodial activity of dichloromethane extract of *P. nivosus* leaf was evaluated *in vivo* and *in vitro* against *Plasmodium berghei berghei* and *Plasmodium falciparum* respectively. In the *in vivo* study, effect of graded doses (10 to 200mg/kg body weight) of dichloromethane extract of *P. nivosus* leaf and 35mg/kg Artemether Lumefantrine (ACT) were evaluated in mice infected with *P. berghei berghei.* Forthe *in vitro* study, inhibition of Plasmodium Lactate Dehydrogenase (pLDH) activity was determined using *Plasmodium falciparum* infected erythrocytes incubated at 37^0C in RPMI 1640 culture media (modified with L-glutamine, sodium bicarbonate and HEPES) in the presence of 0.625 to 5µg/ml of extract and ACT. The extract reduced *P. berghei* infection with percentage suppression ranging from 65.67 to 90.06% compared to 98.8% for the standard drug ACT. pLDH activity was reduced *in vitro* with IC50 values of 1.741µg/ml and 1.455µg/ml for extract and ACT respectively. GCMS analysis of the extract revealed the presence of fifteen compounds, some of which are: 1-Nonadecene (29.18%), 1-(+)-Ascorbic acid 2,6-dihexadecanoate (15.73%), 2-Hexadecene-1-ol-3,7, 11, 15 tert (15.56%), 1,3,121-Nonadecatriene-5,14-diol (11.83%) and 1,2-Benzenedicarboxylic acid (10.63%). The dichloromethane extract of *P. nivosus* leaf possesses antimalarial potential and contains biologically active principles that could be relevant in the design of new antimalarial drugs.

ENP 076

PREVALENCE OF OVERWEIGHT AND OBESITY AMONG STUDENTS IN FEDERAL POLYTECHNIC, IDAH, KOGI STATE, NIGERIA

Odiba, Paul Alhassan[1], Oruma, Unekwu[1] and Abah, Barnabas Adekole[1].

[1]Department of Science Laboratory Technology, Federal Polytechnic ,P.M.B 1037, Idah, Kogi State
Corresponding author: odibahassan@yahoo.com08075286864

Abstract

Overweight and obesity are major public health problems all over the world. They have become global epidemics in developing countries. This study was undertaken to estimate the prevalence of overweight and obesity among students of Federal Polytechnic Idah, Kogi State, Nigeria. A descriptive cross-sectional study was conducted among 378 students between the ages 18 and 28 years. Their heights in metres and weights in kilogrammes were measured and used to calculate the body mass index (BMI) of the respondents, which is the determinant of the risk factor of coronary heart diseases. Self administered questionnaire was also used to obtain information on the respondents' dietary habits and life styles. Overweight and obesity was defined using the International Obesity Task Force (IOTF) BMI cut off points. The prevalence of overweight and obesity were 15.1% and 2.9% respectively. The prevalence of overweight and obesity combined was 18.0%. The respondents who exercise regularly were 65%, while those who ate vegetables and fruits regularly were 49% and 21% respectively. The students that watched television for more than 4 hours were 14%. The mean height was 1.70± 0.1, mean weight 61.73± 6.8 and mean BMI 21.32. Twelve students were underweight, 298 had ideal body weight, 57 overweight and 11 obese. From this study, it can be concluded that this population has relatively healthy weight as more respondents have normal weight than underweight, overweight and obesity. The importance of regular physical activity and the need to encourage healthy lifestyle, healthy food habits among the youth need to be emphasized.

Keywords: overweight, obesity, body mass index, Nigeria

ENP 077

BIOASSAY-GUIDED ISOLATION AND IDENTIFICATION OF HYPOGLYCEMIC COMPOUND FROM FRACTIONATED METHANOL EXTRACTS OF *Vernonia amygdalina* DELILE LEAVES

[1,*]Okoduwa, S.I.R., [1]Umar, I.A., [1]James, D.B., [1]Inuwa, H.M., [3]Habila, J.D. and [4]Venditti, A

[1]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[2]Department of Chemistry, Ahmadu Bello University, Zaria, Nigeria
[3]Department of Chemistry, Sapienza University of Rome, Rome, Italy
*Correspondence: Email: siroplc@gmail.com, Phone number: +234-909-964-0143

Abstract

Alcohol extracts of *Vernonia amygdalina* leaves is traditionally used in Nigeria for the treatment of diabetes. In our previous study, fractionated methanol extracts of *Vernonia amygdalina* leaves (FMEVA) revealed chloroform fraction as most potent in treatment of Type-2 diabetes. This study aimed to identify part of the major hypoglycemic component present in the chloroform fraction of FMEVA. Column chromatography was used to isolate and purified nine sub-fractions (C1-C9) from chloroform fraction of FMEVA. All the sub-fractions C1 to C9 were screened for hypoglycaemic activities in Type-2 diabetic rats. The most potent component was elucidated on the basis of extensive spectroscopic (1D-, 2D-NMR, IR) data analysis. The results revealed **s**ub-fraction C5 as the most potent hypoglycaemic in reducing blood glucose by 12.55 ± 3.55% at 4 h post-oral administration, when compared to the positive (18.07 ± 1.20%) and negative (-1.99 ± 0.43%) controls. The spectroscopic data analysis reveals that the isolated compound structure is consistent with 11β,13-dihydrovernolide. In conclusion, the isolated compound is part of the hypoglycemic components present in *V. amygdalina* leaves that is responsible for the anti-diabetic activities. Further research is needed in the development of this compound or its derivatives for pharmaceutical use.

Keywords: Diabetes; Hypoglycemic; *Vernonia amygdalina*; Type-2 diabetes

ENP 078

EFFECTS OF *Annona muricata* LEAVES EXTRACT ON SOME BIOCHEMICAL INDICES OF DIABETIC RATS

***Uzoefuna, Casmir Chima, Ogugua, Victor N., Okoro, Ikechukwu Jacob**
Department of Biochemistry, University of Nigeria, Nsukka
Corresponding Author: uzoefunacasmir@gmail.com Tel: +2347066091303

Abstract
This study evaluated some biochemical parameters of *Annona muricata* leaf extract on diabetic rats. Albino rats (45) were divided into 9 groups of 5 rats each. Group 1 served as the normal control. Group 2-9 were induced with diabetes using 120 mg/kg b. w of alloxan monohydrate. Group 2 was untreated while group 3 was treated with 0.5mg/kg b.w of Glibenclamide. Group 4 and 5 were treated with 100 mg/kg b.w of ethanol and 100 mg/kg b.w of 10% ethanol fraction respectively. Group 6 and 7 were treated with 100 mg/kg b.w of N-hexane fraction and 200 mg/kg b.w of 10% ethanol fraction respectively. Group 8 and 9 were treated with 200 mg/kg b.w of N-hexane fraction and 200 mg/kg b.w of the ethanol respectively. Lipid peroxidation marker, Antioxidants, and kidney function markers were evaluated. **Results**: Liver marker enzymes such as ALP, AST, ALT significantly ($p < 0.05$) decreased in all the treated groups unlike the untreated rats. Malondiadehyde (MDA) concentration decreased ($p < 0.05$) significantly in the treated animals when compared to the untreated animals. The CAT activity and GSH level significantly ($p < 0.05$) increased compared to group 2. Superoxide dismutase (SOD) was found to be significantly ($p < 0.05$) higher in the untreated rats unlike the treated rats. There was a significant ($p < 0.05$) decrease in total bilirubin level of the treated groups unlike group 2. Urea and creatinine levels decreased significantly ($p < 0.05$) than untreated group. The results indicates that the extract contain antioxidants, which mop up free radicals in the system as seen in the MDA result and as such could ameliorate the complications associated with diabetes mellitus.

Key words: *Annona muricata, alloxan monohydrate, Lipid peroxidation, Antioxidants*

ENP 079

EFFECT OF COCONUT WATER ON LIPID PEROXIDATION AND SOME ANTIOXIDANT STATUS OF DIABETIC RATS

***Onyia, Obumneme Maduka, Ogugua, Victor N., Okoro, Ikechukwu Jacob**

Department of Biochemistry, University of Nigeria, Nsukka
Corresponding Author: onyiaobumneme@gmail.com Tel: +2347031174599

Abstract
The antioxidant efficacy of coconut water of *Cocos nucifera*was studied to ascertain the potential effects of the liquid on some biochemical indices. **Materials and Methods**: *In vitro* antioxidants activity was carried out on coconut water using DPPH assay, ferric ion reducing antioxidant power assay (FRAP), and phosphomolybdenum assay **(**PM**).**Twenty albino rats (80 – 120 g) divided into 5 groups of 4 rats each were used for this study. Group 1 served as the normal control while groups 2-5were induced with diabetes using120 mg/kg b.w. alloxanmonohydrate. Group 2 was untreated while Group 3 was treated with glibenclamide. Groups 4 and 5 were treated with 1 ml/kg b.w of mature coconut water and tender coconut water respectively. **Results**: Both tender and matured coconut water and that of the standard (ascorbic acid) showed a concentration-dependent DPPH**.** scavenging capacity with a good positive correlation coefficient and IC_{50} of 1.87mg/ml, 3.01mg/ml and 0.27mg/ml respectively. The liquid also reduced the ferric ion in a concentration-dependent mode with a good positive correlation coefficient and $IC_{50}$of 92.56mg/ml, 137.39mg/ml and 233.79 mg/ml for tender coconut water, mature coconut water and ascorbic acid respectively. Both tender and matured coconut water also reduced Phosphate-Mo (VI) to Phosphate Mo (V) in a concentration-dependent mode with a good positive correlation coefficient and (IC_{50} = 39.56, 48.39 and 19.89 mg/ml) Tender coconut water, mature coconut water and ascorbic acid respectively. Malondiadehyde concentration (MDA) decreased significantly ($p<0.05$) when compared to group 2. The in vivo antioxidant status(CAT, GSH, Vitamin C, and Vitamin E) showed a significant($p<0.05$) increase unlike group 2 while SOD activity showed significant ($p<0.05$) increase in group 2.**Conclusion:** The results obtained from this study showed that both tender and matured coconut water have potent antioxidant properties and as such can reduce the complications associated with diabetes mellitus.

Key words: *lipid peroxidation, diabetic rats, Cocos nucifera, alloxan, antioxidant, In vitro*

ENP 080

EFFECT OF RAW MATERIAL PROCESSING ON THE PHYSICAL QUALITY OF PECTIN EXTRACTED FORM PEEL OF *Citrus x sinensis*

***[1]Olanipekun O. Idowu; [2]Cecilia J. Ochiwu; [3]Barakat Aliyu**

[1]National Research Institute for Chemical Technology, Zaria, Nigeria
[2]Ahmadu Bello University, Zaria, Nigeria
[3]Ibrahim Babangida Badamasi University, Lapai, Nigeria
*Email: olanipekun.idowu@narict.gov.ng; secretkloud@gmail.com Tel: +234-809-870-6720

Abstract
Pectins are large complex polysaccharides of mainly esterified α(1-4) linked D-galacturonic acid, They have the unique ability to form gels in the presence of sugar and acid, which has lent them extensive use in the food and pharmaceutical industries as stabilisers and binders. Pectins can be classified based on speed of setting of gel as fast (>50% methoxy) and slow (<50% methoxy). A major source of pectins are of the genus *Citrus*. This study examined the effect of age of sweet orange peel on the physical quality of the pectin extracted there from. Pectins were extracted from fresh, recently dried and 3-year-old dried samples of sweet orange peel and the gel properties of the pectins where assessed. The gel from the fresh peel was found to have the most uniform, stable and extensive set. Pectin from the 3-year-old sample also set, but did not bind together very well, making recovery via sieving difficult and leading to loss of pectin. Approximately 40% of pectin was lost as a result. Further tests to determine the rate of binding degradation will follow.

Key words: *Citrus x sinensis*; pectin; acidified water; gel;

ENP 081

PEGYLATION OF *DIOSCOREA* (YAM) TYROSINASE INCREASES ITS KINETIC EFFICIENCY

Olutosin Samuel Ilesanmi*[#]and Isaac OlusanjoAdewale*

* Department of Biochemistry and Molecular Biology, Obafemi Awolowo University, Ile-Ife, Nigeria.
[*]Corresponding author. Tel.:+2348062898386, e-mail: olutosinilesanmi@yahoo.com

Abstract
Previous work had established a very high concentration of tyrosinase in four species of yam tubers (*Dioscorea*spp) and preliminary data suggest its usefulness in various technical applications. In this report, a shortened purification protocol was devised. In the purification scheme, the enzyme was chemically-modified by polyethylene glycol (PEG) resulting in further improvement in the kinetic efficiency. The molecular weights of the PEGylated and unPEGylatedtyrosinase were 60±3.0 kDa and 54±6.7 kDa respectively on size-exclusion chromatography. Molecular weights obtained on SDS-PAGE for both the PEGylated and unPEGylated enzymes were 41±1.5 kDa and 26±0.2 kDa respectively. This shows that about 1 mole of PEG had been covalently bonded to a mole of the native enzyme. The decreased $K_m$and increased V_{max} values of the PEGylated enzyme for L-DOPA resulted in an increase in first-order rate constant (k_{cat}/K_m) by between 3 to 4 folds compared to the unPEGylatedtyrosinase. The PEGylated tyrosinase was more stable in acetone, DMSO, chloroform and methanol. *D. praehensilis* retained up to 40% activity in 50% methanol whereas its unPEGylated form had < 20% activity at the same methanol concentration. PEGylated *C. esculenta* tyrosinase was most stable in ethanol, acetone and chloroform by retaining up to 40% activity at 50% concentration of the organic solvents. In addition, all the PEGylated enzymes were activated by up to 2 folds in 40% ether or below; 100% activity was retained at 50% ether concentration. The overall result further reinforces the potential of yam tyrosinase as a promising enzyme in biotechnological applications.

Keywords: Tyrosinase; PEGylation; unPE Gylation; Kinetic efficiency; Yam species.

ENP 082

EFFECT OF TWO NIGERIAN DIETS (BEAN-CORN PORRIDGE AND CORN PUDDING) ON GLUCOSE RESPONSE, INSULIN RESPONSE, GLYCAEMIC INDEX AND INSULIN INDEX IN HEALTHY INDIVIDUALS.

Oluwadamilola M. Kolawole.*, Ehimwenma S. Omoregie

Department of Biochemistry, Faculty of Life Sciences, University of Benin.P.M.B 1154, Benin City,
*Corresponding author: Email: dammykol88@gmail.com; +2348156675002]

Abstract

Development of diseases has been linked to poor nutrition aside from other factors such as genetic factors. The concept of glycaemic index of food provides information on the effect of food on postprandial blood glucose level. Metabolic syndrome diseases have therefore been linked to consumption of high glycaemic index food. Low glycaemic index food are non- drug therapies for improving postprandial glucose level. This study, investigated the effect of two Nigerian diets (bean-corn porridge and corn pudding) on glucose response, insulin response, glycaemic index and insulin index. A total of forty healthy subjects with an average BMI of 21.6kg/m^2 were used for the glycaemic and insulin indices study. Subjects were placed in groups of ten, each group was fed with either serving size of food providing 50 grams of carbohydrate from one of the following diets; glucose (glycaemic index reference food), bean-corn porridge, corn pudding and white bread (insulin index reference food). Blood samples were collected via finger prick at 0, 30, 60, 90 and 120 minutes and assayed for glucose concentration. Venous blood samples were also collected at 0, 30, 60, 90 and 120 minutes and were used to estimate for insulin concentration. The results from the study suggested that bean-corn porridge is a low glycaemic index and insulin index food. Therefore consumption of bean-corn porridge may lower the risk of metabolic syndrome diseases and may be incorporated as a support diet in sufferers.

ENP 083

FOAMING CHARACTERISTICS OF SAPONINS OF LEAVES OF *Hibiscus sabdariffa* LINN. (RED VAR.)

***Maryam Usman and Oluwole Adebayo Sodipo**

Department of Biochemistry, Faculty of Science , University of Maiduguri P.M.B. 1069 Maiduguri

***Correspondence e-mail: maryamusd@gmail.com; Tel. No. 08107582420**

Abstract

The aim of this study was to determine the foaming characteristics (foam power and foam stability) of saponins of leaves of *Hibiscus sabdariffa* Linn. The preliminary screening for saponins and phytochemical screening were carried out to determine the probable presence of saponins and other secondary metabolites. The results showed the probable presence of saponins in the leaves of *Hibiscus sabdariffa* Linn. Cold maceration extraction method was conducted and yields were obtained from the extracts i.e. aqueous, methanol and n-butanol. The methanol extract possessed the highest yield of 46.53% $^{w}/_{w}$ when compared to the aqueous and n-butanol extracts of 8.15% $^{w}/_{w}$ and 0.69% $^{w}/_{w}$ respectively. The foam heights and foaming times of the aqueous, methanol and n-butanol extracts and that of the detergents (Tween 80 and Triton X-100) when subjected to statistical analysis showed significant decrease (at $p<0.05$) between the foam heights (H_0, H_1 and H_5) and foaming times (Tc) of the aqueous, methanol, n-butanol, Triton X-100 and Tween 80. The foam power of the n-butanol extract at 0.5% concentration was 40.47 % indicating that it was metastable when compared with the values of 87.28% and 73.57% for Triton X-100 and Tween 80 respectively. Therefore, saponins of leaves of *Hibiscus sabdariffa* Linn. may be of limited use in the detergent industries but relevant in related industries.

ENP 084

EVALUATION OF FUNCTIONAL PROPERTIES OF OKRA AND JUTE SEEDS PROTEINS.

[*]Thomas, V. Omotina, Egwim, Evans,Omede, Charles

Biochemistry Department, Federal University of Technology, PMB 65, Minna, Niger State, Nigeria.
*Corresponding Author: +2347031628138, +2348150420323. thomasomotina@gmail.com

Abstract
Okra and jute seeds are vegetable seeds with high fiber content and good source of protein and oil.This study was designed to evaluate the composition and functional properties of protein isolates of okra and jute seeds separately. The seeds were subjected to some biochemical screening including test for protein, emulsification, water absorptive capacity, and amino acid profile. The result showed that the protein yield of okra seed was higher compared to that of jute seed. Both seeds had good emulsification capacity and emulsification stabilityof about 54.42% and 55.75% for okra and jute protein isolates respectively. Their water absorption capacity were significantly not different at (p<0.05). The jute seed has higher foaming capacity than the okra seed. Both vegetable seeds protein isolates had good gelation property. The hydrophobic amino acid profile of okra and jute seed were 47.27% and 43.70%, while the hydrophilicamino acids profile of both seeds were 52.73% and 56.30% respectively. The essential amino acids evaluated were about 40.08% and 47.11% and non- essential amino acids was 50.92% and 52.89% for okra and jute seeds isolates respectively. Though the protein yield of both okra and jute seed isolates were lower compared to that of soybean protein. Hence, they can be considered as potential functional food ingredients.

Key words: Okra, Jute Seeds, Protein Isolates, Emulsification, Essential Amino Acids.

ENP 085

EFFECT OF COCONUT WATER ON LIPID PEROXIDATION AND SOME ANTIOXIDANT STATUS OF DIABETIC RATS

***Onyia, Obumneme Maduka, Ogugua, Victor N., Okoro, Ikechukwu Jacob**
Department of Biochemistry, University of Nigeria, Nsukka
Corresponding Author: onyiaobumneme@gmail.com Tel: +2347031174599

Abstract
The antioxidant efficacy of coconut water of *Cocos nucifera*was studied to ascertain the potential effects of the liquid on some biochemical indices. **Materials and Methods**: *In vitro* antioxidants activity was carried out on coconut water using DPPH assay,ferric ion reducing antioxidant power assay (FRAP), and phosphomolybdenum assay **(**PM**).**Twenty albino rats (80 – 120 g) divided into 5 groups of 4 rats each were used for this study. Group 1 served as the normal control while groups 2-5were induced with diabetes using120 mg/kg b.w. alloxanmonohydrate. Group 2 was untreated while Group 3 was treated with glibenclamide. Groups 4 and 5 were treated with 1 ml/kg b.w of mature coconut water and tender coconut water respectively. **Results**: Both tender and matured coconut water and that of the standard (ascorbic acid) showed a concentration-dependent DPPH**.** scavenging capacity with a good positive correlation coefficient and IC_{50} of 1.87mg/ml, 3.01mg/ml and 0.27mg/ml respectively. The liquid also reduced the ferric ion in a concentration-dependent mode with a good positive correlation coefficient and $IC_{50}$of 92.56mg/ml, 137.39mg/ml and 233.79 mg/ml for tender coconut water, mature coconut water and ascorbic acid respectively. Both tender and matured coconut water also reduced Phosphate-Mo (VI) to Phosphate Mo (V) in a concentration-dependent mode with a good positive correlation coefficient and (IC_{50} = 39.56, 48.39 and 19.89 mg/ml) Tender coconut water, mature coconut water and ascorbic acid respectively. Malondiadehyde concentration (MDA) decreased significantly (p<0.05) when compared to group 2. The in vivo antioxidant status(CAT, GSH, Vitamin C,and Vitamin E) showed a significant(p<0.05) increase unlike group 2 while SOD activity showed significant (p<0.05) increase in group 2.**Conclusion:** The results obtained from this study showed that both tender and matured coconut waterhave potent antioxidant properties and as such can reduce the complications associated with diabetes mellitus.

Key words: *lipid peroxidation, diabetic rats, Cocos nucifera, alloxan, antioxidant, In vitro*

ENP 086

AQUEOUS EXTRACT OF *Momordica charantia* PALLIATES HYPERGLYCEMIA AND LIPIDEAMIA IN HIGH FAT HIGH FRUCTOSE FED RATS

Opeyemi Christianah De Campos[1], Adenuga, Abisola Oluwatosin[1], Franklyn Nonso Iheagwam[1] Solomon Oladapo Rotimi[1] and Shalom Nwodo Chinedu[1]

[1]Department of Biochemistry, College of Science and Technology, Covenant University, Km 10 Idiroko Road, Canaan Land, P.M.B. 1023 Ota, Ogun State, Nigeria.
*Corresponding Author: opeyemi.emiloju@covenantuniversity.edu.ng: Tel: +2348189182255

Abstract
Over time, medicinal plants in the form of crude herbal extract from plants have been used in managing and curing diseases. *Momordica charantia* (MC) is a medicinal herb used in traditional medicine for the management of several disease conditions including hyperglycemia. This study examined the effect of aqueous extract of *M. charantia* (AEM) on lipid profile and liver function of rats fed with high fat high fructose diet (HCHF). The rats were divided into five groups; rats in group 1 were fed a control diet and tap water while those in group 2, 3, 4 and 5 were fed a HCHF diet with 25% fructose in their drinking water for 9 weeks. Rats in groups 3, 4 and 5 were administered 100mg, 200mg and 400mg/kg body weight of AEM respectively during the last 4 weeks. After the experimental period, rats were sacrificed and the blood glucose levels, liver function and lipid profile of the rats were determined. AEM significantly reduced ($P < 0.05$) plasma levels of cholesterol, triacyglycerol and LDL while HDL level was significantly increased ($P < 0.05$) among the treatment groups when compared to the group fed only a HCHF diet. There was no significant difference in the activities of the liver enzymes of the treatment groups when compared to the control groups. The study showed that *M. charantia* leaves have anti-lipidemic potential and can thus be used in the treatment of hyperlipidemia.

ENP 087

CURRENT ADVANCES IN FOOD QUALITY ENHANCEMENT BIOTECHNOLOGY: A REVIEW

Oyeniyi Deborah Abosede(*), Achi Dabara, Jigam A.A, Obiokpa Florence
*Corresponding Author Email: deboye17@gmail.com, 07030825984
Department of Biochemistry, Federal University of Technology Minna, Niger state

Abstract
Biotechnology has gained access in enhancement of food quality through biofortification using DNA Recombinant Technology. Steps involved in biofortificationare initiated by identification of target population with known micronutrient deficiency. This is then followed by the discovery and screening of crop genes with desired traits, through several high-throughput technologies. Vitamin A deficiency is a major challenge that has been solved through the design of Golden rice(GR). GR is a transgenic crop engineered with the intention of improving the beta-carotene contents through marker-assisted back-cross breeding. Certain crops have been engineered to combat other forms of malnutrition including iron-deficiency, by addition of phytase to improve iron absorption. Genetic engineering application in organisms, gives them important properties such as tolerance to pest, herbicides, and drought. This has been possible through genetic engineering. The popular genetically modified organism (GMO) crops *Bacillus thuringiensis* (Bt) have improved agricultural productivity with decreasing maintenance costs such as Bt cotton, corn, canola, soybean and productivity. Plant Molecular Farming (PMF) is an aspect of genetic engineering used for production of recombinant protein or pharmaceutical products. These products include vaccines, hormones, human blood products, antibodies and growth regulators. A major example is the banana and potato vaccine. Despite the advancement of biotechnology in production of food with enhanced qualities certain challenges are encountered such as consumer acceptability, and allergic reactions, which could happen as a result of splicing of new genes into crops. Therefore, integrated approach with convectional breeding and indigenous technologies will go a long way in enhancing food quality.

ENP 088

DEVELOPMENT OF OKRA BASED ANTIDIABETIC NUTRACEUTICAL FORMULATION FROM OKRA PEEL AND OKRA SEED OF EX-MARADI FRUIT VARIETY

[1]Nasir Rufa'i; [1]Muhammad Ismaila; [1]Hamza Ibrahim Kankia; [1]Mannir Aabubakar Rawayau; [2]Ibrahim S.Sulaiman[2] Fatima Abdullahi Nashe

[1]Department of Biochemistry, Umaru Musa Yar'adua University, P.M.B. 2218, Katsina State, Nigeria.
[2] Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano State, Nigeria.
Author of Correspondence: 08065547740 ismaila.muhammad@umyu.edu.ng

Abstract

Diabetes mellitus is a complex metabolic disorder with high socio-economic costs that is considered a worldwide epidemic and is associated with the development of many complications. Okra fruit is rich in fiber in addition to its naturally occurring vitamins, minerals, antioxidants and other phytochemicals which makes it a vital nutraceutical fruit. The present study was carried out to develop okra-based antidiabetic nutraceutical formulation from the peel and seed of ex-maradi okra fruit variety. The formulation was developed by combining different proportions of peels and seeds of the ex-maradi okra fruit viz (10:90; 20:80; 30:70; 40:60; 50;50 and vise versal). The proximate composition and functional propaties (Water Adsorption Capacity, Oil Adsorption Capacity, Glucose Adsorption Capacity, Glucose Dialysis, Glucose Dialysis Retardation Index and Antioxidant Capacity) of each combination were determined. The results of the present study revealed that; equal proportions (50% peels and 50% seeds) of the ex maradi okra fruit was found to possess higher percentages of Crude ash, Crude protein and Crude fiber with good functional properties compared to other proportions. Based on these results, the 50:50 % of ex-maradi okra peels and seeds could be a suitable combination for formulating an okra based antidiabetic nutraceutical for the management of diabetes mellitus.

Key Words: Okra fruit, Nutraceutical, Formulation, Proximate composition, Functional Properties

ENP 089

PHYTOCHEMICAL SCREENING AND MUTAGENIC EFFECTS OF THE AQUEOUS ETRACT OF *Azadirachta indica(Ajuss.)*LEAVES ON THE ROOT-TIPS OF *Capsicum frutescence (Linn.)*

WAJA, Samuel*, MOHAMMED, M. malgwi.; T, wandiyahel and BASSEY, E. Eyo
Department of Biological Science technology Federal Polytechnic Mubi Adamawa State.
Department of Plant Science Modibbo Adama University of Technology, Yola Adamawa State. Nigeria
Department of Biological science Technology Federal Polytechnic Mubi
Department of Chemical Technology Federal Polytechnic Mubi
Correspondent Address: samuelwaja@rocketmail.com **GSM: 07036168790**

Abstract

With the increased consumption of medicinal plants extract in altenative treatments and the search for new compound with biological activity, the need arose to carry out the phytochemical screening and the Mutagenicpotentials of the leave extracts of *Azadiracta indicia*. The phytochemical screening of the extract of A. indica have shown the presence of flavonoids, saponins, tannins, terpenoids and phytosteroids .Mutagenic effect was evaluated *in vivo* along with the action of the well-known alkylating agent, EMS using the root-tips of *Capsicum frutescence*. Seeds of *Capsicum frutescence* were soaked in 5%, 10%, 15%, and 20% of plant extract for 72. The test concentrations were determined according to the doses which were suggested for utilization in alternative medicine i.e. 5g with its graded multiples of 2, 3, and 4 respectively. *In vivo* test showed that extracts of *A. indica* induced some chromosomal aberrations in the genome of *Capsicum frutescence.* Mutagenicity was found to increase with increased extract concentrations. The test results showed that the extracts of *Azadiracta indica* administered at 10, 15, and 20gms increased the inhibition of cell division and induced DNA damage which were detected in the forms of segmental agglutinations, polyploidy, fragmentations, chromosomes dissolutions, and stickiness. However, lower concentrations of 5g/5% were not effective suggesting that the medicinal plant *A. indica* is probably safe for consumptions at the recommended dose of 5g. However, the possible DNA damage and segmental changes seen as the concentrations increased to 20gms suggest that higher doses above the recommended 5g could be dangerous to human cells at the long run and calls for caution in the consumption of raw herbal products prepared from *A. indica.* Low concentration of the plant extracts and wide spacing of dosage is therefore suggested for use if *A. indica* is to be used in traditional Medicare.

Key words: polyploidy, stickiness, agglutination, phytochemical , *Azadirachta indica*

ENP 090
ANTI-DIABETIC EFFECT OF METHANOL LEAVES EXTRACT OF *CASSIA ARereh*

Sarah Jada[1], Musa Muhammad Sani, Zainab Muhammad, Onu Andrew[1], AbbasAbdullahiYahya[1]*,Saidu Yusuf[1], BilbisLawal Suleman[1] and Ismaila muhammad[2]

[1]Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University, P.M.B. 2346, Sokoto,
[2]Department of Biochemistry, Umaru Musa Yaradua University, P.M.B. 2218 Katsina, Nigeria.
*Author of correspondence Email:ayabbas2002@yahoo.com Phone: +2348035052927

Abstract
Plants have been source of medicine to treat diseases from time immemorial.The increase in the prevalence of diabetes and problem of efficacy with current drugs have necessitated search for new molecular entities that can be developed into diabetic drugs. In this study, the hypoglycemic and hypolipidemic activities of *Cassia arereh* leaves extract, in normal and alloxan-induced diabetic ratsat the doses of 100mg/kg, 200mg/kg and 300mg/kg were evaluated. Glucose was determined using glucose oxidase method and lipid parameters were determined using standard analytical procedures..Methanolic extract of *Cassia arereh* produced a significant ($P<0.05$) reduction in fasting blood glucose levels with all doses of the extract in day 3 and day 7 of the treatment compared to the diabetic control group. Also, methanolic extract of C*assia arereh*s howed a significant ($P<0.05$) reduction in total cholesterol, triglycerides, LDL and VLDL cholesterol levels while there was significant ($P<0.05$) increase in HDL-cholesterol level. These results indicated that methanolic extract of *Cassia arereh*exhibit both hypoglycemic and hypolipidemic effects and have potential for development as anti-diabetic agent.

ENP 091
BIOASSAY GUIDED ISOLATION OF N-BUTANOL FRACTION OF *MORMODICA BALSAMINA* AGAINST *SALMONELLA TYPHIMURIUM* AND *STAPHYLOCOCCUS AUREUS*

[1]Muktari Isa Shago*, [2]Kola Matthew Anigo, [2]Mu'awiyya Abarshe Musa and [3]Madu AdamuGadaka

[1]Department of Chemistry, Yobe State University Damaturu, Yobe State, Nigeria
[2]Department ofBiochemistry, Ahmadu Bello University Zaria, Kaduna State, Nigeria
[3]Department of Medical Biochemistry, Yobe State University Damaturu, Yobe State, Nigeria
eazziey.eazziey@gmail.com-08038476949

Abstract
The purpose of this study was to isolate and evaluate the antibacterial activity of n-butanol fractions of *Mormodica balsamina* against *Salmonella typhimurium* and *Staphylococcus aureus.* Fraction was isolated using Column Chromatography and six different (A, B, C, D, E and F) fractions of *M. balsamina* were tested for antibacterial activity using agar well diffusion method against *Salmonella typhimurium* and *Staphylococcus aureus*. Fourier Transform Infra-red Spectroscopy (FTIR) was used to detect the characteristic peak values and their functional groups present in the specific fraction that exhibited potent antibacterial activity. The results highlighted that the fractions showed higher zone against all isolates, the highest inhibitory zone (31.00±1.41mm) was observed on fraction C against *Salmonella typhimurium.* Further assessment of minimum inhibitory concentration and minimum bactericidal concentration ranged between 3.125 to 50 mg/ml respectively. Fourier Transform Infra-red (FTIR) Spectra of fraction C revealed the presence of different functional groups ranging from carboxylic (R-C (O)-OH), alkanes (C-H), aldehydes (R-CH=O) and alkenes ($RCH=CH_2$), Amides ($R-C(O)-NH_2$), Alkyl halides(R-F), Alcohol (Ar-OH), Ethers (Ar-o-R), and Aromatic (C-H) respectively. Low Minimum Inhibitory Concentration and low Minimum Bactericidal Concentration may justify the traditional uses of the leaves of *M. balsamina*for therapeutic purposes. FTIR graphs provided characteristic peaks which represented the components responsible for antibacterial activity.

Keywords: *Mormodica balsamina,* Fractionation, Antibacterial, Minimum Inhibitory Concentration, Maximum Bactericidal Concentration and Furrier Transform Infra-red

ENP 092

PHYTOCHEMICAL ANALYSIS AND ACUTE TOXICITY TESTING OF AQUEOUS STEM BARK EXTRACT OF *ERYTHTINA MILDBRAEDII*IN RATS

***SARKI, S.I, WUDIL, A.M., and YUNUSA, A.**
Department of Biochemistry, Kano University of Science and Technology Wudil Kano- Nigeria
*Correspondence author: shaheedah67@gmail.com +2348034518365

Abstract
Phytochemicals are natural bioactive compounds found in plantsand are found to promote human health when consumed. However some are found to be toxic. The genus *Erythrina mildbraedii* is known for its use in traditional medicine especially for the treatment of microbial infections. The research work investigates some phytochemicals and acute toxicity testing of aqueous stem bark extract of *Erythrina mildbraedii* in rats. Quantitative and qualitative analysis of some phytochemicals present in the aqueous stem bark extract of *Erythrina mildbradii* was determined and the acute toxicity (oral)in albino rats was carried out using the method of Lorke(1983). The result of the phytochemical screening indicated the presence of all the tested phytochemicals. Cardiac glycosides and alkaliods were found to be present in higher concentrations than saponins, flavoniods and tannins. The acute toxicity (oral) was evaluated in two phases. In the first phase, mortality and toxic symptoms were not observed 24hrs after oral administration of 10,100 and 1000mg/kg body weight of the extract. In the second phase no mortality was also observed 48hrs after administration of the extract, with some symptoms of weakness for a group with highest dose (5000mg/kg body weight). The result obtained indicated the presence of all the phytochemical tested .Cardiac glycocides was found in higher concentration. Acute toxicity evaluation of the extract classified it as practically non toxic to the experimental animals.

Keywords. Phytochemicals ,*Erythrina mildbraedii*,acute toxicity, aqueous extracts

ENP 093

ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN UNDER 12 YEARS OF AGE.

Amoo-tella[a]* Shakirat Yetunde. And kogari[b] Abdulmalik Sa'adu

[a]Department of Human Anatomy, Faculty of Medicine, Umaru Musa Yaradu'a University, Katsina
[b]Department of Biology, Faculty of Science, Umaru Musa Yaradu'a University, Katsina State, Nigeria.
* Corresponding Author: +2348034678297, e-mail: yetundeamoo2002@gmail.com.

Abstract
Ten and half millions of children under 12 years of age die every year worldwide with 98% of the deaths occurring every year in developing countries. Diarrhea and respiratory disease are the major cause of child mortality and the prevalence rates of emaciation and linear growth retardation reflects the poor health status of children in developing countries. The study is aimed at assessing nutritional status of children under 12 years of age. The subjects were selected randomly and they consist of children under 12 years of age of Dr, Kabir Usman Nagogo primary school, Katsina and Sharab International School, Katsina. They consist of 30 males and 30 females. The anthropometric measurements taken are height, weight, body mass index and head circumference. 21.7% of the children were underweight, 55.0%had normal weight, 11.7% were overweight and 11.7% were obese. Also, majority of the respondents (36.7%) takes balanced diet thrice a week and had head circumference of 23.50cm. Family size correlated significantly with body mass index of the respondents ($p = 0.05$, $r = -0.01$). Also, there was no correlation between parents' occupation and body mass index of respondents ($p = 0.05$, $r = 0.30$). Most of the children assessed in this research were found to be well-nourished.

Key Words: Nutritional assessment, Body mass index, Correlation, Head circumference.

ENP 094

ANTISICKLING, ANTIMICROBIAL AND ANTIOXIDANT PROPERTIES OF *Psidium guajava, Waltheria indica* and *Xylopia aethopica*

Shalom Nwodo Chinedu[1]*, Omolola Dayo-Odukoya[1],Omolola Elizabeth Omotosho[1] and Arinola Abegunde[2]

[1]Department of Biochemistry, College of Science and Technology,
[2]Covenant University Medical Centre (CUMC), Covenant University, Km 10 Idiroko Road, Canaan Land, P.M.B. 1023 Ota, Ogun State, Nigeria.
*Corresponding author: shalom.chinedu@covenantuniversity.edu.ng Tel: +2348065940573

Abstract

Sickle cell disease (SCD) is a debilitating disease associated with high morbidity and early mortality.The sickle cell patient is faced with myriad challenges including susceptibility to infections and hemolysis resulting invaso-occlusive crises characterized by oxidative stress and episodes of pain. In this study, anti-sickling, antimicrobial and anti-oxidative properties of three Nigerian plants, *Waltheria indica* (WI), *Psidium guajava* (PG) and *Xylopia aethopica* (XA) were examined to assess their potentialsfor the treatment of SCD. Ethanolic extracts of PG and WI leaves, and aqueous extract of XA fruits were prepared and tested for *in-vitro* Fe^{2+}/Fe^{3+} ratio improvement and haemoglobin polymerization inhibition effect. Antimicrobial activity was evaluated using Algae-diffusion method. Total antioxidant activity (TAC) and ferric reducing antioxidant power (FRAP) were analyzed. WI and XA extracts increased Fe^{2+}/Fe^{3+} ratio by 113.9% and 50.4% respectively whereas PG extract reduced the ratio by 24.3% compared to the control. XA gave the best value of haemoglobin polymerization inhibition (54.5%). PG+WI (1:1) showed antimicrobial activity comparable to the standard drug(Gentamicin); it was active against *Staphylococcus aureus, Escherichia coli, Salmonella typhimurium, Klebsiella pneumonia* and *Saccharomyces cerevisae.* FRAP of the extracts were significantly higher ($p<0.05$) than the standard (Ascorbic acid); it was 7.8, 6.2 and 5.4 mg AAE/ml respectively for PG, WI and XA. TAC was 33.1, 22.8 and 8.6 mg AAE/ml respectively for WI, PG and XA. This study suggests that the plant extracts, either singly or combined,have good potential for improving the underlying factors for the vaso-occlusive crises associated with SCD.

Keywords: *Psidium guajava*, *Waltheria indica*, *Xylopia aethopica*, Fe^{2+}/Fe^{3+} ratio, polymerization inhibition, antimicrobial activity, antioxidant properties.

ENP 095

PREVALENCE OF HYPERTENSION AMONGST STAFF IN A NIGERIAN UNIVERSITY

Shalom Nwodo Chinedu[1], Michael Onuoha[2], Opeyemi Christianah. Emiloju[1], Franklyn Nonso Iheagwam[1]and Grace Nkechi Joshua[2]

[1]Department of Biochemistry, College of Science and Technology; [2]Covenant University Medical Centre (CUMC); Covenant University, Km 10 Idiroko Road, Canaan Land, P.M.B 1023 Ota, Ogun State, Nigeria.
*Corresponding author: shalom.chinedu@covenantuniversity.edu.ng Tel: +2348065940573

Abstract

Hypertension, a risk factor in several non-communicable diseases (NCDs), contributes greatly to the rising disease burden ofmany developing countries, particularlyin sub-Saharan Africa. In this study, the incidence of hypertension amongst staff of a Nigerian university was evaluated and correlated with their age, gender, BMI, and the job type. A total of 717(448 male; 269 female) staff,consistingof 314 teaching staff (faculty) and 403 non-teaching staff (NTS), in the age brackets of 20–39 years (382), 40–59 years (264), and ≥ 60 years (61), participated in the study. Anthropometric measurements and WHO cut-offs were used to classify body weight into underweight, normal weight, overweight and obesity. Blood pressure (BP),[systolic (SBP) and diastolic(DBP)], was measured and categorized as hypertension(SBP≥140;DBP≥90); prehypertension (SBP≥120≤139;DBP≥80≤89), normal BP (SBP>90<120;DBP>60<90) or hypotension (SBP≤90;DBP≤60). Regression analyses were performed with SPSS software. Prevalence was 36.8%, 32.9%, 21.3% and 8.9% respectively for hypertension, prehypertension, normal BP and hypotension. Hypertension occurred more in males (38.7%) than in females (32.0%) whereas hypotension was more in females (11.9%)compared to the males (7.1%).Hypertension was most prevalentin the obese and middle aged (40-59 years) group.There was strong correlation between hypertension and age (.000), gender (.001), BMI (.000) and job type (.005).The high prevalence of hypertension among the university's workforce is a serious threat that calls for urgent intervention.

Keywords: Hypertension, prehypertension, hypotension, BMI, obesity, age, gender, job type.

ENP 096

NUTRIENTS IN THE ROASTED SEEDS AND ROASTED SEEDS OIL OF NEGRO COFFEE PLANT *(Cassia occidentalis)*

Arekemase SO,[b]AbdulwaliyuI,[a]Batari ML[a], Idowu O O,[a] Mahmud M H,[a]Owolabi O O,[c]AribidoO,[a]

[a]Department of Basic Research, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.
[b]Petrochemical and Allied Department, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.
[c]Bioresources Development Centre, National Biotechnology Development Agency, Lugbe, Abuja, Nigeria
Corresponding author: arekemaseshefiatolayemi@yahoo.com (07068048463)

Abstract

Cassia occidentalis, is a short lived small shrub, and widely distributed in nature. Seeds from this plant (*Cassia occidentalis)* can be roasted, and are sometimes used as substitute for coffee. Despite being used in roasted form "as coffee", nutrient in the roasted seeds of this plant, has not been largely explored. This allured our attention to investigate the nutrient in the roasted seeds and roasted seeds oil of this plant. To evaluate some nutrients in the roasted seeds and roasted seeds oil of *Cassia occidentalis.* The analyses (mineral, vitamins, amino acid, and fatty acid profiling) were carried out using standard protocol. Result obtained from the amino acid profiling showed that the roasted seeds of this plant contained essential amino acids (except tryptophan, which was not detected). The roasted seeds also revealed appreciable amount of minerals, and vitamins. The fatty acid profiling of the roasted seeds oil revealed reasonable percentages of 9-octadecenoic acid (oleic acid) (33.19%) and 9, 12-Octadecadienoic acid (linoleic acid) (21.22%), while tetradecanoic acid (myristic acid) (2.68%) ranked the lowest. The high nutrients content in the roasted seeds and the roasted seeds oil of this plant confirm it good nutritional value.

ENP 097

EFFECT OF PROCESSING ON SOME NUTRIENTS AND ANTI-NUTRIENTS COMPOSITION OF *Sesbania sesban* SEED

AbdulwaliyuI,[a] Arekemase S O,[b]and Bala S[b]

[a]Department of Basic Research, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.
[b]Department of Industrial and Environmental Technology, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.

Abstract

*Sesbania sesban*is widely distributed throughout Asia and Africa including Nigeria. Seeds from this plant (*Sesbaniasesban*) contain nutrients needed by livestock. However, anti-nutritional factors present in the seeds are a big challenge for the exploitation of this plant seed, as alternative feeds for livestock. To assess effect of processing on some nutrients and anti-nutrients composition in the seed of *Sesbania sesban***.** The seeds of *Sesbania sesban* were soaked (24 hours) and boiled (2 hours) using water, calcium hydroxide and lye respectively. The processed samples obtained and the unprocessed sample was subjected to proximate, anti-nutrients, vitamins, minerals, and invitro protein digestibility analysis. All analyses were carried out using standard protocols. Proximate analysis revealed statistically significant ($p<0.05$) decrease in the moisture composition of processed samples as compared to the unprocessed sample. The percentage carbohydrate compositions were significantly ($p<0.05$) lower in all the processed samples as compared to as compared to the unprocessed sample. Vitamins and mineral analysis revealed significantly ($p<0.05$) higher composition of β-carotene, vitamin B_1**,** and zinc in the unprocessed sample compared to the composition revealed in the processed samples. Findings from the invitro protein digestibility revealed statistically significant ($p<0.05$) reduction in the unprocessed sample as compared to the processed samples. Nutrients in the seeds of *Sesbania sesban* qualifies the plant seeds as a potential alternative feeds for livestock. Moreso, the anti-nutritional factors present, could be reduced by processes employed in this study.

ENP 098
INFLUENCE OF PROCESSING AND ADDITION OF PRESERVATIVES ON THE NUTRITIONAL, MICROBIAL QUALITY AND THE ORGANOLEPTIC PROPERTIES OF TIGER NUT (*Cyperus esculentus*) MILK

[1]Sani Ahmad, Ibrahim, [1]Shafa'atu Giwa, [2]Ibrahim Hamza Kankia and [1]Salihu, Tijjani Shinkafi*
Department of Biochemistry, Usmanu Dan Fodiyo University, Sokoto, Nigeria
Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
*Corresponding author; tijjani.salihu@udusok.edu.ng

Abstract
Tiger nut milk (*Kunun aya*)is a traditional fermented non-alcoholic tiger nut beverage widely consumed in northern parts of Nigeria especially during the dry season. Deteriorating effect of micro-organisms and its short lifespan affects its large scale production and profitability. Big yellow tiger nuts were grindedinto powder and divided into four portions and subjected to the following treatments; 0.05% sodium benzoate, 0.05% gelatin, a combination of 0.05% of gelatin and sodium benzoate and a fresh tiger nut powder as a control. The samples were stored at room temperature(28± 2^0C) and the influence of processing and added preservatives on pH, temperature, organoleptic, nutrients and microbiological quality of the samples were evaluated for six (6) weeks. The results of the pH showed that all the samples were acidic throughout the storage period. There are no significant ($P<0.05$) changes observed in temperature range prior to storage and after storage. The protein content increases slightly after storage due to a reduction in moisture content, vitamin C & E contents of the treated milk samples were found to be significantly different at ($P<0.05$) compared with the control sample after storage. The mineral contents of the treated milk samples were not found to significantly ($P<0.05$) differ with the control sample throughout the storage period. Microbiological quality of *kunun aya* was found to be good and acceptable throughout the storage period. Processing method and the addition of preservatives could extend the shelf life of *kunun aya* for six (6) weeks at room temperature in powdered form.

Keywords: Tiger nut milk, Preservation, Microbial quality, Sensory qualities

ENP 099
MINERAL COMPOSITION AND ANTIMICROBIAL ACTIVITY OF *Vitellaria paradoxa* (Shea tree) LEAVES

Muhammad Aliyu, Rabi'u Sai'du Umar Wasagu, Ibrahim Hamza Kankia[2] and Tijjani Salihu Shinkafi*,[1]
Department of Biochemistry, Usmanu Danfodiyo University Sokoto, PMB 2346, Nigeria
[2]Department of Biochemistry, Umar Musa Yar'adua University, Katsina, Nigeria
Corresponding author email: tijjani.salihu@udusok.edu.ng

Abstract:
A large number of medicinal plants have been reported to possess bioactive compounds with several pharmacological properties. Largely, these bioactive compounds are concentrated in the leaves, bark or roots of various medicinal plants. The plant *Vitellaria paradoxa* is used in Nigeria and for the cure of jaundice when taken orally. About 100g of the dried leaf powder was used for ethanol extraction. Clinical bacteria isolate which include; *Salmonella typhi, Shigella dysenteriae* and *Escherichia coli* were subjected to antimicrobial susceptibility test using agar well diffusion technique. The prepared bacteria isolates were later compared with a Mcfarl and standard. The agar dilution method was used in the antifungal susceptibility study. The fungi isolate used were; *Aspergillus niger and Fusarium oxysporum.* The Atomic absorption spectroscopic method was used for the estimation of the mineral content of the crude extract. The ethanolic extract did not produce any clear zones of inhibition at a concentration ranging from 100 to 160mg/ml for the antibacterial assay. And also, no clear zones of inhibition were observed at a concentration ranging from 30 to 90mg/ml for the antifungal profiles. The result on the analysis of mineral content of the Shea butter leaf are; Mg (19.16 ± 0.25mg/kg), K (0.61 ± 0.19mg/kg), Fe (3.803 ± 0.12mg/kg). The results revealed that *Vitellaria paradoxa* leaf has no antimicrobial activity against the tested isolates. The leaf of the plant is also rich in essential mineral elements for human benefits.

Keywords: Medicinal plants, antimicrobial activity, zone of inhibition, bioactive compounds

ENP 100

ANTIOXIDANT STATUS OF SPONDYLORADICULO-MYELOPATHY SUBJECTS ATTENDING USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL, SOKOTO.

***Magaji Rose[1], Bilbis Lawal Suleman[2], Abbas AbdullahiYahya[2], Balarabe Salisu Abdullahi[3], Sahabi Danladi Mahuta[2]and Saidu Yusuf[2]**

[1]National Research Institute for Chemical Technology, P.M.B.1052, Basawa, Zaria.
[2]Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University,Sokoto.
[3]Deparment of Medicine, Faculty of Clinical Sciences, College of Health Sciences Usmanu Danfodiyo University, Sokoto.
* Corresponding author: sangodares@yahoo.com Phone Number:08106211139

Abstract
Oxidative stress plays significant role in many human diseases and is thought to contribute to the development of a wide range of diseases, including spondyloradiculo-myelopathy (SRM). A total of thirty (30) patients with Spondyloradiculo-myelopathy (SRM) and twenty five (25) Apparently Healthy Subject (AHS) participated in the study. Some antioxidant enzymes, MDA, antioxidant minerals, calcium, phosphorus, antioxidant vitamins and vitamin D of SRM subjects and AHS were evaluatedusing Cayman kits, Atomic Absorption Spectrophotometry (AAS) and chemical methods respectively. Findings indicated that there was significant ($P< 0.05$) decrease in the activity of serum antioxidant enzymes (SOD, CAT, GPx) and a significant ($P<0.05$) increase in the level of serum MDA in SRM subjects when compared to AHS. Significant decrease ($P<0.05$) in the level of serum Manganese and vitamin E were also observed in SRM subjects when compared to AHS. These findings indicated the presence of oxidative stress in SRM and hence oxidative stress may play an important role in the pathogenesis and management of SRM patients.

ENP 101

PHYTOCHEMICAL AND CHEMICAL COMPOSITION OF *Borassusa ethiopum* (muruchi) HARVESTED IN ZARIA

[1]Aribido Oladipo*, [1]Abdulwaliyu Ibrahim, [1]Ibrahim Ademola Saheed, [1]Edem U. Okon, [2]Lawal OlamilekanMuritala, [1]Adudu Judy Atabat, [1]Odeke Evelyn Hope, [1]Pindarr Aisha, [3]Anyanwu Stella Ezinne, [1]Anyim Benadeth Patrick, [1]Ochigbo Victor, [4]BarminasTsware Jeffrey

1 Scientific and Industrial Research Dept, National Research Institute for Chemical Technology, Zaria.
2 Textile and Industrial Design Department, National Research Institute for Chemical Technology, Zaria.
3 Industrial and Environmental Pollution Dept. National Research Institute for Chemical Tech,, Zaria.
4 Director General, National Research Institute for Chemical Technology, Zaria.
*Corresponding author email: dipoaribido@gmail.com; 07030451383

Abstract
This study was carried out to investigate the chemical and phytochemical composition of muruchi. This comprises of the proximate, vitamins, mineral, phytochemical and amino acids composition.The proximate composition revealed 36.42% moisture, 14.64%fibre,1.47%lipid,8.12% ash,19.25% protein and 21.10% carbohydrate. The amino acid revealed that the muruchi harvested in Zaria is a good source of protein most especially the essential amino acid compared to WHO standard for adult. The mineral content revealed Zn,Fe,Mg,Ca,Mn,K,Cd,Na and Pb.The Pb(7.56mg/100g) indicates a high level of toxicity which gave a great concern. . There was a slight increase in the concentration of tannin, phytic acid and oxalate according to the reference toxic standard level.There was an appreciable amount of Vitamin A(209mg/100g), while vitamin C,B6,E and K showed lower amounts compared to WHO standard.

Keywords: proximate, vitamins, minerals, phytochemical and *Borassusaethiopum.*

ENP 102

EFFECTS OF SCOPULETIN ON ACETAMINOPHEN - INDUCED LIVER DAMAGE IN WISTAR RATS

Yahaya-Oruma, U., Abraham, O.J*. and Odiba, P. A.

Dept of Science Laboratory Technology, Federal Polytechnic Idah, Kogi State, Nigeria.
*Corresponding author- josephoyiguh@yahoo.com, Phone number: 08062908906

Abstract
Scopoletin is a fluorescent coumarin compound, yellow to beige crystalline powder found in Noni, manaca, passion flower, stevia, cotton leaf, citrus peel and cassava (*Manihotesculentus*). Acetaminophen (paracetamol) is the active metabolite of phenacetin responsible for its analgesic effect. It is a weak prostaglandin inhibitor in peripheral tissues, and one of the most important drugs used for the treatment of mild to moderate pains is assessed everybody, and its abuse has detrimental effect on the liver. Scopoletin has been reported to have protective effect against paracetamol- induced liver damage. This study determined the effects of scopoletin on paracetamol- induced liver damage in male Wistar rats. Thirty-five male Wistar rats albino rats ages 4 to 8 weeks old weighing 150 –230g were grouped into five of seven each, andfed with 6mg/kg body weight of scopoletinintragastrically for 28 days, and 500mg/kg body weight of paracetamol(Single dose). Controls were kept for Paracetamol, 10% DMSO and placebo. Blood was collected from the animals through ocular puncture and sera gotten wereassayed forAlanine and Aspartate aminotransferase, Alkaline Phosphatase, Bilirubin, Superoxide Dismutase (SOD), Serum Protein, Lipid Peroxidation.Statistical analysis was carried out using one-way analysis of variance together with post-Hoc test (Multiple comparism).Alkaline Phosphatatse, Aspartate aminotransferase and Alanine aminotransferase, Bilirubin, Superoxide Dismutase (SOD), Serum Protein, Lipid Peroxidation were low in the treatedgroup.Scopoletin showed a significant ($p<0.05$) protective effect on the hepatic cells damaged by paracetamol.Plant materials that contain scopoletin should be investigated fortheir antioxidants property in metabolism.

Key Words: Scopoletin, coumarin, paracetamol, liver damage, Wistar rats,

ENP 103

PHYTOCHEMICALS PROPERTIES AND ANTIBACTERIAL ACTIVITY OF COMBINED LEAVES EXTRACT OF *Senna*siamea, Coffee*senna* and *Citrus lemon*

Zaharadeen Abdullahi[1], Bertha Abdu Danja[1],SaiduJibril[1], Abdurrahman Abubakar[1], Lodma Hassan Hammashi[1],Abdulqadir Tahir Ahmed[2], Yusuf Abdulkarim[3],Aliyu habib[4],

[1]Department of Chemical Sciences, Federal University Of kashere, P.M.B. 0182,Gombe State.
[2]Department of Chemical Sciences, Federal University Of kashere,P.M.B. 0182, Gombe State.
[3]Government Secondary School Toro, P.M.B. 008, Bauchi State.
[4]School of Pre-degree and remedial studies, Umaru Musa Yaradua University, P.M.B. 2218, Katsina.
Corresponding Email: Zaharadeen1988@gmail.com

Abstract
Medicinal plants, since time immemorial, have been used in virtually all cultures as a source of medicine. An increasing reliance on the use of medicinal plants in societies has been traced to the extraction and development of several drugs from these plants. Standard procedure for analysis of phytocompounds which is based on color formation or disappearance and bacterial activity was adopted. n- hexane extract shows the presence ofphlobatannins, flavanoids, volatile oil, glycoside, and saponins and terpenoids also shows the absence of Alkaloid, phenols, glycoside (general), resins, and tannins while in the water extract shows the presence of Alkaloid, saponins, terpenoids, volatile oil, and the presence of tannins, glycoside, anthraquinones, resins, phlobatannins, phenols, and absence offlavanoids. In antibacterial activity (*Staphylococcus aureus*, *Salmonella typhi*, *E. coli*, and *Streptococcus pneumonia*) shows no inhibition in the n-hexane extract while in water extracts,at 2.00 mg/dl and 1.00mg/dl shows inhibition *Staphylococcus aureus*, *Salmonella typhi*, *E. coli*,and inactive against *Streptococcus pneumonia.* At 0.50mg/dl it is active against *Staphylococcus aureus*, *E. coli* and inactive against *Salmonella typhi* and*Streptococcus pneumonia*. Based on our findings it can be concluded that the combined leaves extract can be used in treatment of these bacterial spacies.
Keywords: Phytochemicals, Antibacterial, Medicinal and Extraction

ENP 104
EFFECT OF LEAF EXTRACT OF *TELFAIRIA OCCIDENTALIS* ON SOME HEAMATOLOGICAL PARAMETERS IN 2, 4-DINITROPHENYLHYDRAZINE INDUCED ANAEMIC RATS

***Suleiman, Z.A., Ya'u, S., Kankia, H.I, Matazu, K.I., Matazu, N.U., Usman, A., Abdullahi, A.**
Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria
Corresponding Author Email: * zainab.suleiman@umyu.edu.ng Phone: (+234-8069768060)

Abstract
Telfairia occidentalis (ugwu) is a tropical vine grown in West Africa as a leafy vegetable for its edible seeds. It is a dark green leafy vegetable popularly used in soup and in herbal preparation for management of many diseases in Nigeria. Verbal communication showed that there is a claim that the plant can be used to prevent or cure anemia, which constitutes a serious health problem in many tropical countries including Nigeria. It is on this basis that we further investigate the hematogenic effect of this plant. Thirty Wister albino male and female rats were separated into five groups of six rats each for the study.Rats in group 1-4 were injected with 40mg/kg 2, 4-dinitrophenylhydrazine for two consecutive days to induce anemia.The anemic groups 1and 2 received 200 and 400 mg/kg b.w. methanolic extract of *T.occidentalis* leaves respectively, group 3 were treated with standard hematinic drug (Astymin) 20ml/kg, these were administered once daily for 21 consecutive days by oral-feeding cannula; while group 4 was not given any treatment. Analysis of the haematological parameters was done using microheamatocrit method for PCV and heamocytometer was used to count both theWBCs and RBCs under the light microscope. The results obtained showed that oral administration of methanolic leaf extract of (*T. occidentalis*) to group 1 and 2and that of Astyminsignificantly ($p<0.05$) increase the investigated haematologicalparameters compared to group 4. Therefore it can be concluded that Ugwu leaves might have some haematogenic potential and could ameliorate anaemia.

Key words: *Telfairi aoccidentalis*, Anemia, Packed Cell Volume, White Blood Cells, RedBlood Cells.

ENP 105
COMPARATIVE ANALYSIS OF TOTAL FLAVONOID, ASCORBIC ACID, B-CAROTENE AND ANTI-OXIDANT ACTIVITY OF FRESH AND SUN-DRIED TOMATOES IN AJIWA COMMUNITY, BATAGARAWA LOCAL GOVERNMENT AREA, KATSINA STATE.

***Suleiman, Z.A., Kankia, H.I., Nasir, A., Yaradua, A.I., Muhammad, I., Bello, U.**
Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria

Corresponding Author Email:* zainab.suleiman@umyu.edu.ng (+234-8069768060)

Absract
Tomatoes are rich in antioxidants and are important valuable raw materials for a very wide range of processed foods. They are perishable food crops that are cultivated seasonally causing the need for preservation and storage. Sun drying is the cheapest method for preserving tomatoes to last for longer time before the effect of spoilage set in.The study was aimed to estimate the effect of sun drying on tomatoesby measuring the amount of some antioxidants in fresh and dried tomatoes and to test the antioxidant potentials of the two samples. Spectrophotometric method was used in determining the flavonoid as well as the β-carotene content whereas ascorbic acid content was determined by titration method. Total antioxidant activity was evaluated using hydrogen peroxide scavenging assay. The result obtained demonstrated that higher total flavonoid content was found in the dried sample (3.60mgRE/100g DW) compared to the fresh (2.23mgRE/100g DW) and also more β-carotene concentration in the dried (4.75mg/dm^3) than the fresh sample (3.83mg/dm^3). But for ascorbic acid the concentration was higher in fresh sample (14.70mg/dm^3) than that of the dried (7.10mg/dm^3) sample. Based on the results, this study shows that sun drying of tomatoes has less or no negative effectson the total β-carotene and flavonoid content of tomatoes. However sun drying causes loss of ascorbic acid.

Key words: Tomatoes, Antioxidants, Flavonoids, Ascorbic acid β-carotene, sun drying,

ENP 106
INVESTIGATION OF ANTIOXIDANT EFFECT OF AQUEOUS LEAVES EXTRACT OF *Anisopus mannii*

Zainab Yusuf and *SalahuddeenYa'u

Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina.
*Corresponding Author: salahuddeen.yau@umyu.edu.ng

Abstract
The aim of this study was to investigate the antioxidant effect of aqueous leaves extract of AnisopusmanniiN.Er in 8% salt induced oxidative stress on wister rats. Five groups was induced with 8% salt orally from the second week to the last (fifth) week of salt induced oxidative stress while the normal (first) group was only feed with rat chow and water. AnisopusmanniiN.Er leaf extract was administered at different doses of 100Mg/Kg, 200Mg/Kg, 300Mg/Kg, to different (4, 5, and 6) groups respectively and group 3 was administered with commercial vitamin C of 75Mg orally for 3 weeks after the induction of 8% salt for four weeks. Various doses of Anisopusmannii leaf extract was administered orally for three weeks to confirm the effective dose concentration of Anisopusmannii leaf extract on body weight and antioxidant enzyme activities. Administration of aqueous extract of Anisopusmannii has increased in catalase, and reduced glutathione levels in salt induced oxidative stress when compared to the normal and standard control group ($P<0.05$). These results propose that Anisopusmannii is therefore a potent antioxidant source that could help in improving and or maintaining the quality of life of people.

Keywords: Antioxidant effect; Aqueous leaves extract; Anisopusmannii: Wistar rats

ENP 107
ANTI-HYPERLIPIDAEMIC EFFECTS OF LEAF AND STEM BARK EXTRACTS OF *FICUS POLITA* ON DIETARY INDUCED HYPERLIPIDAEMIC RATS

[*1]Nasir, A., [2]Alhassan, A.J., [2]Sule M.S., [1]Yaradua, A.I., [2]Muhammad, I.U., [2]Idi, A., [1]Usman, A., [3]Kanadi, A.M., [1]Mannir, A.R. and [1]Nasir, R.

[1]Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria.
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano, Nigeria.
[3]National Agency for Food and Drug Administration and Control (NAFDAC), P.M.B. 2015,
*Corresponding Author Email: amnuf81@gmail.com Phone: +2348036851879

Abstract

Hyperlipidaemia is a major risk factor in the pathogenesis of atherosclerosis. It is one of the many metabolic abnormalities regarded as world killer disorders. The study was aimed at evaluating anti-hyperlipidaemic effects of the leaf and stem bark extracts of *F. polita*. Anti-hyperlipidaemic effects of the leaf and stem bark extracts of *F. polita* on dietary induced hyperlipidaemic *wistar* rats were investigated after 2 weeks of treatment. *Wistar* rats were induced with high fat diet for 6 weeks. Body weight gain was monitored, on weekly basis, throughout the 8 weeks' study period. After 2 weeks of treatment, a significant decrease ($p<0.05$) in TC was observed in the normal control (NC), and the test groups HAL-250, HAL-125, HCL-500, HCL-250, HAS-5000, HCS-500, HHS-500, and HHS-250 compared to hyperlipidaemic control (HC). There was substantial body weight gain in hyperlipidaemic control rats compared normal control rats throughout the 8 weeks of the study. The study revealed that almost all the extracts of *F. polita* have anti-hyperlipidaemic potential, as they reduced TG, TG, LDL, and slightly increased HDL blood levels of the dietary induced hyperlipidaemic *wistar* rats. Chloroform leaf extract (HCL-500) was found to be the most potent of the extracts.

Keywords: *Ficus polita*, hyperlipidaemia, leaf, stem bark.

ENP 108

EFFECT OF AQUEOUS LEAF EXTRACT OF WATER LETTUCE SUPPLEMENTATIONS ON SOME LIVER PARAMETERS IN CARBON TETRACHLORIDE (CCL4)-INDUCED LIVER DAMAGE IN RATS

***Wasagu, I.Z. and Bunza, F.U.**

Department of Chemical Pathology, Faculty of Medical Laboratory Sciences,
Usmanu Danfodiyo University P.M.B. 2346, Sokoto, Nigeria
*Corresponding Author: ibrahimzubairu7@gmail.com, Tel: +237064565488

Abstract

Water lettuce is a plant used traditionally to treat various diseases such as skin infections, diabetic, liver disease, ulcer etc. The present study was designed to evaluate the effect of *pistia stratiotes* against carbon tetrachloride (ccl4) induced liver damage in rat. Twenty five rats divided into 5 groups of 5 rats each were used in this experiment. Groups 3, 4 and 5 were intraperitonially administered 1mg/kg of ccl4 (30 %) + paraffin (70 %) to each treated groups and parentarally administered 100 mg/kg, 200 mg/kg and 300 mg/kg of aqueous leaf extract of *pistia stratiotes* to the treated groups respectively. Group 1 served as positive control and was given the vehicle while group 2 served as negative control and was induced using ccl4. The serum protein (7.90 g/dl) and Albumin (4.80 g/dl) were significantly ($P<0.05$) lower than control in group 3 (100 mg of extract) while prothrombin time (14.06 s) and Alanine amino transferase activity (35.504/l) were both significantly higher than control ($P<0.05$). Group treated with 300mg of the extract after administration of ccl4 showed non-significant ($P>0.05$) increase of prothrobin time (11.565 s) and Alamine amino transferase activity (30.034/l). This study indicates that aqueous leaf extract of *pistia stratiotes* may possess some hepatoprotective activity.

Key Words: *Pistia stratiotes*, hepatoprotective, intraperitonial, parentaral.

ENP 109

MONOSUBSTITUTION MODIFICATION OF OLEANOLIC ACID FOR DRUGLIKENESS IMPROVEMENT; THE IN-SILICO PHARMACOKINETICS

***[1]O. A Durojaye, [1]S. Cosmas, [1]P. T Okoli, [1]D. E Anyebe, [1]E. N Akpan, [1]R. C Anozie**

[1]Department of Biochemistry, University of Nigeria, Nsukka, University of Nigeria, Nsukka.
Corresponding Author's Email and Phone Number: lanre.durojaye@yahoo.com, +2348120814475

Abstract

Oleanolic acid is a pentacyclic triterpene, found in the non-glyceride fraction of olive pomace oil, is a blend of refined-pomace oil and virgin olive oil, fit for human consumption). Pentacyclic triterpenes are natural compounds which are widely distributed in plants. The triterpenes have a history of medicinal use in many Asian countries. Oleanolic acid exhibits both pro- and anti-inflammatory properties depending on chemical structure and dose and may be useful in modulating the immune response; further studies are required to confirm the immunomodulatory behaviour of this triterpenoid, and characterise the mechanisms underlying the biphasic nature of some aspects of the inflammatory response. Oleanolic acid is a ubiquitous triterpenoid in plant kingdom, medicinal herbs, and is an integral part of the human diet. Various modifications were made by substituting the COOH group attached to the C_5 of oleanolic acid with CH_3, C_2H_5, $CONH_2$, NH_2, OCH_3 and OH groups respectively. The 2D structure of oleanolic acid and its modified derivatives were designed using the Marvin Sketch software. The 2D structures were saved as mrv files and converted into canonical SMILES strings using the OpenBabel software. The SMILES strings were used in the building of the 3D structure of the compounds which were minimized and visualized with the use of the Chimera and Pymol software respectively. The druglikeness parameters of oleanolic acid and its modified analogues were estimated using the Swiss ADME software. After the monosubstitution modifications made to oleanolic acid, the compound and its derivatives still remained poorly soluble with low lipophilicity values which resulted into a single violation in the lipinski's rule of 5. A positive improvement was observed in the $CONH_2$ derivative of oleanolic acid in the aspect of gastrointestinal absorption which appeared to be high compared to others with low gastrointestinal absorption rate. The synthetic accessibility values of all the compounds were also less than 7. The result obtained from this research has shown that the $CONH_2$ derivative of oleanolic acid might be the most druglike therapeutic option among all other derivatives of oleanolic acid used for this study. The synthetic accessibility values also indicated that the compounds can easily be synthesized in the laboratory. The laboratory synthesis of the $CONH_2$ derivative of oleanolic acid and the molecular docking study against parasitic enzymes is therefore recommended to confirm its therapeutic potentials.

Keywords: Oleanolic acid; Tritepernoids; SMILES; Druglikeness

ENP 110
EFFECT OF AQUEOUS LEAF EXTRACT OF *PISTIA STRATIOTES* AGAINST CCL4-INDUCED LIVER DAMAGE ON BODY WEIGHT OF ALBINO RATS

***Wasagu, I.Z. and Bunza, F.U.**
Department of Chemical Pathology, Faculty of Medical Laboratory Sciences,
Usmanu Danfodiyo University P.M.B. 2346, Sokoto, Nigeria
*Corresponding Author: ibrahimzubairu7@gmail.com, Tel: +237064565488

Abstract
Pistia stratiotes is a plant used traditionally to treat various diseases such as skin infections, diabetic, liver disease, ulcer etc. The present study was designed to evaluate the effect of *pistia stratiotes* against carbon tetrachloride (ccl4) induced liver damage in rat. Twenty five rats divided into 5 groups of 5 rats each were used in this experiment. Groups 3, 4 and 5 were intraperitonially administered 1mg/kg of ccl4 (30 %) + paraffin (70 %) to each treated groups and parentarally administered 100 mg/kg, 200 mg/kg and 300 mg/kg of aqueous leaf extract of *pistia stratiotes* to the treated groups respectively. Group 1 served as positive control and was given the vehicle while group 2 served as negative control and was induced using ccl4. The body weight of the animals were 25.80±1.22 g, 27.90±0.30 g, 24.00±0.17 g, 26.00±1.32 g and 29.80±0.55 g in controls, groups 3, 4 and 5 respectively, as against the body weight of 25.40±0.90 g, 29.00±0.34 g, 25.10±0.11 g, 27.10±1.01 g and 31.20±0.62 g before administration of carbon tetrachloride (ccl4) as well as aqueous leaf extract of *pistia stratiotes*. All values are not significantly ($P>0.05$) different from the initial weight. This study indicates that aqueous leaf extract of *pistia stratiotes* may possess some hepatoprotective activity on body weight of the rats.

Key Words: *Pistia stratiotes*, body weight, hepatoprotective, intraperitonial, parentaral.

ENP 111
BIOGUIDED ANTIMALARIAL AND HEPATOPROTECTIVE POTENTIALS OF *T. GLAUCESCENS* STEM BARK IN *plasmodium berghei* INFECTED MICE.

Eustace B. Berinyuy[1,3], Mann Abdullahi[2], Adamu, Y. Kabiru[3], Emmanual O. Ogbadoyi[3].

1 Faculty of Medicine and Biomedical Sciences, University of Yaounde1, Cameroon
2 Federal University of Technology, School of Life Sciences, Department of Chemistry, Minna, Nigeria
3 Federal University of Technology, School of Life sciences, Department of Biochemistry, Minna, Nigeria.

Abstract
The use of plants for the treatment and alleviation of diseases dates back since the prehistoric times. Bio guided fractionation of 80% methanol was used to investigate antimalarial activity of *T. glaucescens* and the fractions evaluated for liver function indices. Secondary metabolites present in the extracts were determined using standard procedures. The *in vivo* antiplasmodial effects were evaluated using curative model. Packed cell volume (PCV), bodyweight and mean survival time of mice were determined. The study revealed a significant ($P<0.05$) dose dependent decrease in parasitaemia level in the crude extracts compared to the negative control. The parasitized groups treated with extracts at 100, 300, and 500 mg/kg bodyweight produced percentage suppressive parasitaemia of 45.95%, 59.61% and 66.31%. The positive control group treated with chloroquine 5 mg/kg bodyweight showed the highest parasitaemia suppression of 76.88% and extended the survival period to more than 30 days. The infected nontreated group had increasing parasitaemia and all died before the 10^{th} day. All the extracts employed in this study have significant prevention of weight and PCV reduction at all dose level. The phytochemical studies revealed the presence of phenols (0.86±0.05), alkaloids (0.49±o.05), saponins (0.12±0.01), Tannins (0.05±0.08) and flavonoids (0.086±08) mg/100g. The extract was safe with LD_{50} at 3808 mg/kg bodyweight. The percentage parasite inhibition in methanol partition were 66.95, 69.01 and 71.53% in groups treated with 100,200 and 300 mg/kg bodyweight. The ethylacetate partition exhibited higest percentage inhibitions of 67.44, 69,86, and .73,13%. The column fractions showed a dose dependent antimalarial activity. It was observed that the ALT and ALP activity were significantly ($P<0.05$) higher in infected nontreated than the infected treated groups with fractions. The results suggest the plant is safe and hepatoprotective and hence, justify the use of the plant in traditional medicine to treat malaria.

Key words: *Terminalia glaucescens*, bioguided, antimalarial, hepatoprotective

ENP 112
ANTIBACTERIAL ACTIVITY OF LEAF EXTRACTS OF *FICUS POLITA*

[*1]Nasir, A., [2]Alhassan, A.J., [1]Yaradua, A.I., [2]Muhammad, I.U., [2]Idi, A., [1]Matazu, K.I., [1]Usman, A., [1]Muhammad, I., [1]Umar, M.I. and [1]Suleiman, Z.A.

[1]Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria.
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano, Nigeria.
*Corresponding Author Email: amnuf81@gmail.com Phone: +2348036851879

Abstract
Bacterial infections have been significant causes of mortality and morbidity in tropical countries. The alarming increase of bacterial resistance to existing antimicrobial agents has become a real challenge facing patients suffering from various infections. Antibacterial activity of leaf extracts (aqueous, chloroform, and n-hexane) of *F. polita* against bacterial isolates *(Staphylococcus aureus, Escherichia coli,* and *Pseudomonas aeruginosa*) was evaluated. Agar well diffusion method was used to test the antibacterial activity. All the extracts, at 100 mg/ml, had a remarkable activity against all the test organisms. All the test organisms showed resistance to the n-hexane extract at 12.5 mg/ml. The aqueous and chloroform extracts had minimum inhibitory concentration (MIC) value of 12.5 mg/ml for *P. aeruginosa*, and *E. coli*, respectively. It may be concluded, from this study, that the leaf extracts (aqueous, chloroform, and n-hexane) demonstrated some degree of antibacterial activity against *S. aureus*, *E. coli*, and *P. aeruginosa*. Hence, *F. polita* has a great potential as an antibacterial agent.

Keywords: *F. polita*, leaf, bacterial isolates, agar well diffusion.

ENP 113
CARCASS, BLOOD AND ATHEROGENIC CHARACTERISTICS OF BROILER CHICKENS FED ON MIXED SPICES SUPPLEMENTED DIETS

IDOKO, A.S[1]; Zaharaddeen, A.S[1]; Sabiu, U.A[1]*; Alao, S. O[1]; Idoko, I[1]; and Saidu, M[1].

1 Department of Biochemistry, Federal University Dutsinma, Katsina state, Nigeria
Correspondence E-Mail; umarsabiu5@gmail.com Phone +2347062201568

Abstract

This research was conducted to determine the carcass, blood characteristics and lipid profiles of broiler chickens fed on mixed spices supplemented diet. Dried and pulverized spices; *Allum sativum*, *Zingiber officinale* and *Punica granatum* were mixed in ratio of 2:2:1 respectively. One hundred and forty-eight (148) a day-old broiler chickens (168.42 ±2.55) were divided into four groups of 37 chickens. Group A was maintained on non supplemented starter and finisher feed (control). Groups B C and D were respectively fed on non supplemented starter feed but 2% mixed spices supplemented finisher, 2% mixed spices supplemented starter but non supplemented finisher feed, and 2% mixed spices supplemented starter and 2% mixed spices supplemented finisher. The birds were maintained on their respective experimental diets and water *ad libitum* for additional six weeks. The feed intake, change in body weight, dressing codes, and percentage organ to carcass weight, lipid and hematological profiles were determined using standard methods. Increase in weight (1075.2 ±16.57g) was significantly lower ($p>0.05$) in the birds fed on 2% mixed spices supplemented starter diet compared to the control (1163.4 ±24.18g) at the end of the third week. The dressing codes, organs to carcass ratio, hematological and lipid profiles of birds fed on 2% mixed spices was found not to be significantly different from the control. Conclusively, the use of mixed *Allum sativum*, *Zingiber officinale* and *Punica granatum* as feed supplement in broiler chickens may not cause any changes in studied parameters in birds.

ENP 114
IN VIVO A-AMYLASE AND A-GLUCOSIDASE INHIBITION BY AQUEOUS LEAF EXTRACT OF *Anacardium occidentale* LINN IN EXPERIMENTAL RATS

Abubakar Gidado*, Rabiu Shehu Saad and Miriam Watafua

Department of Biochemistry, Faculty of Science, University of Maiduguri, Maiduguri, Borno State
*Corresponding Author: Email- abugidado@unimaid.edu.ng, Mobile number - 08032828098

Abstract

Anacardium occidentale Linn is being used to treat several ailments including diabetes mellitus. To explore the underlying mechanism of its antidiabetic potential, α-amylase and α-glucosidase inhibitory activity of aqueous leaf extract of the plant was evaluated *in vivo*. Experimental rats were co-administered different doses of the extract and starch for α-amylase inhibition and maltose or sucrose for the α-glucosidase inhibition. Acarbose was used as the standard drug to make comparisons. The extract at 200mg/kg dose significantly inhibited blood glucose rise when administered with starch and was comparable with the acarbose. The extract however did not affect the rise in the blood glucose level of the experimental rats following its administration with either maltose or sucrose. Inhibition of α-amylase but not α-glucosidase may therefore be responsible for the therapeutic potential of *Anacardium occidentale* Linn in managing diabetes mellitus.

ENP 115
EVALUATION OF *IN VITRO* ANTIBACTERIAL ACTIVITY OF CRUDE LEAF EXTRACTS OF *CASSIA TORA*

ABUBAKAR ABDULHAMID*[1], IBRAHIM SANI[1] AND OKWUOGORI CHIBUZOR NOBLE[1]

Department of Biochemistry, Kebbi State University of Science and Technology, , Aliero, Kebbi State
* Corresponding author: abuaugie132@yahoo.com

Abstract

Infectious diseases caused by bacteria, fungi, parasites and viruses are still a major threat to public health. Their impact is particularly large in developing countries due to the relative unavailability of medicines and the emergence of widespread drug resistance. This has lead to the search of new antimicrobial agents mainly among plant extracts. Hence, there is need to carry out scientific research to confirm the potency of plant extracts**.** Preliminary phytochemical screening was done on ethanol and petroleum ether extracts of *Cassia tora* leaves using standard methods while the antibacterial activity was done using disc diffusion method. The results for the phytochemical secreening showed the presence of tannins, alkaloids, anthraquinones, flavonoids and steroids except for saponins which were not detected in both extract. The results for the antibacterial activity of the ethanol and petroleum ether extracts showed varying degree of inhibitory potential against the tested bacteria. However, ethanolic extract showed a higher degree of inhibition compared to petroleum ether extract. For the ethanol extract, the lowest minimum zone of inhibition (9.00±1.73mm) was observed against *Shigella dysenteriae* while the highest zone of inhibition (15.67±1.15mm) was observed against *Escherichia coli*. For the petroleum ether extract, the lowest zone of inhibition (3.67±0.58mm) was observed against *Salmonella typhi* while the highest zone of inhibition (12.00±1.00mm) was observed against *Staphylococcus aureus*. The result of the present study signifies the potential of *Cassia tora* leaf as a source of therapeutic agents, which may provide leads in the ongoing search for antimicrobial agents from plants.

Keywords: *Cassia tora*, antibacterial activity, phytochemicals, ethanolic extract and zone of inhibition.

ENP 116
COMPARATIVE PHYTOCHEMICAL ANALYSIS OF RED AND WHITE *Hibiscus Sabdariffa*

[1*]Abubakar, A. L., [1]F.A Farouk, [2] Magaji, U. F. and [1] Dandare, A.
[1]Department of Biochemistry, Usmanu Danfodiyo University, P.M.B. 2346, Sokoto, Nigeria,
[2]Departemnt of Biochemistry and Molecular Biology, Federal University Birnin-Kebbi, Nigeria,
*Corresponding email-address: abubakar.aminu3@udusok.edu.ng

Abstract

Hibiscus sabdariffa are widely consumed in Northern Nigeria either as juices (red calyces) or as culinary and vegetable in soup and other food types (white calyces). Both calyces have varied applications in folk medicine; for ailment of wide range of common illnesses such as cold, rashes, inflammation, antiemetic, diuretics and constipation. In this study, comparative qualitative and quantitative phytochemical compositions of the white and red *H. sabdariffa* calyces were investigated using standard methods. Higher amount of flavonoids and glycosides were detected in the red variety in contrast to moderate and trace amount respectively found in the white type. In both varieties moderate and trace amounts of saponins and steroids were detected, respectively. However, moderate amount of tannins and trace amount of balsams was detected only in the red calyces. Alkaloids, cardiac glycosides, anthraquinones, and volatile oils were neither detected in the red nor the white variety. The tannins concentration in the red calyces (6.767 ± 0.058 %w/w) was quantitatively higher ($P<0.05$) than that of other phytochemicals. More so the quantitative value of flavonoids, saponins and glycosides of the red variety was statistically higher ($P<0.05$) than that of white calyces, but was insignificant for steroids concentration ($P>0.05$). This study reveals that the red variety of *H. sabdariffa* is a better source of phytochemicals compared to the white variety. Consequently supports the wider usage of red *H. sabdariffa* juice and calyces in folk medicinal practices when comparison to the white type.

Keywords: *H. sabdariffa*, Calyces, Phytochemicals, Comparative analysis, "Zobo"..

ENP 117
IMPACT OF ETHANOLIC EXTRACT OF *Tecoma stans* AND *Costus afer* LEAVES ON LIPID PROFILE STATUS OF STREPTOZOTOCIN INDUCED DIABETIC WISTAR RATS.

***EKPE, Ini Patrick [1]. Udosen, Esua Orok[2]., Dennis, Amaechi[1]., Okwuchi, Flora Ugoanyanwu[1]., Yisa, Benjamin[1].**
[1] Dept. of Biochemistry, College of Natural and Applied Sciences,Veritas University, Bwari, Abuja
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar, Nigeria
[*]Corresponding author:iekpe@yahoo.com 08037092538

Abstract

The lipid profile status of streptozotocin induced diabetic rats treated with ethanolic extract of *Tecoma stans* and *Costus afer* leaves using seventy (70) male wistar rats divided into five (5) parallel group consisting of diabetic (DC) and non diabetic (ND) groups of seven (7) rats per group. Group I received placebo (Control) Group II received insulin (humulin 5mg/kg body weight) Group II received Ts 250mg/kg Body weight) Group IV, received Ca (200mg/kg Body weight) Group V received combined extracts TS (150mg/kg body weight) A and a (100mg/kg body weight). The extracts were administered orally while insulin was subcutaneously. The treatment lasted for 21 days after, The animals were sacrificed and whole blood was collected for biochemical analysis. There was no significant increase in total cholesterol among insulin, *Tecoma stans* and combined therapy when compared to NC. HDL-C was significantly ($P<0.05$) higher in non diabetic group treated with *Costus afer* and combined therapy compared to NC, insulin and *Tecoma stans* in the non diabetic group while the total cholesterol levels in the serum was significantly ($p<0.05$) higher in diabetic control group and those administered insulin, Tc and Ca compared in NC. HDL-C concentration in *Tecoma stans* and *Costus afer* treated group were significantly increased ($P<0.005$) compared to NC in diabetic study group. From the result obtained from the study, it may be concluded that the ethanolic extracts of *Tecoma stans* and *Costus afer* leaves has hypolipidemic, hepatoprotective properties and may be able to alleviate oxidative stress induced by streptozotocin in wistar rats.

ENP 118
EVALUATION OF SOME VITAMINS AND MACRO-NUTRIENTS COMPOSITION OF ETHANOLIC EXTRACT OF *Tecoma stans* AND *Costus afer* LEAVES.

***EKPE, Ini Patrick[1]., Udosen, Esua Orok[2]., Dennis, Amaechi[1]., Okwuchi, Flora Ugoanyanwu[1] .,Yisa, Benjamin[1]**

[1] Department of Biochemistry, College of Natural and Applied Sciences,Veritas University, Bwari, Abuja

[2]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar, Nigeria

[*]Corresponding author:iekpe@yahoo.com 08037092538

Abstract

Some vitamins and mineral composition of ethanolic extract of leaves of *T.stans* and *C. afer* evaluated were collected at Malabo Campus, University of Calabar, Calabar and from Eman-Uruan local government area, Akwa Ibom, Nigeria respectively. The parameters investigated were determined using standard biochemical methods. This showed that the leaves contain a variety of vitamins (A, D, E, Bcomplex and C) with vitamin E- (276.33.±3.28mg/100g) for *Tecoma stans* and (265.67±5.49mg/100g). T. s recorded higher concentration in mg/100l for the determined vitamins except for vitamin D, whose concentration for *Costus afer* (0.09±0.01 mg/100g) was higher than the value (0.07±0.01mg/100g) for T.s though it was significant. T.s is significantly different [P=.05] from *C. afer* for vitamins A and C respectively. The mineral compositions of *Tecoma stans* and *Costus afer* leaves contain considerable amount of Potassium (3.27 ± 0.009mg/l) and (4.63±0.09mg/l), Magnesium (26.03 ± 0.009mg/l) and (89.83±0.91mg/l), Sodium(5.27 ± 0.078mg/l) and (16.23±0.12mg/l),Calcium (25.33 ± 0.88mg/l) and (82.00±1.53mg/l), Phosphorus(2.27±0.09mg/l) and (1.63±0.09mg/l), respectively. *Costus afer* contained significant ($P < 0.05$) higher concentration of magnesium, Calcium, Potassium and Sodium compared to *T.stans*. This indicates the tendency of *T.stans* and *C. afer* to be able to control osmotic balance, essential for bone formation, lower blood pressure and also act a source of antioxidant vitamins and minerals. The presence of these vitamins and minerals in both *T.stans* and *C.afer* leaves in this leafy vegetables supports the use of these leaves for food and ethnomedicinal purposes in Nigeria and parts of the world at large where they are cultivated.

ENP 119
PHYTOCHEMICAL SCREENING OF PREPARATIVE THIN LAYER CHROMATOGRAPHY FRACTIONS OF *Sida linifolia* CHLOROFORM LEAF EXTRACT

[*1]Idi, A., [1]Atiku, M.K., [1]Alhassan, A.J., [1]Muhammad, Y.Y., [1]Imam, A.A., [2]Muhammad, I.U., [3]Nasir, A. and [3]Yaradua, A.I.

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano,

[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Yusuf Maitama Sule University Kano

[3]Department of Biochemistry, Faculty Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria.

*Corresponding Author Email: amin2idi66@gmail.com Phone: +2348023098613

Abstract

Plants are important sources for the discovery of novel pharmacological active compounds, and many drugs have been directly or indirectly derived from plants. The study was aimed to screen chloroform leaf extract of *S. linifolia* for phytochemicals. Chloroform leaf extract of *S. linifolia* was fractionated by preparative thin layer chromatography (TLC) using silica gel (G) stationary phase and 100% chloroform mobile phase. Qualitative phytochemical screening of the fractions was determined using standard methods. Preparative thin layer chromatography (TLC) results showed the presence of five (5) fractions (F1, F2, F3, F4, and F5). Qualitative phytochemical screening revealed the presence of: alkaloids in F3, terpenoids in F5, and flavonoids; cardiac glycosides; steroids in F4. The study showed that the chloroform leaf extract of *S. linifolia* may have the potential to act as medicinal plant due to the presence of the phytochemicals.

ENP 120

EFFECTS OF METHANOL LEAF EXTRACT AND FRACTIONS OF *Momordica balsamina* Linn. ON GENTAMICIN-INDUCED NEPHROTOXICITY IN ALBINO RATS

AYINLA, Abayomi Abdulfatai* and UMARU, Hauwa Aduwamai

Department of Biochemistry Modibbo Adama University of Technology, Yola, Adamawa State

Abstract

The study investigated the effects of methanol leaf extract and fractions of *Momordica balsamina* Linn. on gentamicin-induced nephrotoxicity in albino rats. Fifty-four male albino rats weighing 100 ± 10g were randomly divided into nine (9) groups of six (6) rats per group. Group I served as a normal control while the other eight (8) groups were administered inter-peritoneally with gentamicin (80mg/kg body weight per day) for seven (7) days to induce nephrotoxicity. Group II served as nephrotoxic (experimental) control. Group III was subsequently treated with standard drug (Furosemide, 80mg/kg body weight per day). Methanol leaf extract, Fractions I and II of the leaf extract of *Momordica balsamina* Linn. at a daily dose of 200 and 400mg/kg body weight respectively were used to treat Group IV and V, VI and VII and VIII and IX separately. All treatments were carried out by oral gavages for fourteen (14) consecutive days. Assays of renal function biomarkers (serum electrolytes, urea, and creatinine), hematological profile and histopathological examination of kidney tissues were also determined. Results obtained showed that gentamicin administration induced nephrotoxicity in albino rats which was characterized by significant ($_P$<0.05) elevation of all renal injury biomarkers and renal tubular necrosis when compared with the normal control group. However, oral post-treatments with leaf extract, fractions I and II of *Momordica balsamina* Linn. in a dose-dependent manner compared to the normal control restored all the indices with significant ($_P$<0.05) restoration observed in fraction II. Hence, *Momordica balsamina* Linn. leaf is effective in ameliorating renal injuries in albino rats.

Keywords: *Momordica balsamina*, Gentamicin, Nephrotoxicity, Renal injury, Ameliorate.

ENP 121

COMPARATIVE YIELD OF FLAVONOIDS, EXTRACTED FROM LEAF OF *Sida ovata*, BETWEEN HOT WATER BATH AND ULTRASOUND ASSISTED EXTRACTION TECHNIQUES.

[*1]Idi, A., [1]Atiku, M.K., [1]Alhassan, A.J., [1]Muhammad, Y.Y., [1]Imam, A.A., [2]Muhammad, I.U., [3]Nasir, A. and [3]Yaradua, A.I.

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano, [2]Department of Biochemistry, Faculty of Basic Medical Sciences, Yusuf Maitama Sule University Kano, [3]Department of Biochemistry, Faculty of Sciences, Umaru Musa Yar'adua University, Katsina, Nigeria.

*Corresponding Author Email: amin2idi66@gmail.com Phone: +2348023098613

Abstract

Sida ovata (Malvaccae) is one of the important herbal drug with wide range of pharmaceutical properties such as wound healing and antimicrobial activity. The study was aimed to compare hot water bath and ultrasound assisted extraction techniques in the extraction of flavonoids from *S. ovata*. Flavonoids were extracted by: hot water bath at 100˚C for 1 hour, and ultrasound bath at 50˚C for 30 minutes. Flavonoids extracted using hot water bath and ultrasound assisted techniques were 0.48g and 0.89g, respectively. Ultrasound assisted technique was found to give higher yield than hot water bath technique.

ENP 122
EFFECTS OF *A. digitata* and *C. olitorius* LEAF BASED-DIET ON NRF-2, NFKB AND MICRONUCLEI INTEGRITY: POSSIBLE ROLES OF Γ-IRRADIATION IN RATS

BELLO, Olamilekan Kabir[1*], OLOYEDE H. O. Bukoye[1]

[1] Department of Biochemistry, Faculty of Life Sciences, University of Ilorin
Email of Corresponding Author: Karbanion001@yahoo.com
Phone Number: +2348062659697

Abstract

Humans are inseparable from phones, laptops, telecommunication mast, because they have ushered in new era of ease and accessibility, the truth is, they are source of γ-radiation. γ-radiation increases physiological free radical from 20ug/dl to 120ug/dl in humans, thus the need to protect or treat. Hence, the research investigated the effects of *A. digitata* and *C. olitorius* leaf based-diet on rat exposed to 6 grey γ -radiation. Total of thirty-six (36) rat were divided into 6 of 6 animal each (A-F). Group A received normal rat chow and water only, B were exposed to 6 grey γ-radiation only. Group C, D, E and F were exposed to γ-radiation and were administered with *A. digitata* and *C. olitorius* leaf-based diet at 1000 mg/kg bwt for1 week and F received Vitamin C based-diet. They were sacrificed, blood and tissues were collected for biochemical assays. The result obtained from secondary metabolite screening of *A. digitata* and *C. olitorius* leaf revealed the presence of saponnins, alkaloids, polyphenols and tannins. There were significant ($P<0.05$) increase in NFKB and micro nucleated polychromatic erythrocyte and significant ($P<0.05$) reduction in Nrf-2 status in rat exposed to 6 grey γ-radiation, this further lend credence to the hazardous effects of γ-radiation by previous report. However administration of *A. digitata* and *C. olitorius* leaf based-diet at 1000 mg/kg bwt significantly ($P<0.05$) ameliorate and protect against the effect of γ-radiation. It is logical to conclude that *A. digitata* and *C. olitorius* be used as oral remedy in the treatment free radical diseases.

Keywords: Radiation, Micro nucleated, polychromatic erythrocyte, gamma, Irradiation, Free Radical

ENP 123
CO-ADMINISTRATION OF PARACETAMOL AND AQUEOUS EXTRACT OF *Hibiscus sabdariffa* LINN AMELIORATES PARACETAMOL INDUCED NEPHROTOXICITY IN MICE.

ORJI Blessing Ogechukwu[1]*, OBI Frederick Otunuya[2], MODO Emmanuel Uchechukwu[3], OSIBEMHE Martin[1]

[1]Department of Biochemistry and Molecular Biology, Faculty of Science, Federal University Dutsin-ma, Katsina State, Nigeria.
[2]Department of Biochemistry, Faculty of Life Sciences, University of Benin, Benin City, Edo State
[3]Dept. of Biochemistry, Faculty of Science, Madonna University Nigeria, Elele Campus, Rivers State
*Corresponding author E-mail: blessingoorji@gmail.com, phone number: +2348022226832

Abstract

The impact of co-administration of paracetamol and aqueous extract of *Hibiscus sabdariffa* Linn calyx on nephrotoxicity prompted by paracetamol, under acute and sub-acute treatments was assessed. Four groups, each of them having 5 mice were involved in this study: control, extract-treated, paracetamol-treated and co-treatment with extract and drug. The extract and drug were given by oral route (250mg/kg and 500mg/kg respectively) to the animals. Treatment with paracetamol significantly increased ($P\leq0.05$) creatinine and urea, and reduced bicarbonate and sodium levels when compared to the control group.

Also significantly reduced (P≤0.05) were superoxide dismutase and catalase activities alongside the level of reduced glutathione, while the value of malondialdehyde was significantly increased (P≤0.05). Co-administration was seen to attenuate the changes brought about by paracetamol in the parameters studied. Assessment of histopathology of kidney segments indicated that treatment with the drug caused acute tubular necrosis and necrotizing pyelitis while co-treatment of drug with extract provided protection. Co-administration of paracetamol and extract was shown to enhance kidney function in response to toxicity caused by paracetamol in mice. The source of this amelioration may be due to the antioxidant components of the extract which have been widely reported.

Keywords: *Hibiscus sabdariffa* Linn, nephrotoxicity, paracetamol, co-administration.

ENP 124
ANTIDIABETIC EFFECTS OF COMBINATIONS (RATIOS) OF SELECTED NIGERIAN ANTIDIABETIC PLANTS

***Ezekwesili C.N[1]., Asomugha R.N[2]., Ekwunife C.A[4]., Ekwealor C.C[3]and Adindu S.C[1]**

1. Department of Applied Biochemistry, Nnamdi Azikiwe University, Awka, Nigeria.
2. Department of Industrial Chemistry, Nnamdi Azikiwe University, Awka,Nigeria.
3. Department of Applied Microbiology, Nnamdi Azikiwe University, Awka, Nigeria.
4. Department of Parasitology and Entomology, Nnamdi Azikiwe University, Awka, Nigeria.

* Corresponding E-mail: cnezekwesili@yahoo.com

Abstract

Herbal preparations are produced from separate plants, various plant combinations or combinations of different species of the same plant. *Nauclea latifolia* root, *Acalypha torta* leaves, *Gongronema latifolium* leaves, *Cinchona calisaya* bark and *Moringa oleifera* leaves are Nigerian medicinal plants with scientifically established antidiabetic properties. The antidiabetic activities of various combinations of these plant samples were then studied in alloxan-induced diabetic wistar albino rats to determine the most efficacious combination (ratio). **Materials and Methods:** Diabetes mellitus was induced with alloxan monohydrate, 150.0 mg/kg wt. (i.p). The various plant samples were collected, washed, dried and pulverized. Various combinations (A – H) of the above plants were prepared by mixing varying ratios of the samples. Different groups of diabetic rats were treated with 50.0 and 100.0 mg/kg wt of the ethanol and aqueous extracts of each combination. Rats in the reference group were treated with glibenclamide, 20.0 mg/kg wt. Alloxan, extracts and glibenclamide were solubilized in distilled water. Phytochemical analyses and acute toxicity testing for each combination were carried out using standard experimental methods. The doses-response study was also carried out for the most effective combination. **Results:** Results indicated that all the combinations exhibited significant ($p<0.05$) antidiabetic activities and the most effective combination (aqueous extract of D) reduced rat blood glucose level by 52.4%. This extract was most potent at a dose of 100.0 mg/kg wt. when taken orally, and contained alkaloids (6.8%), flavonoids (9.2%), saponins (13.2%) and tannins (2.0%). Doses of the extract ≤ 5,000 mg/kg wt did not cause any behavioural changes or mortality in the animals. **Conclusion:** Therefore, these antidiabetic plants are effective either separately or in combination with other plants and may be regarded as non-toxic to the animals.

Keywords: Antidiabetic, *Nauclea latifolia*, *Acalypha torta*, *Gongronema latifolium*, *Cinchona calisaya*, *Moringa oleifera*

ENP 125

EFFECT OF ALKALIS, SUGARS, VEGETABLE OIL AND SODIUM CHLORIDE ON GELATINIZATION PROPERTIES OF STARCHES FROM *Colocasia esculenta* and *Colocasia antiquorum*

Cyril-Egware K.Y.,* Onukogu S.C., Egwim E.C. and Ossai P.C.

Department of Biochemistry, Federal University of Technology Minna
*karinateegware@outlook.com; 08160421485

Abstract

Cocoyam is a root and vegetable crop, rich in carbohydrate and cultivated mainly for food. The corms are boiled and used as soup thickeners, pounded fufu or roasted in fire and eaten. Cocoyam serves is an alternative source of starch and can be employed for industrial uses. The work is based on modification of starch in order to get starch for industrial processes. The amylose content, effect of alkalis, sugars, sodium chloride and vegetable oil on gelatinization time and temperature of the pink and white cocoyam starches were determined. The microscopy of both starches was also evaluated using fluorescent microscopy. The results revealed that the yield, amylose content and the gelatinization time and temperature of the native starches of pink and white cocoyam were 11.1% & 5%; 81% & 83% and 1:43mins $(55\text{-}60)^0$C & 1:02mins $(57\text{-}66)^0$C respectively. The presence of sugars, and vegetable oil increased gelatinization time and temperature while the alkalis and sodium chloride reduced the gelatinization time of the pink cocoyam starch but the gelatinization temperature of both starches increased. The microscopy indicated that the pink and white cocoyam starches have granular shapes that are spherical but the pink cocoyam starch granules appeared larger. The gelatinization property of these starches would be beneficial in industrial processes like gum production, thickening, binding and improvement of digestibility. The alkali modification of starch improves its use as binder and thickeners while the sugar modification can be applied in production of sweeteners and lipid modification makes starch better emulsifiers.

Keywords: alkali, cocoyam, gelatinization time, gelatinization temperature, granular shape, physicochemical and structural properties, sugars, starch.

ENP 126

SEED OIL FROM *Monodora myristica* (GAERTN) DUNEL AMELIORATES HEPATOTOXICITY AND OXIDATIVE STRESS INDUCED BY CARBON TETRACHLORIDE IN RATS

***EKEANYANWU, Raphael Chukwuma and MADUEKE, Patricia Chiamaka**

Department of Biochemistry, Imo State University Owerri, Imo State, Nigeria, P.M.B 2000
*Corresponding author email: ekeanyanwuraphael@yahoo.com, Phone: +2348032744572

Abstract

Effects of the Seed Oil of *Monodora myristica* (SOMM) were evaluated on some biochemical parameters related to oxidative stress and hepatotoxicity in normal and stressed rats. The effect was assessed by measuring liver marker enzymes activity, analysing the antioxidant parameter, lipid peroxidation by-product and other related biochemical parameters following carbon tetrachloride (CCl_4) induced-oxidative stress. Thirty rats were grouped into six groups of five animals each, namely: control groups and experimental groups. The experimental groups were treated with 1.0 ml/kg b.wt CCl_4, 100 mg/kg b.wt silymarin on alternate days, 10 ml/kg b.wt or 5 ml/kg b.wt of the SOMM were administered to the CCl_4 treated rats for 8 days on alternate days. At the end of the experimental study, levels of serum hepatic enzyme biomarkers (SGPT, SGOT and SALP) as well as Lipid peroxidation product (MDA) and Total bilirubin were significantly raised in the CCl_4 treated groups. Conversely, CCl_4 administration elicited obvious decline in enzymatic and non enzymatic antioxidants (GSH, CAT, SOD, vitamin C, vitamin E) co-treatment with SOMM of *M. myristica* at variable doses as well as silymarin substantially reduced the raised levels of the serum hepatic enzyme biomarkers as well as MDA in the CCl_4 treated groups in a dose dependent manner. Additionally, SOMM of *M. myristica* exhibited reversal potential on CCl_4 toxicity at the tested doses as its administration resulted to a noticeable increase in GSH, SOD and CAT levels. However histopathological results demonstrate that SOMM of *M. myristica* is effectual in the amelioration of hepatic damage and oxidative stress arising from CCl_4 induced hepatotoxicity.

Keywords: *Monodora myristica;* seed oil; biochemical parameters; oxidative stress; rats.

ENP 127

HISTOPATHOLOGY STUDIES OF *Spondias mombin* AND *Aspilia africana* AQUEOUS EXTRACTS ON RATS WITH MONOSODIUM GLUTAMATE-INDUCED LEIOMYOMA

EZE-STEVEN, Peter Emeka [*1] and UDEDI, Stanley Chidi [2]

1 Applied Biochemistry Department, Enugu State University of Science and Technology, Agbani, Enugu
2 Applied Biochemistry Department, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.
*****Author for Correspondence. Email: pejansej@yahoo.co.uk. Telephone: +234-803-740-6569.

Abstract

Uterine leiomyoma is commonly known as fibroid. It is a gynaecological problem that is prevalent among black women of child-bearing age. There is no known anti-fibroid drug and treatment by surgical removal has huge side effects. It is necessary to determine a safer method for its treatment. This work investigated the histopathologic effects of *Spondias mombin* (Hog plum) and *Aspilia africana* (Wild sunflower) leaves on uterus and kidney cells of rats with monosodium glutamate (MSG)-induced fibroid. Twenty-eight rats used for this study were divided into four groups of seven rats and acclimatized. Control I was the normal control without fibroid. Control II, the negative control, had fibroid and remained untreated. Groups III and IV had fibroid on the first 28th days but treated with daily ingestion of 250mg/kg body weight aqueous extracts of hog plum and wild sunflower leaves, respectively, on the second 28th days with continuous MSG ingestion. Histology examinations were performed on the 2nd and 4th weeks, respectively, on two rats from each group. Histology examinations showed degenerated endometrial cells and preserved nephritic tissues after treatment with aqueous extracts of *Spondias mombin* leaves. Also, there was a mild hyperplasia of endometrial cells after treatment with extract of *Aspilia africana* in the 2nd week which differed from that of the 4th week. Monosodium glutamate induces fibroid in rats and has nephrotoxic actions. Aqueous extracts of *Spondias mombin* and *Aspilia africana* alleviated the oxidative powers of MSG on rats' endometrial cells. *Aspilia africana* aqueous extract did not protect the hepatocytes from the oxidizing actions of MSG. These extracts should be further investigated and used as a safe chemotherapy in the treatment of fibroid.

Keywords: Leiomyoma, fibroid, monosodium glutamate (MSG), *Spondias mombin*, *Aspilia africana*, histopathology, uterus, kidney.

ENP 128

FREE RADICAL SCAVENGING ACTIVITIES OF TUMERIC ROOT AQUEOUS EXTRACT

***Uzomba Nnamdi Iheanyi, Amaralam Eric Chinedu, Ajah Obinna and**

Obijuru Thaddeus Nnamdi

Department of Microbiology/Biochemistry, Federal Polytechnic Nekede Owerri.
*Email: uzomba.nnamdi@yahoo.com. 08066611985

Abstract

In this study, the free radical scavenging activities of turmeric root aqueous extract was evaluated for its hydroxyl radical scavenging activity, reducing power assay and superoxide dismutase scavenging activity using ascorbic acid as standard control. The result obtained shows that the tmeric extract had a high hydroxyl radical scavenging potential and reducing power potential than the ascorbic acid (Standard). The extract also had a high superoxide dismutase scavenging ability when compared to the ascorbic acid standard. Hence, the result indicates that aqueous extract of turmeric contains significant amount of polyphenol substances that have remarkable scavenging activities and can be used as a plant natural antioxidant additive.

ENP 129

IN VITRO ANTI-CANCER STUDIES ON EXTRACTS/FRACTIONS OF *Vitex doniana* and *Feretia apodanthera* USING MCF-7 BREAST CANCER CELL LINE

Gilead Ebiegberi Forcados*[a,b] , Dorcas Bolanle James[a], Abdullahi Balarabe Sallau[a], Aliyu Muhammad[a], Peace Mabeta[b]

Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria. Nigeria[a]
Department of Physiology, Faculty of Health Sciences, University of Pretoria. South Africa[b]
gileadforcados@yahoo.com, 07039793126

Abstract

Breast cancer is responsible for morbidity and mortality among women, necessitating research into the anti-cancer potential of natural compounds. *Vitex doniana* and *Feretia apodanthera* are plants used locally for the treatment of inflammatory related diseases and wounds. This work investigated the antioxidant, as well as cytotoxic and anti-proliferative effects of the ethanol extract/fractions of *V. doniana* leaves and *F. apodanthera* root bark on MCF-7 breast cancer cells. The highest scavenging potency from DPPH assay was observed in *V. doniana* Fraction 2 which had an IC_{50} of 68.12 ± 4.94 µg/ml. MTT results showed IC_{50} of 26.11 ± 3.4 µg/mL and 66.5 ± 5.2 µg/mL, after treatment with *V. doniana* and *F. apodanthera* extracts respectively for 48 hours. MCF-7 cells treated with *V. doniana* extract showed cell shrinkage and nuclear condensation on Hematoxylin and Eosin staining when compared to untreated control cells. xCELLigence real time analysis showed a dose dependent reduction in cell growth and time to reach the plateau after MCF-7 cells were treated with *V. doniana* extract for 120 hours. Cell cycle analysis showed that *V. doniana* extract caused cell cycle arrest at G_0/G_1 phase, with a concomitant reduction in the proportion of MCF-7 cells in S and G_2/M phases. These results show that *V. doniana* extract might have cytotoxic and anti-proliferative effects on MCF-7 breast cancer cells, with potential for the development of anti- breast cancer agents.

ENP 130

THE ANTIOXIDANT EFFECT OF *Corchorus olitorius* SUPPLEMENTED DIET AGAINST PARACETAMOL OVERDOSE IN WISTAR RATS

Olumuyiwa Adeyemi Owolabi.,[1] * Ijeoma Okolo.,[1] and Kabiru Adamu[1]

[1]Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University, Zaria, Nigeria.
*Corresponding Author: bestijeoma62@gmail.com, GSM +2348081724583

Abstract

The antioxidant effect of *Corchorus olitorius* supplemented diet against paracetamol overdose in wistar rats was studied. Twenty four (24) rats of both sexes were grouped into 4 of six rats. Group 1 and 2 served as the controls, and were maintained on normal rat chow. Group 3 and 4 served as the test groups and were maintained on rat chow containing 5% and 10% *Corchorus olitorius* leaves respectively. Feeding was done for 21 days, and weight changes were assessed. Paracetamol was administered to rats in groups 2, 3 and 4 following an overnight fast. Rats were sacrificed, and livers were harvested. Qualitative phytochemical screening of the plant sample, and concentration of TBARS and GSH in liver homogenate were determined following standard procedures. Phytochemical screening revealed the presence of carbohydrates, steroids and triterpenes, cardiac glycoside, tannins, flavonoids and alkaloids. Evaluation of the relative weight changes showed significant ($p<0.05$) increases across the days, except for group 2 where there was a significant ($p<0.05$) decrease on day 21. There was a significant ($p<0.05$) increase in the concentration of TBARS in group 2 when compared to group 1, increase in groups 3 and 4 where significantly ($p<0.05$) higher when compared to group 1 but not statistically different ($p>0.05$) from group 2. Also, GSH concentration of rats in group 2, 3, and 4 decreased when compared to group 1, although the decrease were not statistically significant ($p>0.05$). This study has shown that *Corchorus olitorius* supplemented diet has no protective effect against paracetamol overdose

ENP 131
EFFECT OF THE AQUEOUS EXTRACTS OF *Grewia venusta* LEAVES ON POLOXAMER 407-INDUCED HYPERLIPIDEMIC RATS

***Inalegwu Bawa[1], Ornguga Gabriel[1], Etim Esin. Etim[1]**

[1]Department of Biological Sciences, College of Science, University of Agriculture, Makurdi, Benue State

Corresponding author: E-mail= inalegwubawa@yahoo.com; Tel: +324-80-3638-8969

Abstract:
Hyperlipidemia is considered to be one of the greatest risk contributing to the prevalence and severity of cardiovascular diseases. The present study was taken to evaluate the effect of the aqueous leaf extract of Grewia venusta on poloxamer 407-induced hyperlipidemic rats. The poloxamer 407 (P407) was administered using a single dose of 500mg/kg body weight which induced hyperlipidemia after 24 hours. Oral administration of extract, at dose of 200mg/kg body weight in rats, reduced serum total cholesterol, triacyglycerides, low density lipoprotein, very low density lipoprotein and increased high density lipoprotein levels as compared to the Group IV treated with the standard drug (atorvastatin).The Results were expressed as mean±SEM by the statistical analysis-SPSS application 20.0 i.e one way ANOVA. The mean±SEM of measured hyperlipidemia induced by poloxamer 407 as 198.0±24.2 mg/dl for TAG, 247.4±30.3 mg/dl for TC. The plant aqueous extract decrease total cholesterol by 44.75% ($p<0.05$), triacyglyceride by 30.96% ($p<0.05$), VLDL by 31.06% ($p<0.05$), LDLc by 50.61% ($p<0.05$). On the other hand atorvastatin decreased total cholesterol by 33.99% ($p<0.05$), triacyglyceride by 35.15% ($p<0.05$), VLDL by 35.10% ($p<0.05$), LDLc by 37.42% ($p<0.05$).Both the plant aqueous extract and the standard drug increase the levels of HDLc significantly.

Keywords: Hyperlipidemia, *Grewia venusta*, cardiovascular disease

ENP 132
IN VITRO AND *IN VIVO* ANTI-INFLAMMATORY ACTIVITY OF *BUCHHOLZIA CORIACEA* SEED EXTRACTS

Ukwuani-Kwaja A N, Sani I and *Bashir J I

Department of Biochemistry, Kebbi State University of Science and Technology, Aliero.
*Corresponding author email address: jabirbashir58@yahoo.com Phone number: 08035668887

Abstract

Buchholzia coriacea is used traditionally in the treatment of a number of pathophysiologies including inflammations. The research studied the anti-inflammatory potential of extracts of *Buchholzia coriacea seeds* (BCS). *In vitro* anti-inflammatory activity of crude aqueous (BCSAE) and methanol (BCSME) extract of *Buchholzia coriacea* was evaluated using protein denaturation and membrane stabilization assays at different extract concentrations (0.1-0.5mg/ml), while egg-albumin induced rat paw edema was used to evaluate its *in vivo* anti-inflammatory activity. The results showed that aqueous and methanolic BCS extracts significantly ($P<0.01$) protected the Human Red Blood Cell (HRBC) from protein denaturation, hypotonicity and heat induced hemolysis in a concentration-dependent manner. *In vitro* anti-inflammatory activity of the seed extract was higher with methanol extract compared to aqueous extract. BCSME (0.5mg/ml) exhibited inhibitory effects (72%, 67% and 66%) which were comparable to that of diclofenac sodium (70%, 63% and 56%) against protein denaturation, hypotonicity induced hemolysis and heat induced hemolysis respectively. *In vivo* anti-inflammatory activity was exhibited in a dose and time-dependent manner in BCSME compared to the control. However, there was no significant difference in the BCSME treated groups compared to the standard drug (Indomethacin-50mg/kg). The results obtained in this study indicate that BCS could be a potential source of anti-inflammatory agents and justifies the ethnomedicinal use of the seed in the treatment of inflammatory conditions.

ENP 133
IN VITRO ACE, A-AMYLASE AND A-GLUCOSIDASE INHIBITION KINETIC AND ANTIOXIDANT PROFILES OF L. CYLINDRICA SEED PROTEIN HYDROLYSATE

Rotimi Olusanya Arise [1], Idi Jalil James[1, 2]*, Mic-Braimoh Iseoluwa Maureen[1], Korode Emmanuel[1]

[1]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria
[2]Department of Biochemistry, Faculty of Sciences, Gombe State University, Gombe, Nigeria.
*Corresponding author, E-mail: jahleel.james@gmail.com. Mobile no. +2348136000419

Abstract

Food derived peptides have attracted much attention for their potential to serve as natural alternatives or complements to synthetic drugs. The aim of this study was to investigate amino acid constituents, *in-vitro* antioxidant, angiotensin-I-Converting Enzyme (ACE), α-amylase and α-glucosidase inhibition kinetics of *Luffa cylindrica* seed protein hydrolysates. The peptide yield by pepsin (16.93 ± 0.28%) and trypsin (13.20 ± 1.02%) were significantly lower than that of Alcalase (34.04 ± 1.96%). Alcalase hydrolysate however displayed the highest Ferric Reducing Power, DPPH and H_2O_2 scavenging activities (0.630%, 85.88% and 41.69% respectively), while the highest Superoxide scavenging activity was shown by peptic hydrolysate (57.89%). The hydrolysates demonstrated a concentration-dependent ACE inhibition (IC50 0.317- 0.930mg/ml) with peptic hydrolysate at 1.2mg/ml having the highest ACE-inhibitory activity (74.99 ± 0.43%). The hydrolysates demonstrated a potent α-amylase inhibition, with Alcalase and Tryptic hydrolysates having 36.36±0.71% and 27.96±0.06% respectively (IC_{50} 1.020-3.307mg/ml). The hydrolysates showed concentration-dependent α-glucosidase inhibition (IC_{50} 0.480-0.803mg/ml) with Alcalase hydrolysates having the strongest inhibition (65.81±1.95%), followed by Tryptic hydrolysates (54.53±0.52%). Kinetic studies showed that ACE-inhibition by different concentrations of alcalase, pepsin and trypsin hydrolysates were uncompetitive, mixed-type and non-competitive respectively. α-amylase activities gave a non-competitive inhibition with the three hydrolysates, while α-glucosidase gave an un-competitive inhibition for all the hydrolysates. The total amino acid concentration was 53.51g/100g, 75.4g/100g and 85.42g/100g for alcalase, trypsin and pepsin respectively, with Glutamate being the most concentrated essential amino acid in all the three hydrolysates. These results show that *L. cylindrica* seed protein hydrolysates may serve as useful tools in the treatment of hypertension and diabetes.

Keywords: Peptide, Alcalase, hypertension, trypsin and enzyme inhibition

ENP 134
CASSAVA PEEL: A POTENTIAL CARBON SOURCE FOR PRODUCTION OF POLY-Γ-GLUTAMIC ACID BY *Bacillus subtilis*.

John Thomas[a], Aliyu Salihu[a], Elewechi Onyike[a]

[a] Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria.
Author's e-mail address: t.boyfamous@gmail.com Tel: +2348069630292, +2348030729683

Abstract

Poly-γ-glutamic acid (γ-PGA) is a naturally occurring polymer, which due to its biodegradable, non-toxic and non-immunogenic properties has been used successfully in the food, medical and wastewater industries. This study was aimed at utilizing cassava peel as the major carbon source for production of γ-PGA by *Bacillus subtilis*. The cassava peel (CP) was pre-treated using alkali, acid and organosolv with the unpretreated having significantly ($p \leq 0.05$) higher yield of γ-PGA of 3.20±0.08 mg/g. To obtain higher yield of γ-PGA, fermentation medium and process parameters were subjected to one-factor-at a-time method in order to determine their optimum concentrations. The selected factors were incubation period, moisture content, various carbon and nitrogen sources. Maximum γ-PGA production of 4.29 mg/g was obtained in cassava peel-based medium supplemented with 5 g/L each of glycerol, sucrose, peptone and $(NH_4)_2SO_4$; and 0.5 g/L each of K_2HPO_4 and glutamic acid

Keywords: *Bacillus subtilis*, Cassava Peel, Poly-γ-glutamic acid, Pretreatment.

ENP 135

PHYTOCHEMICAL COMPOSITION AND *INVITRO* A-AMYLASE ACTIVITY OF METHANOL LEAF EXTRACTS OF *Anarcadium occidentales, Huntaria umbellata, parkia biglobosa, psidium guajava and vitellaria paradoxa*

***Abubakar Asmau Niwoye, Abubakar Ndaman Saidu, Helmina Olufunmilayo Akanya and Evans Chidi Egwim**

Department of Biochemistry, Federal University of Technology, Minna, Niger State, Nigeria
Email: asmaubeam@yahoo.com , phone no: +2348037302979

Abstract

This study investigated both qualitative and quantitative phytoconstituents of the methanol leaf extracts of *Anarcadium occidentales, Huntaria umbellata, parkia biglobosa, psidium guajava and vitellaria paradoxa* and their inhibitory effect on α-amylase enzyme. Dinitrosalicylic (DNS) method was adopted for α-amylase inhibition assay while phytochemical screening was carried out on the extracts by standard methods. Preliminary qualitative pytochemical screening showed the presence of Anthraquinones, Flavonoids, Tannins, Steroids, Alkaloids, phenols, and Saponins in all the plant extracts, as well as reducing sugars with the exception of *Hunteria umbellata* extracts. Phlobatannins was not detected in all the plants extracts. The concentration of phenols ranges from 184.368±0.23 mg/g to 120.241±0.01 mg/g in *Anacardium occidentales* extract and *Hunteria umbellata* extract respectively. However, among the selected plants, *Hunteria umbellata* extract had the highest concentration of Alkaloids (76.76±0.01 mg/g) *Parkia biglobosa* extract had the highest tanins content (137.55±0.05 mg/g) and *Vitellaria paradoxa* extract contains more saponins (188.50±0.01 mg/g) as compared to other plant . Flavonoids concentration was higher in *Parkia biglobosa* extract (458.06±0.06 mg/g) while *Psidium guajava* extracts had (84.28±0.02 mg/g). The ability to inhibit α- amylase activity by the standard drug (Acarbose) and all the selected plant extracts increased as their concentration increases. Acarbose had a significant ($p<0.05$) higher activity than all the extracts with IC_{50} of (76.34± 0.12 ug/ml). *Anarcadium occidentales* extract had a better activity and thus a lower IC_{50} of (171.1±0.13 ug/ml) among all the plants while *Hunteria umbellata* extract had the least activity with IC_{50} of (191.0 ± 0.12) However no significant ($p<0.05$) was observed when compared to the remaining extracts. This result suggests that the methanol leaf extract of the studied plants possesses some hypoglycemic potentials.

Key words: phytoconstituents *Invitro*, α-amylase, Acarbose *Anarcadium occidentales, Huntaria umbellata, parkia biglobosa, psidium guajava and vitellaria paradoxa*

ENP 136

EVALUATION OF ANTI-MICROBIAL, ANTI-INFLAMMATORY AND ANTI-ARTHRITIC PROPERTIES OF SECONDARY METABOLITES FROM FUNGI, *Aspergillus flavus*.

Kelani Teslimat Olamide[1*], Oni Azeezat Omobukola[1], Oyawoye Fatima Olatundunmomi[1], Afolabi-Balogun Nusirah Bolatitio[1]

[1] Department of Chemical sciences, Fountain University Osogbo, Opposite Olomola Hospital, along Agric Settlement Road, Oke-osun, Osogbo-Osun state, Nigeria.

Email: Kelanito@yahoo.com Phone number: +2348074602425, +2348063184934

Abstract

Fungi of families; Ascomycota and Basidiomycota are known to produce different secondary metabolite, which are bioactive and serve several benefits to man. However, the culturing condition as well as the constituent of the media plays significant roles on the quantity and diversity of metabolites produced. In this study, validated pure *Aspergillus flavus* characterized from the soil of Osun Osogbo Grove was conditioned to produce secondary metabolite using malt extract agar and its secondary metabolites were screened for biological activities. *Aspergillus flavus* was grown in malt extract agar for 56 days in the dark. Secondary metabolites were then extracted from the mycelium. The extract obtained was subjected to silica gel column and thin-layer chromatography purification. Thereafter, the fractions from column chromatography were identified using GC-MS analysis and evaluated for antimicrobial, anti-inflammatory and anti-arthritic property. Total concentration obtained after evaporation was 5mg/ml. GC-MS analysis of the chromatography fractions revealed the presence of a number of compounds including Carbamodithioic acid, formyl-, methyl

ester, 11-(2-Cyclopenten-1-yl) undecanoic Acid, Pentanoic acid, 4-methyl- and 1,5-Hexadiene, 3-methyl-. The fractions containing Carbamodithioic acid, formyl- and methyl ester exhibited inhibitory effect on staphylococcus, while the fractions containing Carbamodithioic acid, formyl-, methyl ester, 11-(2-Cyclopenten-1-yl) undecanoic Acid, Pentanoic acid, 4-methyl- and 1,5-Hexadiene, 3-methyl- exhibited in-vitro anti-arthritic effects. Overall, the secondary metabolites obtained from *Aspergillus flavus* exhibited antimicrobial, anti-inflammatory and anti-arthritic activities, and thus are agents of therapeutic importance. To this extent, the study confirmed the bioactive importance of column purified secondary metabolites from *A. flavus.*

Keywords: Fungi, secondary metabolite, *Aspergillus flavus*, mycelium, GC-MS, bioactive, anti-microbial, anti-inflammatory and anti-arthritic

ENP 137
PHYTOCHEMICAL CONTENT AND IN VITRO ANTIOXIDANT ACTIVITY OF DIFFERENT FRACTIONS OF *Ipoemea asarifolia leaves (MORNING GLORY*)

***Dalhatu, Maimuna M. and Bichi, Sadiya A., Ibrahim A. M., and Tasiu A. M.**

Department of Biochemistry, Kano University of Science and Technology, Wudil, Kano Nigeria
*Corresponding author: Email:maimunadalhatu@gmail.com
Phone: +2348066561352

Abstract

Plants contains phytochemicals which are known to have therapeutic effects when consumed by humans. The research work investigated the phytochemical content and in vitro antioxidant activity of different fractions of *Ipomoea asarifolia* leaves. Quantitative phytochemical analysis of *I. asarifolia* was determined, Extract from the dried leaves powder was fractionated using different solvents: water, methanol, chloroform and N-hexane. In vitro antioxidant activity was determined using DPPH with vitamin c as standard. The inhibitory concentration (IC_{50}) of DPPH scavenging radical was found to be lowest in the methanol fraction, 52.5µg/ml, and highest in the N-hexane fraction, 744µg/ml. *I. asarifolia* leaves contain phytochemicals with antioxidant activity and the methanol fraction was found to be the most active.

Key words*: Ipoemea asarifolia*, phytochemicals, antioxidant,

ENP 138
ANTIOXIDANT POTENTIALS OF CYCLOHEXANE, DICHLOROMETHANE, METHANOL AND AQUEOUS EXTRACTS OF *Eucalyptus camaldulensis* STEM BARK

Fatima Gogo Mayaki[*], Isama Adah Desmond and Dickson Achimugu Musa

Department of Biochemistry, Faculty of Natural Sciences, Ibrahim Badamasi Babangida University, P.M.B. 11 Lapai, Niger state, Nigeria
*Corresponding author: gomayaki007@gmail.com; 08149251683

Abstract

Eucalyptus camaldulensis is used in Igala traditional medicine for the treatment of various febrile aliments. The cyclohexane, dichloromethane, methanol and aqueous extracts of *Eucalyptus camaldulensis* stem bark obtained by sequential maceration were assayed for their antioxidant potentials using 2,2, diphenyl-1-picrylhydrazyl scavenging activity (DPPH), Ferric reducing power, hydrogen peroxide (H_2O_2) Scavenging activity, phenol quantification, flavonoid quantification and free phenol determination methods. The methanol and aqueous extracts had the highest activities in all parameters assayed except for total phenol and flavonoid content. High total flavonoid was observed in dichloromethane (68.55±0.31) and High total phenol content was observed in cyclohexane (268.50±16.34). The aqueous extract showed highest DPPH scavenging activity (91.88) at (100 µg/ml), highest 50% inhibitory concentration of 75.51 and also highest H_2O_2 scavenging activity (57.45±0.21) at concentration of (100 µg/ml). Highest free phenol was obtained in the methanol extract (0.93±0.028) and lowest in the cyclohexane extract (0.19±0.01). At (500 µg/ml) the aqueous (59.24) and methanol (72.54) extracts had the highest reducing power when compared to the standard ascorbic acid (74.63) and gallic acid (75.10). The cyclohexane extract at concentration (40-20 µg/100g) had no DPPH scavenging activity. The methanol and aqueous extracts of *Eucalyptus camaldulensis* has antioxidants potentials comparable to the standard ascorbic acid.

ENP 139

EFFECTS OF CRUDE METHANOL EXTRACT OF *Bauhinia Rufescens* LEAVES ON ACETAMINOPHEN INDUCED ACUTE LIVER TOXICITY IN RATS

***Muhammad Auwal Saliu[a], Auwal Adamu[a] and Mohammed Auwal Ibrahim[a]**
[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
***Correspondence** Telephone: +2348138536397; E mail: auwaltamsab33@gmail.com

Abstract

The present study elucidated the effect of crude methanol extract of *Bauhinia rufescens* leaves on acetaminophen induced acute liver toxicity in rats. Acute liver toxicity was induced with oral administration of acetaminophen in rats and was treated with 100 and 200 mg/kg b.w. crude methanol extract of *B. rufescens* leaves and silymarin serving as standard drug. At the end of the experiment, animals of all groups were sacrificed by cervical decapitation, blood samples were collected and relevant biochemical parameters were measured. From the results, serum samples of animals that received acetaminophen showed significant increase ($p<0.05$) in the levels of alanine aminotransferase, aspartate aminotransferase, urea, creatinine, cholesterol, triglycerides and glucose compared to the normal control group, whereas the total protein level showed significant decrease ($p<0.05$). However, serum samples from animals treated with crude methanol extract of *B. rufescens* at the dose of 100 and 200mg/kg b.w. showed significant decrease ($p<0.05$) in alanine aminotransferase, aspartate aminotransferase, urea, creatinine, cholesterol, triglycerides and glucose levels and a significant increase ($p<0.05$) in total protein level compared to the acetaminophen induced untreated group. The crude methanol extract control group had no significant difference statistically compared to the normal control group. There was no any statistical significant ($p<0.05$) difference on HDL levels among all the experimental groups. The study indicates the remarkable hepatoprotective activity of *B. rufescens* leaves against acetaminophen induced acute liver toxicity in addition to nephroprotective properties.

Keywords: Acetaminophen, *Bauhinia rufescens*, Liver toxicity, Silymarin

ENP 140

SAPONIN EXTRACT FROM *Vernonia amygdaling* LEAVES ATTENUATES NEPHROLITHIASIS *IN VIVO* AND *IN VITRO*

***Mikhail O. NAFIU, Albert A. KURE, Musa O. SALAWU, Hamdalat F. MURITALA & Musbau A. AKANJI**

Department of Biochemistry, University of Ilorin, P. M. B. 1515, Ilorin, Nigeria.
Correspondence: *olumikail@gmail.com +2348054208511

Abstract

The anti-nephrolithiasis effect of a saponin extract from *amygdalina* leaves was studied using *in vitro* and *in vivo* models. The formation of calcium oxalate stones in the presence or absence of the saponin extract was measured *in vitro* while the *in vivo* prophylactic, protective and curative anti- nephrolithiasis effects of the saponin extract (500 mg/kg b. w.) were evaluated in rat nephrolithiasis models induced by administration of Ammonium Chloride (0.5%) and Ethylen Glycol (0.75%). The intervention lasted for 14 days and Cystone (750 mg/kg b.w.) was used as standard drug. The results showed greater *in vitro* inhibition of calcium oxalate (CaOx) nucleation and aggregation to factors of about 5% and 11% than cystone drug at concentrations of 1000 and 1500 µg of saponin per ml of the dissolving solution (distilled water) respectively. *in vivo* treatment with saponin significantly decreased ($p < 0.05$) serum magnesium, sodium, urea and creatinine as well as concentrations of kidney Malondialdehyde, calcium and oxalate to levels lower than that observed in the lithiatic control group. Significant elevations in Superoxide dismutase activity and levels of reduced glutathione in kidneys plus serum potassium were obtained on treatment with extract while kidney histology showed disappearance of microscopic granulations of CaOx deposits prominent in lithiatic group. Saponin extract from *V. amygdalina* displayed prophylactic, protective and curative effects in nephrolithiatic rats by balancing stone promoters and inhibitors, decreasing deposition and facilitating excretion of small CaOx crystals or maintaining antioxidant environment. Thus, saponin extract from *V. amygdalina* is a promising potential alternatives drug for nephrolithiasis.

Key words: Nephrolithiatic, *Vernonia amygdalina*, Saponin, nucleation and aggregation

ENP 141
ANTI-HYPERLIPIDEMIC ACTIVITY OF AQUEOUS EXTRACT OF *Cucumis sativus* FRUIT AND ITS TOXICOLOGICAL EVALUATION

Oyegoke, Rukayat Abiodun*and Oladiji, Adenike Temidayo

*rukayat.oyegoke @gmail.com; 08062075089
Department of Biochemistry, University of Ilorin, Ilorin, Kwara State, Nigeria.

Abstract

The study investigated the anti-hyperlipidemic activity of the aqueous extract of *Cucumis sativus* fruit and its toxicological evaluation at 50, 100 and 150 mg/kg body weight in high-fat diet induced hyperlipidemic rats. 36 rats having an average weight of 97.72 ± 2.15g were grouped into six (A-F). Rats in group A were fed control diet while those in groups B – F where fed high fat diet for a period of eight weeks. After four weeks of feeding, Group A and B were administered 1 ml of distilled water each while groups C to F were administered 1 ml of 10 mg/kg body weight of Atrovastin, 50 , 100 and 150 mg/kg body weight of *Cucumis sativus* fruit respectively for a period of four weeks. Proximate analysis, Phytochemical screening and mineral constituents of the fruit as well as that of the feed were determined using standard methods. Likewise, the feed intake (g), body weight gain (g) as well as all other parameters relating to evaluation of hyperlipidemic status was also determined. For the toxicological evaluation, various biochemical parameters like alkaline phosphatase, creatine kinase, lactate dehydrogenase, serum lipids, liver histopathology were also determined. The result revealed that the extract significantly reduced ($p < 0.05$) the weight gain as well as other lipidemia parameters. For the activities of the enzymes, there was a significant decrease ($p < 0.05$) in rats administered the extract with that of the 150 mg /kg bodyweight being the most effective comparing favourably with the reference drug, atrovastin. Overall, the results suggest that the extract of *Cucumis sativus* fruit possess anti-hyperlipidemic activity optimally at 150mg/kg bodyweight and it is relatively safe, therefore support its usage in folklore medicine.

ENP 142
COMPARATIVE STUDY OF THE EFFECTS OF *Cassia spectabilis* AND *Byrsocarpus coccineus* LEAF EXTRACTS ON DICLOFENAC-INDUCED HEPATORENAL INJURIES IN WISTAR RATS

Raphael J. Ogbe[1, 2*], Solomon Agu[1], Carrol D. Luka[2], Godwin I. Adoga[2]

[1]Department of Veterinary Physiology and Biochemistry, Federal University of Agriculture, Makurdi
[2]Department of Biochemistry, University of Jos, Jos, Nigeria.
[*]Author for correspondence: ralphjohn2012@gmail.com, Tel.: +234 806 530 0976

Abstract

There is high prevalence of drug-induced hepatorenal injuries globally, but plant extracts may be useful in their management. This study evaluated the comparative activities of *Cassia spectabilis* (CSE) and *Byrsocarpus coccineus* (BCE) leaf extracts in diclofenac-induced hepatorenal injuries in Wistar rats. Adult rats were selected into four groups consisting of 5 rats each. Group 1 - normal saline, Group 2 - 11 mg/kg diclofenac (DF) by intramuscular route for 5 days, Group 3 and 4 - 342 mg/kg CSE and BCE respectively by oral gavages for 6 days, after DF exposure as in group 2. About 24 hrs after treatment, blood was collected from rats; serum was separated and used for estimations of biochemical parameters. Liver and kidney of rats were removed and processed by histological techniques. There was significant ($p<0.05$) increase in the levels of ALT (185.1±1.3 U/L), AST (274.8±7.7 U/L), total bilirubin (2.1±0.4 mg/dL), sodium ions (572.7±24.1 mmol/L), urea (44.9±0.6 mmol/L), and creatinine (71.1±2.1 µmol/L) of rats exposed to DF, when compared with normal levels of 73.5±4.4 U/L, 83.2±3.4 U/L, 0.6±0.1 mg/dL, 161.4±1.4 mmol/L, 9.0±0.2 mmol/L, and 63.6±1.8 µmol/L respectively. However, treatment of DF-exposed rats with CSE and BCE significantly ($p<0.05$) reduced the levels of ALT (83.9±5.9 & 90.7±8.4), AST (182.0±5.6 & 143.1±5.5), sodium ions (142.5±18.6 & 146.2±6.8), urea (35.5±3.1 & 8.0±0.1), and creatinine (60.8±2.7 & 52.5±2.9) respectively compared with DF control. Histopathological findings supported our biochemical findings. Current findings have shown that both plant extracts may have ameliorative effects on diclofenac-induced hepatorenal injuries in rats but BCE has greater activity than CSE.

Keywords: Hepatotoxicity, Histopathology, Nephrotoxicity, Phytochemicals

ENP 143
LARVICIDAL ASSESSMENT OF CRUDE EXTRACTS AND FRACTIONS OF *Aristolochia albida* RHIZOME ON *CULEX quinquefasciatus*

Hauwa Salisu Usman*, Abdullahi Balarabe Sallau, Aliyu Salihu, Andrew J. Nok
*ummisa71@gmail.com, 08069676503
Department of Biochemistry, Ahmadu Bello University Zaria, Nigeria

Abstract
Aristolochia albida is a plant, native of Africa that has found various applications including anti-parasite and anti-snake venom. In the present study, *Aristolochia albida* rhizome was extracted successively with chloroform and methanol by maceration technique. The extracts were tested for their larvicidal activity against 3rd and 4th instar larvae of *Culex quinquefasciatus* mosquito, according to WHO guidelines for larvicidal bioassay, with slight modifications. Fractionation of the chloroform extract was carried out using column chromatography. Larvicidal bioassay was carried out on the fractions obtained and the most potent fraction (fraction S) was further analyzed using preparative Thin Layer Chromatography (TLC) and characterized using Gas Chromatography-Mass Spectrometry (GC-MS) and Fourier Transform Infra-Red (FTIR) spectroscopic analyses. Chloroform extract showed the highest mortality (100%) at 25 ppm, with LC_{50} and LC_{90} values of 4.24 ppm and 7.59 ppm. Fractionation of the chloroform extract of *Aristolochia albida* rhizome yielded 180 fractions. Fraction S was the most potent fraction having the lowest LC_{50} value (1.12 ppm). Preparative TLC profile of fraction S yielded five distinct spots (S1-S1a, S2-S2a and S3). Assessment of the larvicidal activity of the fractions confirmed that they act in a synergistic manner. Likely compounds identified using GC-MS were columbin, benzene acetaldehyde, oleic acid, naphthalene and fucosterol. FTIR analysis identified some functionalities, such as, alcohols, aromatics and carboxylic acids. It was concluded from the present study that chloroform extract and fractions of *Aristolochia albida* possess larvicidal activity against *Culex quinquefasciatus.*

Keywords: Plant extracts, Fractions, Larvicidal activity, *Aristolochia albida, Culex quinquefasciatus.*

ENP 144
ANTI-DIABETIC ACTIVITY IN *Azadirachta indica*: YOUNG VERSUS MATURED LEAVES.

Abubakar Mohammed[a,b] and Syed Ibrahim Rizvi[a]*
[a]Department of Biochemistry, University of Allahabad, Allahabad 211002, India
[b]Department of Biochemistry, Bauchi State University, Gadau PMB 065, Nigeria
* Correspondence: mabubakar035@gmail.com, 09060819384

Abstract

Ethno pharmacological relevance: *Azadirachta indica (*Neem) is used for its anti-diabetic properties in India, Pakistan, and Nigeria; and is also recognized in Ayurveda. The present study was undertaken to investigate the anti-diabetic capacity of the ethanolic extract of the matured and young leaves of *Azadirachta indica* in streptozotocin induced diabetic rats *Azadirachta indica* leaf extract (AIOLE) was orally administered at 400mg/kg body weight (BW) dose to Streptozotocin induced diabetic rats. After 28 days consecutive treatment, various diabetic parameters were studied and compared with the untreated rat. Furthermore, Laser Induced Breakdown Spectroscopy (LIBS) and Fourier Transformed Infra-red Spectroscopy (FTIR) were used to determine the elemental analysis and functional groups respectively. The matured and young leaf extract demonstrated antihyperglycaemic activity by reducing 75.4% blood glucose level after 28 days treatment. Oral glucose tolerance test (OGTT) revealed increasing glucose tolerance as shown by a 72% decrease in blood glucose in 3 hours post treatment. Treatment of the diabetic rats with ethanolic extract of leaves of matured and young A. indica at a dose of 400 mg/kg body weight for 28 days resulted in gradual but significant normalization of plasma sialic acid (N-acetyl neuraminic acid -NANA) level, erythrocyte reduced glutathione (GSH), erythrocyte malondialdehyde (MDA) content, plasma antioxidant activity by FRAP method, erythrocyte plasma membrane redox system (PMRS) activity which are not normal diabetic rats. Different elemental compositions were identified with LIBS and the FTIR revealed the different functional groups present in the matured and young leaf. The present investigation revealed that *Azadirachta indica* possesses potent anti-diabetic activity as claimed in different ethno pharmacological practices.

ENP 145
PHYTOCHEMICAL SCREENING AND IN VITRO DETERMINATION OF THE ANTIMALARIAL ACTIVITIES OF ETHANOLIC LEAVES EXTRACT OF *Azadirachta indica.*

***Nwaokezi, C.O., Miebaka, J.**
Department of Biochemistry, River State University.
Correspondence: Juchryson@rocketmail.com. Tel: 08037257983

Abstract
Malaria prevalence and resistant to synthetic drugs such as coartem has become a growing concern and accounts for the high mortality rate in tropical countries. This study investigates the quantitative phytochemical constituents and determination of the antimalarial activities of ethanolic leaves extracts of *Azadirachta indica* commonly known as "dogonyaro" in Hausa. The samples of whole blood confirmed to be infected with the malaria parasite *Plasmodium falciparum* and ethanolic extracts of *A. Indica* were categorized into five (5) groups. Sample A represents control (0.25ml whole blood only) while sample B, C, D and E were (0.5ml whole blood + 0.5ml of plant extracts), (0.5ml whole blood + 1ml plant extracts), (1ml whole blood + 1ml plant extracts) and (0.5ml whole blood +0.25ml plant extracts) concentrations respectively. Results of the preliminary phytochemical analysis revealed the presence of the Saponins, Tannins, Terpenoids, Alkaloids, Flavonoids, Steroids, and Glycosides in varying concentrations. The Gas Chromatography-Mass Spectroscopy (GC-MS) analysis confirmed the occurrence of 26 different compounds. The in vitro test results showed a higher antimalarial activity and clearance ability of the ethanolic leave extract of *A. Indica* against the parasite *P. falciparum* at concentrations of 0.5ml and 1ml respectively. While no activity was seen at concentrations of 0.25ml of the leave extracts of the plant against the parasite. Further, the red blood cells were not lysed, rather they appear normal. The chemo clearance ability demonstrated by *A. Indica* could be attributed to the phytochemical constituents present and justifies its use in traditional medicine.

Keywords: Phytochemical, *Azadiratcha indica, Plasmodium falciparum*, *concentration*, drugs.

ENP 146
EVALUATION OF EFFECT OF *Cussonia bateri* AND *Afrostyrax lepidophyllus* OIL ON SOME SERUM MINERALS AND OXIDATIVE STRESS MARKERS IN RATS

[1]Ogugofor, Martins Obinna and [1*]Njoku, Obioma U.
[1]Department of Biochemistry, University of Nigeria Nsukka
*Correspondence: obinna.ogugofor.pg76810@unn.edu.ng

Abstract
The study was designed to evaluate the physicochemical properties of *Cussonia bateri* and *Afrostyrax lepidophylus* seeds oil, and the influence of the oil on some serum minerals (Ca^{2+}, Mg^{2+} and Zn^{2+}), vitamin E, catalase, glutathione peroxidase and malondialdehyde. Fifteen (15) wistar albino rats were divided into 3 different groups of 5 rats each. Group 1 received distilled water which served as the control while groups 2 and 3 received 6 ml/kg b.w *Cussonia bateri* and *Afrostyrax lepidophylus* seeds oil respectively. The administration of the oil lasted for 14 days after which blood samples were collected for analysis. The physicochemical properties of *Cussonia bateri* were acid value (2.67±0.40 mg KOH/g), iodine value (21.41±0.73 g I_2/100g), saponification value (128.67±2.52 mg KOH/g) and peroxide value (3.40±0.60 mq/kg) while the physicochemical properties of *Afrostyrax lepidophyllus* were acid value (4.83±0.53 mg KOH/g), iodine value (16.06±0.36 g I_2/100g), saponification value (133.67±2.51 mg KOH/g) and peroxide value (4.33±1.52 meq/kg). In addition, there were non-significant ($p>0.05$) decreases in $Zn^{2+}$and Mg^{2+} across the test groups. There was a significant ($p<0.05$) decrease in Ca^{2+} in rats that received *Afrostyrax lepidophyllus*, and a non-significant ($p>0.05$) decrease in rats that received *Cussonia bateri*. There were non-significant ($p>0.05$) increases in catalase, glutathione peroxidase across the test groups while vitamin E was significantly ($p<0.05$) higher in rats that received *Cussonia bateri* compared to control and group that received *Afrostyrax lepidophyllus* respectively. Malondialdehyde showed a non-significant ($p>0.05$) increase across the test groups. This study showed that *Cussonia bateri and Afrostyrax lepidophyllus* oil reduced the absorption of the selected minerals, and also, may not serve as good sources of antioxidant.

Key words: *Cussonia bateri* seed oil, *Afrostyrax lepidophylus* seed oil, physicochemical properties, serum minerals, antioxidants

ENP 147
BIOASSAY-GUIDED ISOLATION AND IDENTIFICATION OF HYPOGLYCEMIC COMPOUND FROM FRACTIONATED METHANOL EXTRACTS OF *Vernonia amygdalina* DELILE LEAVES

[1,*]Okoduwa, S.I.R., [1]Umar, I.A., [1]James, D.B., [1]Inuwa, H.M., [3]Habila, J.D. and [4]Venditti, A

[1]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[2]Department of Chemistry, Ahmadu Bello University, Zaria, Nigeria
[3]Department of Chemistry, Sapienza University of Rome, Rome, Italy
***Correspondence: Email:** siroplc@gmail.com, stanley@sironigeria.com; **Tel**: +234-909-964-0143

Abstract

Alcohol extracts of *Vernonia amygdalina* leaves is traditionally used in Nigeria for the treatment of diabetes. In our previous study, fractionated methanol extracts of *Vernonia amygdalina* leaves (FMEVA) revealed chloroform fraction as most potent in treatment of Type-2 diabetes. This study aimed to identify part of the major hypoglycemic component present in the chloroform fraction of FMEVA. Column chromatography was used to isolate and purified nine sub-fractions (C1-C9) from chloroform fraction of FMEVA. All the sub-fractions C1 to C9 were screened for hypoglycaemic activities in Type-2 diabetic rats. The most potent component was elucidated on the basis of extensive spectroscopic (1D-, 2D-NMR, IR) data analysis. The results revealed **s**ub-fraction C5 as the most potent hypoglycaemic in reducing blood glucose by 12.55 ± 3.55% at 4 h post-oral administration, when compared to the positive (18.07 ± 1.20%) and negative (-1.99 ± 0.43%) controls. The spectroscopic data analysis reveals that the isolated compound structure is consistent with 11β,13-dihydrovernolide. In conclusion, the isolated compound is part of the hypoglycemic components present in *V. amygdalina* leaves that is responsible for the anti-diabetic activities. Further research is needed in the development of this compound or its derivatives for pharmaceutical use.

Keywords: Diabetes; Hypoglycemic; *Vernonia amygdalina*; Type-2 diabetes

ENP 148
ANTIMALARIAL ACTIVITY OF *Voacanga africana* EXTRACTS ON *Plasmodium berghei* INFECTED MICE

Abiodun Humphrey Adebayo[1*], Elohor Odebala[1], Omolara Faith Yakubu[1], Okukwe Christa Obode[1,2], Titilope Modupe Dokunmu[1], Temitope Arike Ishola[1] and Alaba Oladipupo Adeyemi[1]

[1]Department of Biochemistry, College of Science and Technology, Covenant University, PMB 1023, Canaan land, Ota, Ogun State, Nigeria
[2]Nutrition and Toxicology Division, Food Technology Department, Federal Institute of Industrial Research Oshodi, Lagos, Nigeria
[*]Corresponding author: abiodun.adebayo@covenantuniversity.edu.ng Phone no: 08036357197

Abstract

The acute oral toxicity and antimalarial activity of *V. africana* was investigated. Albino mice were inoculated with *P. berghei* and thereafter treated with graded doses of *V. africana* extracts (125, 250 and 500 mg/kg). Results obtained showed a significant ($p<0.05$) enhancement of liver function as well as significant increase ($p< 0.05$) in haematological indices after treatment. Also, higher chemo suppression by extracts of *V. africana* compared to chloroquine was observed, however histopathological analysis revealed vascular congestion in the kidneys of mice treated with 250 mg/kg and 500 mg/kg. Therefore *V. africana* possess good *in vivo* anti-malarial activities against *P. berghei* upholding its traditional use.

Keywords: Medicinal-plants, *Voacanga africana*, antimalarial, suppressive, curative

ENP 149

EVALUATION OF SOME INDICES OF HEPATIC DAMAGE, OXIDATIVE STRESS AND RENAL FUNCTION IN ALUMINUM CHLORIDE INTOXICATED WISTAR RATS TREATED WITH ETHANOL LEAF EXTRACT OF *Vernonia amygdalina*

[1]Edet Okon Akpanyung, [2]Utibe Evans Bassey, [1]Utonne Texubong Noah

[1]Department of Biochemistry, University of Uyo, Uyo, Akwa Ibom, Nigeria
[2]Department of Biochemistry, Obong University, Etim Ekpo, Akwa Ibom, Nigeria
Correspondence: edetakpanyung@gmail.com

Abstract

The effect of ethanol leaf extract of *Vernonia amygdalina* on aluminum chloride intoxicated albino Wistar rats was investigated. Twenty-five (25) male Wistar rats weighing 180 – 220 g used for the study were divided into five (5) groups with 5 rats in each group. Group 1 served as control. Group 2 was administered 100 mg/kg of aluminum chloride daily for 14 days. Group 3 received 400 mg/kg of ethanol leaf extract of *Vernonia amygdalina* for 14 days. Group 4 received 100 mg/kg of aluminum chloride and 400 mg/kg of ethanol leaf extract of *Vernonia amygdalina* simultaneously. Group 5 received aluminum chloride for 14 days and was allowed to remain for another 14 days without treatment. Serum was obtained for assay of lipid peroxidation product, some antioxidant and liver enzyme activities as well as urea and creatinine. Liver and kidney sections were used for histological studies. The results show that serum malondialdehyde (MDA) concentration was significantly ($P<0.05$) elevated in response to treatment with aluminum chloride. Administration of ethanol leaf extract of *Vernonia amygdalina* significantly ($P<0.05$) reduced the MDA concentrations. There were no significant changes ($P>0.05$) in the activities of the antioxidant enzymes. The activities of ALT, AST and ALP were significantly increased ($P<0.05$) in the aluminum chloride intoxicated group while the extract treated groups showed reduced activities close to control values. Serum urea and creatinine concentrations which were significantly elevated ($P<0.05$) due to the administration of aluminum chloride were observed to decrease significantly ($P<0.05$) following administration of the extract. Serum electrolyte levels were not significantly altered. Histological evaluation of the liver and kidney sections corroborated the results obtained from the biochemical analyses. The present study has demonstrated that administration of ethanol leaf extract of *Vernonia amygdalina* protects against the toxic effects of aluminum chloride in male albino Wistar rats.

Keywords: *Vernonia amygdalina*, Lipid peroxidation, Antioxidant enzymes, Hepatotoxicity, Nephrotoxicity.

ENP 150

GREEN SYNTHESIS AND COLLOIDAL STABILITY OF SILVER NANOPARTICLES USING PECTIN FROM *Parkia biglobosa* PULP

Saheed Ademola Ibraheem*, Mas'ud Jaafar, Jeffery Twase Barminas, Victor Ochigbo, Micah Musa Muster and Siraj Bashir.

Scientific and Industrial Research Department; National Research Institute for Chemical Technology, Zaria, Kaduna State, Nigeria.
*Correspondence: sunat4u@yahoo.com, saheed.ibraheem@narict.gov.ng +2348065033203

Abstract

Silver nanoparticles (Ag NPs) are known to possess distinctive catalytic, optical, electrical and antimicrobial properties with various potential applications in biological system. Several research attempts have been reported on the synthesis of Ag NPs using different methods such as chemical, photochemical and electrochemical reduction. Here in, we report the synthesis of Ag NPs via green route using pectin from *Parkia biglobosa* pulp as both reducing and capping agent. The synthesized Ag NPs were analyzed using different analytical tools including scanning electron microscope, uv-vis spectrophotometer, Fourier Transform Infrared among others. Colloidal stability of the synthesized Ag NPs in distilled water, electrolytes (NaCl; NaOH), biological solutions (Bovine serum albumin, BSA and phosphate buffered saline, PBS) at different Ph (7 and 9) were also evaluated. Spectroscopic analysis indicated the stabilization of the Ag NPs via hydroxyl and carbonyl groups of the *P. biglobosa* pulp pectin. The nanoparticles also exhibited relative colloidal stability over a period of time. We therefore conclude that pectin from P. biglobosa pulp can be used as an alternative green template for the biosynthesis of colloidal stable Ag NPs.

Keywords: Ag NPs, pectin, colloidal stability, spectroscopy and pulp

ENP 151
PHYTOCHEMICAL AND ANTIOXIDANT ACTIVITY OF AGED RAW PEANUTS (*Arachis hypogaea L.*) SKIN EXTRACT.

[1*]Ugwu CE, [1]Suru SM, [1]Dike CC, Maduka HCC[1]

[1]Department of Human Biochemistry, Faculty of Basic Medical Sciences Nnamdi Azikiwe University Awka, Nnewi Campus, Anambra State Nigeria.
*Corresponding author: ce.ugwu@unizik.edu,ng; ugwuchidiksu@yahoo.com; +2348063276355.

Abstract
Peanut skins (PNS) are by-product from peanuts but with low socio-economic value despite having appreciable amounts of bioactive phytochemicals. Studies are on-going to remove some astringent properties in PNS and improve its pharmacological and organoleptic values. In this study, we used long term maceration and ageing of raw peanut skins (RPNS) in hydro alcoholic medium to determine whether ageing improves the *in vitro* antioxidant activity. The raw PNS powder was subjected to short-term (RPNS, 70% methanol, 24 hours) and long-term ((ARPNS, 70% methanol, 6 months) extraction respectively. The phytochemical screening including total phenolic and flavonoid contents (TPC,TVC) were determined. The antioxidant activity including DPPH radical scavenging, Fe^{2+}-chelating, ferric reducing antioxidant property(FRAP), OH^- radical scavenging and reducing power assays were determined and compared against standard antioxidants. The results showed significantly higher ($P<0.05$) TPC and TFC in the ARPNS relative to the RPNS extract. The ageing process significantly improved the total antioxidant capacity of the ARPNS extract compared to the RPNS extract. The ARPNS extract showed significantly higher ($P<0.05$) DPPH radical, OH^- radical scavenging capacity and ferric reducing antioxidant property compared to the RPNS extract. The ARPNS extract exhibited non significantly higher Fe^{2+} chelating and reducing power compared to the RPNS extract. The results showed that both extracts produced concentration dependent antioxidant activity while exhibiting significantly lower antioxidant activity compared to the standard antioxidants. The results showed that the long-term maceration and ageing process improved the *in vitro* antioxidant properties of the ARPNS extract compared to the RPNS extract.

Key words: Raw, ageing, peanut skins, antioxidant activity.

ENP 152
PLANT GROWTH PROMOTING POTENTIALS OF PHOSPHATE-SOLUBILIZING BACTERIA ISOLATED FROM RUMEN CONTENT OF WHITE FULANI CATTLE, INDIGENOUS TO NIGERIA

Adebayo, A. A.[1,2], Faleye, T. O. C.[2,3], David, O. M.[2], Odeyemi, A. T.[2], Adeosun, O. M.[2], Alhaji, A. A.[1] and *Egbe, N. E. L.[1]

[1]Department of Biological Science, Faculty of Science, Nigerian Defence Academy, Kaduna, Nigeria
[2]Department of Microbiology, Faculty of Science, Ekiti State University, Ado-Ekiti, Nigeria
[3]Department of Virology, College of Medicine, University of Ibadan, Oyo-State, Nigeria
*Corresponding author: loegbe@yahoo.com

Abstract
Phosphate-solubilizing bacteria (PSB) with other plant growth promoting (PGP) traits are among options to reduce fertilizer application and enhance sustainable agriculture. Tith the aim to search for bacteria capable of promoting the growth of plants, the rumen contents of indigenous White Fulani cattle were sampled. The phosphate solubilizing potentials of the isolates on media containing tricalcium phosphate (TCP) was assayed for 7 days and their multiple PGP activities were enumerated using standard

techniques. A Total of 23 bacteria were selected from the total bacterial counts which ranged from 5.20±0.123 x 10^5 to 4.60±0.123 x 10^6 CFU/g) for the sample of rumen content. Out of the 23 isolates, 14(61%) exhibited varying phosphate solubilization efficiency (120-680 µg mL^{-1}) and thus were assessed *in vitro* for multiple PGP activities. The 16SrRNA gene sequencing analysis suggested that 8(57%) of the isolates with prominent PGP ability are strains of *Pseudomonas aeruginosa* and *Escherichia coli*. *Escherichia coli* AKRC16 took the lead as potential PGP bacteria among member of the genus Escherichia with 345 µg mL^{-1} soluble phosphates liberated. Overall, *P. aeruginosa* AKRC7 showed highest PGP activity by liberating highest (680 µg mL^{-1}) soluble phosphate at pH 4.2 after 120hrs, IAA (39 µg mL^{-1}), ammonia (3.89µmol mL^{-1}) and also displayed ability to fix nitrogen. The findings of this study demonstrate the rumen content of cattle as reservoir of PSB and also report *P. aeruginosa* AKRC7 as a potential plant growth promoting bacteria.

Keywords: *Escherichia coli* AKRC16, *Pseudomonas aeruginosa* AKRC7, Rumen content, Phosphate-solubilizing bacteria (PSB), Tricalcium phosphate (TCP).

ENP 153

ASSESSMENT OF ANTIOXIDANT ENZYMES AND TOXICOLOGICAL STUDIES OF AQUEOUS EXTRACT OF *Phyllanthus amarus* SCHUM THONN (EUPHORBIACEAE) LEAVES IN FEMALE WISTAR RATS

***[1]Quadri O. Nurudeen, [1]Zainab K. Zubairu and [2]Musa T. Yakubu**

[1]Department of Biological Sciences, Al-Hikmah University, Ilorin, Nigeria.
[2]Phytopharmacology, Reproductive Biochemistry and Biochemical Toxicology Research Laboratory, Department of Biochemistry, University of Ilorin, Ilorin, Nigeria.
Correspondence to: Phone No.: +234-803-4273-045, E-mail: quadriolaide@yahoo.com

Abstract

The effects of aqueous extract of *Phyllanthus amarus* leaves (AEPAL) on some antioxidant enzyme activities, toxicity studies as it relates to function indices and histology of the liver and kidney of female rats were evaluated. Twenty, healthy Wistar female rats (159.25±3.32 g) were completely randomized into four groups (A-D), with each group comprising 5 animals. Rats in group A (control) were orally administered 0.5 ml of distilled water with the aid of a metal oropharyngeal cannula, while the extract (20, 40, and 80 mg/kg body weight) were administered orally to rats in groups B, C and D respectively, once daily for a period of 7 days under laboratory conditions. All the doses investigated significantly increased ($p < 0.05$) the concentrations of serum total protein, urea, chloride ion, sodium ion as well as the activity of serum alanine transaminase (ALT). In contrast, the levels of creatinine, uric acid and superoxide dismutase were reduced by the extract. There was no significant difference ($p > 0.05$) between the test groups administered with AEPAL in relation to the control group for serum electrolytes (phosphorus, potassium, calcium), serum albumin, globulin, total and conjugated bilirubin, as well as the activities of lactate dehydrogenase, catalase, glucose-6-phosphate dehydrogenase, glutathione peroxidase, malondialdehyde, reduced glutathione, glutathione reductase and total antioxidant capacity. The activities of liver ALT, liver aspartate transaminase (AST) and serum AST were altered at specific doses of the extract. Histopathological examination of the liver and kidney section of rats that were administered with 40 and 80 mg/kg body weight of aqueous extract revealed severe microvesicular steatosis in the liver of female rats as well as mild tubular necrosis and collapse of the renal tubules. Considering all the outcomes in the present study, AEPAL may not induce significant toxic effects when administered at 20, 40 and 80 mg/kg body weight and thus may be safe for use at the recommended therapeutic dose. However, intake of high doses had better be avoided by patients with protracted liver diseases to avoid additional difficulties.

Keywords: Toxicity studies; Histopathology; *Phyllanthus amarus;* Antioxidant; liver; kidney.

ENP 154

GREEN SYNTHESIS AND COLLOIDAL STABILITY OF SILVER NANOPARTICLES USING PECTIN FROM *Parkia biglobosa* PULP

Saheed Ademola Ibraheem*, Mas'ud Jaafar, Jeffery Twase Barminas, Victor Ochigbo, Micah Musa Muster and Siraj Bashir.

Scientific and Industrial Research Department; National Research Institute for Chemical Technology, Zaria, Kaduna State, Nigeria.

*Correspondence: sunat4u@yahoo.com, saheed.ibraheem@narict.gov.ng +2348065033203

Abstract

Silver nanoparticles (Ag NPs) are known to possess distinctive catalytic, optical, electrical and antimicrobial properties with various potential applications in biological system. Several research attempts have been reported on the synthesis of Ag NPs using different methods such as chemical, photochemical and electrochemical reduction. Here in, we report the synthesis of Ag NPs via green route using pectin from *Parkia biglobosa* pulp as both reducing and capping agent. The synthesized Ag NPs were analyzed using different analytical tools including scanning electron microscope, uv-vis spectrophotometer, Fourier Transform Infrared among others. Colloidal stability of the synthesized Ag NPs in distilled water, electrolytes (NaCl; NaOH), biological solutions (Bovine serum albumin, BSA and phosphate buffered saline, PBS) at different Ph (7 and 9) were also evaluated. Spectroscopic analysis indicated the stabilization of the Ag NPs via hydroxyl and carbonyl groups of the *P. biglobosa* pulp pectin. The nanoparticles also exhibited relative colloidal stability over a period of time. We therefore conclude that pectin from P. biglobosa pulp can be used as an alternative green template for the biosynthesis of colloidal stable Ag NPs.

Keywords: Ag NPs, pectin, colloidal stability, spectroscopy and pulp

ENP 155

ANTIOXIDANT EFFECT OF AQUEOUS LEAVES EXTRACT OF *Anisopus mannii* ON SALT INDUCED OXIDATIVE STRESS IN WISTAR RATS.

Ya'u, S*, Akilu, S.A., Kankia, I.H., Nasir, A. and Matazu, N.U.

Department of Biochemistry, Umaru Musa Yar'adua University Katsina.

Abstract

Excessive salt intake plays important roles in the genesis of many pathologies including cancer, cardiovascular diseases and degenerative diseases via oxidative stress. This research studied the antioxidant effect of aqueous leaves extract of *Anisopus mannii* in high sat fed rats. Rats were grouped into six groups of five animals each and placed on 8% NaCl diet for 4 weeks. *A. mannii* leaves extract was administered at 100mg/kg, 200mg/kg and 300mg/kg to groups 4, 5 and 6 respectively in the presence of salt diet while group 3 was given 75mg/kg vitamin c. Rats in group 1 serves as normal control whereas group 2 animals served as positive control. Administration of the extract at all doses significantly ($P<0.05$) increased the activities of catalase and superoxide dismutase with increase in the levels of reduced glutathione when compared to the normal and standard control group ($P<0.05$). The results of this study indicated that *A. mannii* is a potent antioxidant source that could help in improving or maintaining the quality of life of people.

Keywords: Antioxidant, Anisopus mannii, Salt, Oxidative stress, Wistar rats.

ENP 156

HYPOLIPIDAEMIC AND ANTIHYPERTENSIVE EFFECT OF AQUEOUS LEAVES EXTRACT OF *Anisopus mannii* IN HIGH SALT FED RATS.

Ya'u, S*, Adamu, Z., Matazu, K.I., Matazu, N.U., Usman, A., Suleiman, Z.A. and Muhammad, I.
Department of Biochemistry, Umaru Musa Yar'adua University Katsina.

Abstract
Excessive salt intake causes obesity and increase the risk of cardiovascular morbidity and mortality. In this study, we investigated the effects of aqueous extract of *Anisopus mannii* leaves in the management of hypertension in albino rats fed with high salt diet. The rats were given 8% NaCl diet for 4 weeks and then treated with the extract for additional 3 weeks in the presence of the salt diet. Administration of the extract at doses 200mg/kg and 300mg/kg caused a significant ($P<0.05$) decreased blood pressure of the rats as compared with positive control whereas 100mg/kg of the administered extract results in no significant decrease in blood pressure of the rats as compared with positive control. Administration of the extract at all doses (100mg/kg, 200mg/kg, 300mg/kg) also significantly ($P<0.05$) reduced serum total cholesterol, triglyceride, low-density lipoprotein cholesterol and increase in high density lipoprotein cholesterol as compared with untreated group.

Keywords: *Anisopus mannii*, Salt, Blood pressure, Wistar rats.

ENP 157

EFFECT OF ETHANOLIC STEM BARK EXTRACT OF *Lannea acida* ON INDOMETHACIN-INDUCED ULCER IN RATS

[*]Sarkiyayi Shehu And [1] Yusuf, Umar Aliyu

[1]Department of Biochemistry, Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria.
Corresponding Author's E-mail: sarkiyayi_shehu@yahoo.com, 08031803942

Abstract
Effect of ethanolic stem bark extract of *Lannea acida* on indomethacin- induced ulcer in rats was determined. In this study, we aimed to qualitatively and quantitatively determined phytochemicals of ethanol stem bark extract of *Lannea acida*, to determine the in vitro antioxidants status of ethanol stem bark extract and extract fractions of Lannea acida using DPPH, FRAP and TBARS, to determine anti-ulcerogenic effects of ethanol stem bark extract and extract fractions of Lannea acida on indomethacin-induced ulcer in rats, to determine in-vivo antioxidant enzymes activities using superoxide dismutase (SOD) and examine the histopatology of stomach of normal, ulcer control and the treated rats. Albino rats were divided into nine different groups of six rats in each group. The first three groups served as normal control, experimental control and standard control groups, the remaining six groups served as treatment groups. The normal control group received normal feeds and distilled water only, the rest of the groups were ulcerated by oral administration of single dose of indomethacin (30 mg/kg /body weight). Ulcerated rats were orally administered with extract and extract fractions I and II at 200 and 400 mg/kg/ body weight once daily for 14 days except experimental control group. Biochemical and antioxidant parameters were then evaluated. The study indicates that indomethacin caused a significant increase in ulcer index, volume of gastric juice, free and total acidity, malondialadehyde level and pepsin activity. The values of gastric pH, SOD activity and protein content were significantly reduced. However, administration of *Lannea acida* extract in rats reversed these parameters. The results of the research are indicative of antisecretory and antioxidative effects of the extract, which was revealed in its ability to reverse the gastric juice secretion parameters and to scavenge the free radical produced by MDA level. From the above finding *Lannea acida* contain bioactive potential for treatment of gastric ulcer.

ENP 158

EVALUATION OF ANTIMICROBIAL PROPERTY AND PHYTOCHEMICAL CONSTITUENTS OF *Tridax PROCUMBENS* LEAVES EXTRACTS

***Shehu Shaayau, Sani Jamilu, Jelani Isah Usman and Wasagu Rabiu Saidu Umar.**
Department of Biochemistry, Usmanu Danfodiyo University, Sokoto.
(Correspondence: email: elmafary@gmail.com T: +2348064881350)

Abstract
The phytochemical constituents and antimicrobial property of leaves extracts of *Tridax procumbens* were investigated in this study. Qualitative phytochemical analysis was conducted using standard procedures and the antibacterial and antifungal properties were tested using agar well diffusion method. The analysis revealed the presence of alkaloids, glycosides, flavonoids, tannins, saponins and steroids in the extracts. The antibacterial activity was tested in methanol and ethanol extracts against three bacterial isolates; *Staphylococcus aureus*, *Bascillus subtillis* (gram positive) and *Salmonella specie* (gram negative). The extracts showed inhibitory effects against all the test isolates, which was comparable with that of the standard drug Ampicillin, but the effect of ethanol extract was stronger. The antifungal activity was tested in N-hexane extract against *Candida albicans* and *Aspergillus niger*. The extract also exhibited inhibitory activity against both fungal species, which was comparable with that of the standard drug Fluconazole. These results suggest that *T. procumbens* leaves contain abundant bioactive compounds in its leaves that possess inhibitory effects against the tested bacterial and fungal isolates and can therefore, be effective in the treatment of some bacterial and fungal infections.

Key words: Phytochemical, anti-bacterial, anti-fungal, extract and *Tridax procumbens*

ENP 159

EVALUATION OF ANTI-MICROBIAL, ANTI-INFLAMMATORY AND ANTI-ARTHRITIC PROPERTIES OF SECONDARY METABOLITES FROM FUNGI, *Aspergillus flavus*.

Kelani Teslimat Olamide[1*], Oni Azeezat Omobukola[1], Oyawoye Fatima Olatundunmomi[1], Afolabi-Balogun Nusirah Bolatitio[1]
Email: Kelanito@yahoo.com Phone number: +2348074602425, +2348063184934
[1]Department of Chemical sciences, Fountain University Osogbo, Opposite Olomola Hospital, along Agric Settlement Road, Oke-osun, Osogbo-Osun state, Nigeria.

Abstract
Fungi of families; Ascomycota and Basidiomycota are known to produce different secondary metabolite, which are bioactive and serve several benefits to man. However, the culturing condition as well as the constituent of the media plays significant roles on the quantity and diversity of metabolites produced. In this study, validated pure *Aspergillus flavus* characterized from the soil of Osun Osogbo Grove was conditioned to produce secondary metabolite using malt extract agar and its secondary metabolites were screened for biological activities. *Aspergillus flavus* was grown in malt extract agar for 56 days in the dark. Secondary metabolites were then extracted from the mycelium. The extract obtained was subjected to silica gel column and thin-layer chromatography purification. Thereafter, the fractions from column chromatography were identified using GC-MS analysis and evaluated for antimicrobial, anti-inflammatory and anti-arthritic property. Total concentration obtained after evaporation was 5mg/ml. GC-MS analysis of the chromatography fractions revealed the presence of a number of compounds including Carbamodithioic acid, formyl-, methyl ester, 11-(2-Cyclopenten-1-yl) undecanoic Acid, Pentanoic acid, 4-methyl- and 1,5-Hexadiene, 3-methyl-. The fractions containing Carbamodithioic acid, formyl- and methyl ester exhibited inhibitory effect on staphylococcus, while the fractions containing Carbamodithioic acid, formyl-, methyl ester, 11-(2-Cyclopenten-1-yl) undecanoic Acid, Pentanoic acid, 4-methyl- and 1,5-Hexadiene, 3-methyl- exhibited in-vitro anti-arthritic effects. Overall, the secondary metabolites obtained from *Aspergillus flavus* exhibited antimicrobial, anti-inflammatory and anti-arthritic activities, and thus are agents of therapeutic importance. To this extent, the study confirmed the bioactive importance of column purified secondary metabolites from *A. flavus.*

Keywords: Fungi, secondary metabolite, *Aspergillus flavus*, mycelium, GC-MS, bioactive, anti-microbial, anti-inflammatory and anti-arthritic

ENP 160

A-AMYLASE, MALTASE AND SUCRASE INHIBITIONS BY AQUEOUS EXTRACTS OF *Piliostigma reticulatum* (CAESALPINIACEAE) AND A RECIPE COMPRISING *ACACIA NILOTICA* (FABACEAE) AND *Piliostigma reticulatum* IN EXPERIMENTAL RATS

Abubakar Gidado*, Hafsat Sule Tagi, Suleiman Abdullahi and Miriam Watafua

Department of Biochemistry, Faculty of Science, University of Maiduguri, Maiduguri, Borno State
*Corresponding Author Email- abugidado@unimaid.edu.ng Mobile phone number - 08032828098

Abstract

Amylases, maltase and sucrase enzymes are involved in digestion of carbohydrate meals and are therefore targets for inhibition to prevent postparandial blood glucose rise in diabetes mellitus. Extracts of the leaves of *Piliostigma reticulat*um and a recipe comprising seeds of *Acacia nilotica* and leaves of *Piliostigma reticulatum* are reported to possess antidiabetic activity. This study reports the inhibitory potential of the aqueous extracts of the plant and the recipe on the carbohydrate digestive enzymes *in vivo* to establish their possible mechanism of action. 100 and 200 mg/kg doses of the extracts were co-administered to normoglyceamic rats with starch for the α-amylase and maltose or sucrose for the maltase and sucrase inhibitions respectively. Acarbose was used as standard drug for comparisons. A 39% and 31% increases in blood glucose levels were seen after 30 and 60 minutes respectively following starch administration to the experimental rats. Co-administration of starch with the aqueous extract of *P. reticulatum* at 200 mg/kg dose completely inhibited the rise in the blood glucose. Similar pattern was also observed when the aqueous extract of the recipe at the 200 mg/kg dose was administered with the starch. Postprandial rise in blood glucose was also inhibited when the extracts were co-administered with maltose but not with sucrose. The results therefore suggest that the antidiabetic potential of the plants may be associated with amylases and maltase inhibitions.

ENP 161

PHYTOCHEMICALS AND *IN VITRO* ANTIOXIDANT STUDIES OF *Daucus carota* L. SEED EXTRACTS

Habibu Tijjani[1,*] Hassan Uba[1], Saminu Musa[1], Sani Muktar[1], Simon K. Subudam[1], Yusuf Abubakar[1], Adegbenro P. Adegunloye[2] and Adamu J. Alhassan[3]

[1]Natural Product Research Laboratory, Department of Biochemistry, Bauchi State University, Gadau, Bauchi State, Nigeria.
[2]Biochemistry Unit, Department of Biological Sciences, Wesley University of Science and Technology, Ondo, Ondo State, Nigeria.
[3]Department of Biochemistry, Bayero University, Kano, Kano State, Nigeria.
*Corresponding author. E-mail: haatscific@gmail.com; Phone no.: +2348037327138.

Abstract

Daucus carota seeds are important in the treatment of a broad spectrum of ailments. This study evaluated the phytochemicals status and *in vitro* antioxidant activities of aqueous and diethyl ether extracts of *D. carota* seed. 50 g of *D. carota* seeds were pulverized and dissolved in 200 ml distilled water for 24 hours, the crude aqueous extract obtained (AQE, 11.05g, 22.1% yield) was partition in water/diethyl ether (2:1) to yield the diethyl ether fraction (DEE, 0.45g, 0.90% yield). The extracts were evaluated for quantitative phytochemicals, 2,2-diphenyl-1-picrylhydrazyl (DPPH), total antioxidant capacity and ferric ion

reducing effect at 0.4 to 2.0 mg/ml. AQE and DEE contain alkaloids (7.28%, 5.22%), flavonoids (5.56%, 4.03%), saponins (4.68%, 1.52%), steroids (3.23%, 2.71%), tannins (0.40%, 0.27%) and phenol (0.37%, 0.22%) respectively. The DPPH scavenging effect of the extracts was superior to the reference compound butylated hydroxytoluene (BHT) with IC_{50} of 2.84 mg/ml compared to AQE with 2.00 mg/ml and DEE with 1.39 mg/ml respectively. AQE extract when compared with BHT had similar total antioxidant capacity while BHT was significantly ($p<0.05$) higher than DEE. However, both AQE and DEE express better ferric ion reducing effect compared to BHT at the concentration range. The results shows that aqueous and diethyl ether extracts of *D. carota* seed possess good *in vitro* radical scavenging activities with presence of higher phytochemical content in the aqueous extract.

KEYWORDS: Antioxidants; *Daucus carota;* Phytochemicals; Partition extract; Seeds

ENP 162

SAFETY EVALUATION OF NATURAL PRODUCT AND ITS *IN VITRO* ANTIOXIDANT PROPERTIES - *Detarium microcarpum* PLANT LEAF

Augustina O. Akinsanmi[*,1,2], Titilayo O. Johnson[1], Longdet Y. Ishaya[1], Aguiyi C. John[2,3],

[1]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos
[2]African Center of Excellence in Phytomedicine Research and Development, University of Jos, Jos.
[3]Department of Pharmacology, Faculty of Pharmaceutical Sciences, University of Jos, Jos
Tel. no.-+234 803 282 2672 E-mail – tinamakeens@gmail.com

Abstract

There is a great need to boost the foreign direct investment (FDI) in Nigeria, and one of the major ways is to enhance the research of natural product. Such findings can be translated into product in the industries. Nigeria has a vast bio-diversity that is yet to be explored. *Detarium microcarpum* has a high antioxidant capacity, and has been used for ethno medicinal purposes, such as antidiabetic, antibacterial, antifungal, and antiviral. This can be used as, herb, nutraceutical, supplement, and important constituent in diets. The *in-vitro* antioxidant activity of methanolic extract of *Detarium microcarpum* (DML), its Butanolic fraction (BfDML) and Ethyl acetate fraction (EfDML) were determined by Hydroxyl, Nitric -oxide, 1,1-Diphenyl-2-picrylhydrazyl (DPPH), 2, 2-azino-bis(3-ethylbenzazoline-6-sulphonic acid (ABTS) free radical scavenging and inhibition of lipid peroxidation ($FeSO_4$ and SNP induced) activities. From the IC50 results, DPPH (24.92±0.13mg/ml), NO (44.85±0.84mg/ml), MDA-Fe induced (50.69±1.20mg/ml) and MDA-SNP induced (31.29±0.32mg/ml), EfDML had the highest scavenging and MDA prevention abilities. Toxicity testing by Organization for Economic Cooperation and Development (OECD) method (Disease activity index, haematological, liver and kidney function tests and histological studies) revealed that the rats fed EfDML fraction showed no signs of toxicity up-to a dose level of less than 2000mg/kg body weight. In conclusion, these results indicates that, EfDML possesses a strong antioxidant capacity and has a relative high margin of safety (<2000mg/kg); and can be considered as one of the product for use in driving an increase in the FDI; both in pharmaceutical and food industries in Nigeria.

Keywords: Natural products, Antioxidants, Acute toxicity (LD_{50}), total antioxidant capacity, free radical scavenging activities

ENP 163

EFFECT OF AQUEOUS EXTRACT OF *Vernonia amygdalina* ON LIPID PROFILE OF TESTOSTERONE AND ESTRADIOL INDUCED BENIGN PROSTATIC HYPERPLASIA IN ADULT MALE RATS

Ugwu Melvin Nnaemeka*[1], Eteng, Mbeh Ubana[2], Dasofunjo, Kayode[1] and Ujong Peter Ujong[1]

[1]Department of Medical Biochemistry, Faculty of Basic Medical Sciences, Cross River University of Technology, Okuku Campus, Nigeria

[2]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Calabar, Calabar Nigeria

Correspondence to: E-mail: melvincrux@yahoo.com. Phone: +2348038728570

Abstract

Plant extracts belong to the most popular drugs in the medical management of lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia/benign prostatic enlargement. We investigated the effect aqueous extract of *Vernonia amygdalina* (VA) on lipid profile of BPH. BPH was induced in male rats weighing 250-350g through exogenous administration of testosterone and estradiol by subcutaneous injection. A total of 30 rats were divided into five groups. One group was used as a control and the other groups received subcutaneous injections of the hormones for 3 weeks to induce BPH. Groups 1 and 2 were treated with different doses of VA extracts and group 3 received finasteride, while group 4 was left untreated, group 5 served as normal control. After forty-five days of treatment with VA extract, the rats were sacrificed. Blood was collected by cardiac puncture and the sera centrifuged and used for the determination of lipid profile. The prostate were harvested and weighed. Treatment with extract caused a significant decrease in the size of the enlarged prostate ($p<0.05$) when compared with the BPH control group. The level of cholesterol and LDL-C were significantly reduced when compared to the BPH control. There was a significant change in HDL concentration in all groups treated when compared to BPH control group. The significant reduction of cholesterol, LDL and increase in HDL supported by reduced prostate weight suggest that the extract hold potentials for amelioration of alteration in lipid metabolism as a result of induction of BPH in rats.

Keywords: Testosterone, estradiol, cholesterol, TG, HDL and LDL-C

ENP 164

IN VITRO AND *IN VIVO* INVESTIGATION ON EFFECT OF SEED EXTRACT OF *Moringa oleifera* ON SINGLE AND MIXED INFECTION WITH *Trypanosomal brucei brucei* AND *Trypanosomal congolense* IN ALBINO RATS.

[*1] Ujah, Frederick Oduh [2] Balkisu, Oyeronke Abdulrahman and [1]Swase, Dominic Terkimbia

[1]Department of Chemical Sciences, College of Sciences and Education, University of Mkar, Mkar. P.M.B 017, Benue State, Nigeria.

[2]Department of Biochemistry, Faculty of Biomedical sciences, Bayero University Kano, Kano Nigeria.

[*]corresponding author: oyiujah2004@yahoo.com, 08039234148, 08150605821

Abstract

This study examined the trypanocidal activity of *Moringa oleifera* seed on rats infected with *Trypanosomal brucei brucei* (T.b.b) and *Trypanosomal congolense* (T.c). The acute toxicity (LD_{50}) was carried out and the plant showed no apparent signs of toxicity. In-vitro trypanocidal activity of *Moringa* seed showed the highest activity at 10mg/ml within five minutes of incubation. The in-vivo study also showed inhibition in the group infected and treated whereas, there was a case of death recorded in the groups infected without treatment. The mean body weight of the infected rats were observed to decrease steadily although not statistically significant at $P<0.05$. Hematology revealed a significant decrease ($p< 0.05$) in PCV and Hb, an indication of anemia but was significantly increased in the treated groups. Furthermore, rats infected with T. b.b and T.c, revealed a significant increase in levels of AST, ALT and ALP in the untreated groups but were significantly decreased ($p<0.05$) in the treated groups. From the findings, the seed extract of *M. oleifera* could serve as adjuvant to fodder of cattle and other ruminants as a curative measure against T. b.b and T. c.

ENP 165

EVALUATION OF PAWPAW SEED POWDER AS PHYTOBIOTIC TO IMPROVE GROWTH PERFORMANCE, FEED EFFICIENCY, ANTIOXIDANT ENZYME ACTIVITY AND SERUM BIOCHEMICAL PRAMETERS OF BROILER CHICKENS

[*]Umar Muazu, *Mohammed Aliyu-Paiko

[*]Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai
Corresponding Author: umarmuazu1321@gmail.com; +2347063529882

Abstract

Phytobiotics are plant derived products added to feed to improve the performance of farmed animals. Phytobiotics exhibit variety of properties, including antioxidant, growth promoting, appetite enhancing and stimulation of enzyme activities. This study investigated potential effects of *carica papaya* seed powder (PSP) to improve growth performance, feed efficiency, antioxidant enzyme and serum biochemical activities of broiler chickens. Sixty day old chickens were randomly distributed into three treatments and fed diets (commercial starter feed) mixed with 0, 0.5 and 1% PSP for the six weeks starter period. Feed and Water were offered to the birds in all the different treatments *ad-libitum*. Feed consumption, growth performance and water intake were monitored weekly when cages were also cleaned. At the end of the experiment, results showed that growth performance and feed efficiency of broilers were not significantly ($p>0.05$) influenced by dietary treatments. There were also no significant ($p>0.05$) influence of PSP on serum biochemical parameters such as SGPT, SGOT, ALP, bilirubin, albumin, creatinine, proteins, potassium, chloride, sodium and urea. The result of antioxidant enzyme activities revealed a dose dependent relationship, as the activities of Superoxide dismutase and Catalase were significantly ($p<0.05$) influenced by dietary inclusion of PSP. Furthermore, lipid peroxidation assay decreased significantly ($p<0.05$) in treatments with PSP when compared to the control. From the results of this experimentation, feeding broiler chickens with diets mixed with PSP did not adversely affect feed efficiency, growth performance and serum biochemical parameters but positively influenced serum antioxidant enzyme activity to enhance their resistance against infections.

Key words: Phytobiotic, Pawpaw seed powder, broiler, antioxidant

ENP 166

EVALUATION OF SOME INDICES OF HEPATIC DAMAGE, OXIDATIVE STRESS AND RENAL FUNCTION IN ALUMINUM CHLORIDE INTOXICATED WISTAR RATS TREATED WITH ETHANOL LEAF EXTRACT OF *Vernonia amygdalina*

[1]Edet Okon Akpanyung, [2]Utibe Evans Bassey, [1]Utonne Texubong Noah

[1]Department of Biochemistry, University of Uyo, Uyo, Akwa Ibom, Nigeria
[2]Department of Biochemistry, Obong University, Etim Ekpo, Akwa Ibom, Nigeria
Correspondence: edetakpanyung@gmail.com

Abstract

The effect of ethanol leaf extract of *Vernonia amygdalina* on aluminum chloride intoxicated albino Wistar rats was investigated. Twenty-five (25) male Wistar rats weighing 180 – 220 g used for the study were divided into five (5) groups with 5 rats in each group. Group 1 served as control. Group 2 was administered 100 mg/kg of aluminum chloride daily for 14 days. Group 3 received 400 mg/kg of ethanol leaf extract of *Vernonia amygdalina* for 14 days. Group 4 received 100 mg/kg of aluminum chloride and

400 mg/kg of ethanol leaf extract of *Vernonia amygdalina* simultaneously. Group 5 received aluminum chloride for 14 days and was allowed to remain for another 14 days without treatment. Serum was obtained for assay of lipid peroxidation product, some antioxidant and liver enzyme activities as well as urea and creatinine. Liver and kidney sections were used for histological studies. The results show that serum malondialdehyde (MDA) concentration was significantly ($P<0.05$) elevated in response to treatment with aluminum chloride. Administration of ethanol leaf extract of *Vernonia amygdalina* significantly ($P<0.05$) reduced the MDA concentrations. There were no significant changes ($P>0.05$) in the activities of the antioxidant enzymes. The activities of ALT, AST and ALP were significantly increased ($P<0.05$) in the aluminum chloride intoxicated group while the extract treated groups showed reduced activities close to control values. Serum urea and creatinine concentrations which were significantly elevated ($P<0.05$) due to the administration of aluminum chloride were observed to decrease significantly ($P<0.05$) following administration of the extract. Serum electrolyte levels were not significantly altered. Histological evaluation of the liver and kidney sections corroborated the results obtained from the biochemical analyses. The present study has demonstrated that administration of ethanol leaf extract of *Vernonia amygdalina* protects against the toxic effects of aluminum chloride in male albino Wistar rats.

Keywords: *Vernonia amygdalina*, Lipid peroxidation, Antioxidant enzymes, Hepatotoxicity, Nephrotoxicity.

ENP 167

ANTIOXIDANT POTENTIAL OF *Azadirachta indica* LEAF EXTRACTS ON ALBINO RATS ENVENOMED WITH *Naja nigricollis* VENOM

Ibrahim Sani, Sufiyanu Abubakar Jiga*, Fatima Bello, Abubakar Abdulhamid

Department of Biochemistry, Kebbi State University of Science and Technology, Aliero, Nigeria
*Corresponding Author's E-mail: jigasufyanu@gmail.com, Phone No.: +2348032915146

Abstract

Medicinal plants' extracts have been used to supplement the use of commercial antivenom due to its adverse effects. Majority of these plants are only used without knowing the mechanism for neutralizing the venom toxicity. Hence, this research was aimed at evaluating the antioxidant potentiality of *Azadirachta indica* leaf extracts as a mechanism of venom neutralization in albino rats. In order to achieve this, *in vitro* and *in vivo* experiments were conducted using standard methods. The results indicated remarkable antioxidant potentials of hexane (79%) and ethyl-acetate (76%) extracts when compared to ascorbic acid (75%) and α-tocopherol (77%). The *in vivo* study indicated antioxidant potentials of these extracts on hepatic and renal tissues homogenates of Albino rats when compared to venom control group. The hexane and ethyl-acetate extracts of the *A. indica* leaf increased the activities of hepatic SOD and CAT to 17.97±3.11 U/g and 64.07±8.81 U/g for SOD and 0.25±0.02 U/g and 0.28±0.16 U/g for CAT respectively when compared to venom control activities of the enzymes (14.76±2.48 and 0.15±0.05 U/g respectively). Renal GPx activities were raised to 114.10±19.02 U/g and 105.65±17.61 U/g for the hexane and the ethylacetate extracts respectively when compared to the venom control (63.16±10.53 U/g). These extracts decreased the level of hepatic and renal ROS significantly ($P<0.05$) to 340.00±120.00 mmol/g and 60.00±37.42 mmol/g respectively when compared to the venom control (463.33±79.30 mmol/g and 70.00±21.60 mmol/g respectively). Based on these results, it has been established that, this plant has antioxidant activity as a mechanism of action against *Naja nigricollis* venom toxic effect.

Keywords: *Naja nigricollis, Azadirachta indica,* Albino rats, Antioxidants, Antivenom

ENP 168

ANTIHYPERLIPIDEMIC ACTIVITIES OF AQUEOUS EXTRACT OF *Daucus carota* L. SEED IN TRITON X-100 INDUCED HYPERLIPIDEMIC MICE MODEL

Yusuf Abubakar[1], Simon K. Subudam[1], Hassan Uba[1], Sani Muktar[1], Saminu Musa[1], Adamu J. Alhassan[2] and Habibu Tijjani[1*]

[1]Natural Product Research Laboratory, Department of Biochemistry, Bauchi State University, Gadau, Bauchi State, Nigeria.

[2]Department of Biochemistry, Bayero University, Kano, Kano State, Nigeria.

*Corresponding author. E-mail: haatscific@gmail.com; Phone no.: +2348037327138.

Abstract

Hyperlipidemia is a predisposing factor to diseases, including coronary heart disease and atherosclerosis. *Daucus carota* L. seed are locally used in treatment of diseases associated with dyslipidemia. This study therefore evaluates the antihyperlipidemic properties of aqueous extract of *D. carota* (AQE) seed. Hyperlipidemia was induced by single intraperitoneal injection of freshly prepared solution of Triton X-100 (100 mg/kg body weight) in physiological saline (0.9% NaCl solution) after overnight fasting for 12 h in 20 mice which were randomly distributed into 4 groups (group B-E) of 5 mice per group. Group A were non induced untreated mice which received distilled water while groups B-E were induced and treated with distilled water, simvastatin (10 mg/kg body weight) and AQE at 50 and 100 mg/kg body weight respectively. All animals were sacrifice after 24 hours of extract administration under diethyl ether anesthesia. Aqueous extract of *D. carota* seed significantly ($p<0.05$) decrease the levels of plasma cholesterol, triglyceride and low density lipoprotein (LDL) cholesterol at all treatment doses with significant increase ($p<0.05$) in high density lipoprotein (HDL) cholesterol at 100 mg/kg body weight when compared with untreated mice. Furthermore, significant decrease ($p<0.05$) was observed in hepatic cholesterol at all treatment doses when compared with untreated mice. However, no significant difference ($p<0.05$) were observed in hepatic triglyceride when compared with untreated mice. Decrease were observed in feacal cholesterol, feacal triglyceride and feacal protein by treatment with AQE at 100 mg/kg body weight. More so, AQE significantly decrease ($p<0.05$) coronary artery, atherogenic and cardiac indices. Aqueous extract of *D. carota* seed express antihyperlipidemic properties in triton X-100 induced hyperlipidemic mice model and could prevent further complications associated with plasma hyperlipidemia.

Keywords: Hyperlipidemia; *Daucus carota;* Lipid profile; Cardiovascular indices

ENP 160

INCLUSION OF CASHEW NUT MEAL AS PHYTOBIOTIC IN FEEDS TO IMPROVE GROWTH PERFORMANCE, FEED EFFICIENCY, BLOOD METABOLIC AND ENZYMATIC PROFILE OF BROILER CHICKENS.

Yusuf, Hulelatu Umar, M. Aliyu-Paiko

Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai.

Abstract

Phytobiotics are natural products from parts of plants that exhibit diverse properties. Their inclusion in diets increases general performance of farm animals. This study evaluated the effects of including cashew nut meal (CNM) in feed on growth performance and other parameters in broiler chickens, after 6 weeks of feeding trial. Sixty birds were grouped into three treatments, where T_1 was fed commercial diet only. T_2 and T_3 were maintained on diets containing 2% and 4% CNM, respectively. Feed and water were

supplied *ad-libitum* during the experimental period. Growth performance, feed consumption and water intake were monitored weekly, when also cages were cleaned. Results revealed that T_2 differed significantly ($P< 0.05$) in growth compared to T_1 and T_3. However, no significant ($p>0.05$) difference was noted in the concentrations of other monitored blood biochemical parameters. Similarly, the values for hematological parameters such as haematocrit (PCV), Hb, RBC, mean corpuscular haemoglobin concentration (MCHC), mean corpuscular haemoglobin (MCH), mean cell volume (MCV), PLT, RDWC, GRA, MID were also not significantly affected ($P>0.05$) by the dietary treatments. On the other hand, WBC count was higher in treatment groups compared to the control, as serum superoxide dismutase (SOD) and catalase (CAT) activities differed significantly ($P< 0.05$) in the treatment group except for T_2, which did not differ ($P>0.05$) from the T_1 treatment. Based on results in this study, CNM could be used to improve immune system of broiler chickens without adverse effect on growth performance and feed efficiency.

Keywords: Phytobiotics, Cashew nut meal, antioxidant enzymes, haematological parameters

ENP 170
PROTECTIVE EFFECTS OF METHANOL/ACETONE EXTRACT OF *N. latifolia* FRUIT ON LEAD ACETATE INDUCED LIVER AND KIDNEY DAMAGE IN RATS

[*]Busari Musa Bola[1, 2], Tsado Amos Ndarubu[3], Hamzah Rabiat Unekwu[1], Muhammad Hadiza Lami[1], Adeniyi Jamiu Olabanji[1], Adakole Jennifer Onyowo[1]

[1] Department of Biochemistry, Federal University of Technology, Minna, Nigeria
[2]Centre for Genetic Engineering and Biotechnology, Global Institute for Bioexploration Unit, Federal University of Technology, Minna, Nigeria
[3]Department of Biological Sciences, Niger State Polytechnic Zungeru, Niger State
Corresponding Author: aosbmbas@gmail.com (+2348050501497)

Abstract

Protective effects of methanol/acetone extract of *N. latifolia* fruit was assessed on lead acetate induced liver and kidney damage in male rats. The LD_{50}, antioxidant activities and phytochemical components of the extracts were also determined using standard methods. Fifteen Wister male albino rats were grouped into five groups of three rats per group. The toxicity was induced through the administration of 1000mg/kg body weight of lead acetate solution orally. After150mg/kgbw and 300mg/kgbw of methanol/acetone extract of *N. latifolia* fruit and 0.5ml/kgbw of saline along with 100mg/kg of standard drug (silymarin) were administered to four of the groups while the fifth group was non-toxic rats. The LD_{50} >2000mg/kg with dose dependent antioxidants properties. High concentrations of flavonoids (18.09±0.03mg/g), total phenols (61.39±0.28mg/g) and Tannins (10.72±0.21 mg/g) with trace amount of alkaloids (28.34±0.20µg/g) and saponins (43.29±1.71µg/g). The treatment of toxic rats with methanol/acetone extract of *N. latifolia* fruit resulted in significant ($p<0.05$) decrease in activities of liver and kidney function biomarkers; AST, ALT and ALP when compared with untreated group. Likewise, concentration of other biochemical markers such as bilirubin, urea, creatinine and serum electrolytes also showed significant improvements when compared with untreated group. The findings of this study suggest that the acetone/methanol extract possesses protective effect against lead acetate induced liver and kidney damage in rats. Therefore *N. latifolia* can be a source of drug for the management of lead poison.

ENP 171
BIOGUIDED ANTIMALARIAL AND HEPATOPROTECTIVE POTENTIALS OF *T. glaucescens* STEM BARK IN *Plasmodium berghei* INFECTED MICE.

Eustace B. Berinyuy[1,3], Mann Abdullahi[2], Adamu, Y. Kabiru[3], Emmanual O. Ogbadoyi[3].

1 Faculty of Medicine and Biomedical Sciences, University of Yaounde1, Cameroon
2 Federal University of Technology, School of Life Sciences, Department of Chemistry, Minna, Nigeria
3 Federal University of Technology, School of Life sciences, Department of Biochemistry, Minna, Nigeria.

Abstract

The use of plants for the treatment and alleviation of diseases dates back since the prehistoric times. Bio guided fractionation of 80% methanol was used to investigate antimalarial activity of *T. glaucescens* and the fractions evaluated for liver function indices. Secondary metabolites present in the extracts were determined using standard procedures. The *in vivo* antiplasmodial effects were evaluated using curative model. Packed cell volume (PCV), bodyweight and mean survival time of mice were determined. The study revealed a significant ($P<0.05$) dose dependent decrease in parasitaemia level in the crude extracts compared to the negative control. The parasitized groups treated with extracts at 100, 300, and 500 mg/kg bodyweight produced percentage suppressive parasitaemia of 45.95%, 59.61% and 66.31%. The positive control group treated with chloroquine 5 mg/kg bodyweight showed the highest parasitaemia suppression of 76.88% and extended the survival period to more than 30 days. The infected nontreated group had increasing parasitaemia and all died before the 10th day. All the extracts employed in this study have significant prevention of weight and PCV reduction at all dose level. The phytochemical studies revealed the presence of phenols (0.86±0.05), alkaloids (0.49±o.05), saponins (0.12±0.01), Tannins (0.05±0.08) and flavonoids (0.086±08) mg/100g. The extract was safe with LD_{50} at 3808 mg/kg bodyweight. The percentage parasite inhibition in methanol partition were 66.95, 69.01 and 71.53% in groups treated with 100,200 and 300 mg/kg bodyweight. The ethylacetate partition exhibited higest percentage inhibitions of 67.44, 69,86, and .73,13%. The column fractions showed a dose dependent antimalarial activity. It was observed that the ALT and ALP activity were significantly ($P<0.05$) higher in infected nontreated than the infected treated groups with fractions. The results suggest the plant is safe and hepatoprotective and hence, justify the use of the plant in traditional medicine to treat malaria.

Key words: *Terminalia glaucescens*, bioguided, antimalarial, hepatoprotective

ENP 172
OPTIMIZATION OF SOME MECHANICAL PROPERTIES OF EDIBLE CHITOSAN COMPOSITE FILMS USING BOX-BEHNKEN SURFACE RESPONSE METHODOLOGY

***OSSAMULU, Ifeanyi Famous, AKANYA, Helmina Olufunmilola, EGWIM, Evans Chidi and KABIRU, Adamu Yakubu**

Department of Biochemistry, Federal University of Technology, Minna

Email: i.ossamulu@futminna.edu.ng or ossafame@gmail.com Phone: 08065350388

Abstract

Response surface methodology was used in the optimization of the amount (g) of chitosan, starch, protein and glycerol for the development of composite edible film. Box-Behnken experimental design from design expert software (11.0.5.0) was used. Four factors: starch (A) at 0-2 g, chitosan (B) at 0-2 g, protein (C) at 0-1 g and glycerol (C) at 0-1 g compositions, 3-levels (-1, 0 and +1) and five replicates at the centre point generated twenty seven (27) runs and the predictive models for the different responses (thickness,

elongation, young modulus, maximum tensile strength (MTS), toughness, solubility, moisture, transmittance, water vapour transmission rate (WVTR) and density). Linear, two factor linear (2FL) and quadratic models were generated for all the responses. However, thickness, moisture, solubility and transmittance only had linear and 2FL but no quadratic model. The linear effect of chitosan, starch and glycerol was significant ($p<0.05$) for thickness, elongation, density, moisture, thoughness and transmittance whereas, protein was significant for MTS, toughness solubility and transmittance. Film elongation was the only property significantly ($p<0.05$) effected by all the 2FL combinations. The combination, AB showed significant ($p<0.05$) effect on all the responses except for MTS, young modulus, moisture, solubility and transmittance. The effect of BC was only significant ($p<0.05$) on MTS, elongation and transmittance while BD had significant ($p<0.05$) effect on all the responses except MTS and toughness. Water vapour transmission rate was significantly ($p<0.05$) effected by all the combinations except BC. However, there was a significant quadratic effect on The result for optimization showed that factors; chitosan (1.04 g), starch (0.50 g), protein (0.00 g) and glycerol (0.30 g) generated optimal responses at favourable range (thickness = 0.14 mm, elongation=1.66 mm, young modulus = 5.45 Mpa/mm, MTS = 1.41 MPa, toughness = 1.38 MPamm, solubility = 18.01 %, moisture = 13.28 %, transmittance = 84.98 %, WVTR = 0.06 g/m^2/day and density = 1.15 mg/dm^3) with a desirability of 78.3%. The predictive models generated can therefore be used in the development of edible chitosan based films to suit the choice of the manufacturers.

Key words: Chitosan, Box-behnken design, Optimization, Response, Film

ENP 173
PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF *Curcuma longa* (TURMERIC) RHIZOME

[1]Adudu Judy Atabat,* [1]Sangodare Rose, [1]Edem Okon, [1]Otori Mercy, [1]Odeke Evelyn Hope, [1]Idio Uduakobong Ime, [2]Okezie, Victoria Chisolu, Anyim Benadeth Patrick
1 Scientific and Industrial Research Dept, National Research Institute for Chemical Technology, Zaria.
2 Quality Control Department, Nigeria Natural Medicine Development Agency, Lagos State.
*Corresponding author email: judyasanato@gmail.com; 08024029539

Abstract

The development of bacterial resistance to the available antibiotics and increasing popularity of traditional medicine has led researchers to investigate the antibacterial compounds in plants. One medicine in that category is turmeric (*Curcuma longa*) which belongs to the ginger (Zingiberaceae) family. Its major constituents are fat soluble, polyphenolic pigments known as curcuminoids which give turmeric its unique aroma, flavour and medicinal properties. In this study, the in vitro antimicrobial activity of the aqueous extract of *Curcuma longa* rhizome was investigated against standard strains of *Staphylococcus aureus* (ATCC 6571), *Escherichia coli* (ATCC 25922), *Salmonella typhi* (ATCC 6539), *Pseudomonas aeruginosa* (ATCC 27853) and *Bacillus subtilis* (6633) using the agar well diffusion method. Different concentrations of the extract were prepared ranging from 400 mg/ml to 12.5 mg/ml. *Pseudomonas aeruginosa* was more sensitive to the extract with zones of inhibition ranging from 23mm to 13mm. *Salmonella typhi* was the least sensitive with zones of inhibition ranging from 18mm to 7mm. Mean MIC values were as follows: *S. aureus* (12.5 mg/ml), *E. coli* (50 mg/ml), *S. typhi* (50 mg/ml), *P. aeruginosa* (12.5 mg/ml) and *B. subtilis* (25 mg/ml). Qualitative phytochemical revealed the presence of alkaloids, flavonoids, saponins, glycosides and tannins.

Key Words: Bacterial resistance, *Curcuma longa,* curcuminoids, antibacterial activity, zone of inhibition.

ENP 176

QUALITATIVE AND QUANTITATIVE PHYTOCHEMICAL ANALYSIS OF MAERUA CRASSIFOLIA LEAVES USING VARIOUS SOLVENTS

***Aletan Uduak I[1]. and Kwazo Hadiza A[2].**

[1]Department of Pure and Applied Sciences, Faculty of Science, National Open University of Nigeria, Jabi, Abuja. Nigeria

[2]Department of Chemistry, Shehu Shagari College of Education, Sokoto. Nigeria

*Corresponding author E mail: ualetan@noun.edu .ng Tel: 234 8070707683

Abstract

Qualitative and quantitative phytochemical screening of different solvent extracts of *Maerua crassifolia* leaf was carried out using standard methods. Ethanol, chloroform, methanol, deionized water, acetone and petroleum ether were used as solvents. The presence of eight secondary metabolites (alkaloid, saponin, flavonoid, cardiac glycosides, tannin, phenols, anthraquinones and steroids) was tested. The results showed that four of these phytochemicals were present in all the solvent extracts (alkaloid, flavonoid, phenol, and combined anthraquinones) while, cardiac glycoside was not detected in any of the solvent extracts used. Although saponin was present in only four of the solvent extracts, it had the highest value in the quantitative analysis (120.37±0.18 mg/100g) from the aqueous extract while the highest quantity of flavonoids (38.47±0.32 mg/100g) was from the acetone extract. Percentage alkaloids ranged between (0.025±0.007mg/100g) from the methanol extract to (0.93 ± 0.03mg/100g) from the aqueous extract. Petroleum ether extracted the highest quantity of combined anthraquinone (74.61± 0.22 mg/100g). The presence of various phytochemicals has further established the previous findings that *Maerua crassifolia* leaf is a good source of therapeutical compounds and further identifies the most appropriate solvent for the extraction of the required phytochemical. This can be extensively studied to extract the natural compounds which are beneficial to human beings and that could be commercialized for higher production thus limiting the use of synthetic drugs with side effects.

Keywords: Qualitative, Quantitative, Phytochemical analysis, *Maerua crassifolia*

ENP 177

ANTIOXIDANT ACTIVITIES OF THE LEAVES AND STALKS EXTRACTS OF *Justicia carnea HOOKER*

Udedi, S.C. and Asogwa K.K.

Departmet of Applied Biochemistry, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria.

Abstract

Oxidative stress plays a major part in the development of chronic and degenerative ailments such as cancer, autoimmune disorders, rheumatoid arthritis, cataract, ageing, cardiovascular and degenerative disease. Peroxidation of lipids exposed to oxygen is responsible for damage to tissues in vivo, where it may cause cancer, inflammatory diseases, atherosclerosis, and ageing. The effects are considered to be caused by free radicals that are produced during peroxide formation from fatty acids polyunsaturated fatty acids. The antioxidant activities of the aqueous, boiled and methanol extracts of the leaves and stalks of *Justicia carnea hooker* was evaluated using standard methods. The result obtained showed that the boiled extract of both the leaves and stalks had the best ability to scavenge free radicals (EC50 = 543.84µg/ml) with a significant (α=0.05) different from the standard antioxidant, BHA, (615.00µg/ml). The methanol

extract of the leaves show the highest activity against lipid peroxidation (IC50 = 451.08µg/ml) when compared with that of the aqueous and boiled extracts but this was significantly lower (α=0.05) than that of the standard antioxidant, BHA, (422.88) which had a better activity. The percentage inhibition of the H_2O_2 radical by the boiled and methanol extracts of the leaf was higher than those of the aqueous extract and standard antioxidant (BHA), but that of the methanol extract of the stalk was higher than the standard antioxidant and the aqueous and boiled extracts. The leaf extracts showed higher activity when compared with the stalk extracts. The ferric reducing capacity of the boiled extract of the leaf was higher compared to those of the standard, aqueous and methanol extracts, whereas, the methanol extract of the leaf had the highest ability to inhibit lipid peroxidation, this was followed by the boiled extract while the aqueous extract had the least ability to inhibit lipid peroxidation. These results suggest that the boiled extract of the leaf and stalk of *Justicia carnea hooker* has high antioxidant potential and could serve as a remedy to the deleterious effects of oxidative stress.

ENP 178

EFFECT OF ALKALIS, SUGARS, VEGETABLE OIL AND SODIUM CHLORIDE ON GELATINIZATION PROPERTIES OF STARCHES FROM *Colocasia esculenta* AND *Colocasia antiquorum*

Cyril-Egware K.Y.,* Onukogu S.C., Egwim E.C. and Ossai P.C.

Department of Biochemistry, Federal University of Technology Minna
*karinateegware@outlook.com; 08160421485

Abstract

Cocoyam is a root and vegetable crop, rich in carbohydrate and cultivated mainly for food. The corms are boiled and used as soup thickeners, pounded fufu or roasted in fire and eaten. Cocoyam serves is an alternative source of starch and can be employed for industrial uses. The work is based on modification of starch in order to get starch for industrial processes. The amylose content, effect of alkalis, sugars, sodium chloride and vegetable oil on gelatinization time and temperature of the pink and white cocoyam starches were determined. The microscopy of both starches was also evaluated using fluorescent microscopy. The results revealed that the yield, amylose content and the gelatinization time and temperature of the native starches of pink and white cocoyam were 11.1% & 5%; 81% & 83% and 1:43mins $(55\text{-}60)^0$C & 1:02mins $(57\text{-}66)^0$C respectively. The presence of sugars, and vegetable oil increased gelatinization time and temperature while the alkalis and sodium chloride reduced the gelatinization time of the pink cocoyam starch but the gelatinization temperature of both starches increased. The microscopy indicated that the pink and white cocoyam starches have granular shapes that are spherical but the pink cocoyam starch granules appeared larger. The gelatinization property of these starches would be beneficial in industrial processes like gum production, thickening, binding and improvement of digestibility. The alkali modification of starch improves its use as binder and thickeners while the sugar modification can be applied in production of sweeteners and lipid modification makes starch better emulsifiers.

Keywords: alkali, cocoyam, gelatinization time, gelatinization temperature, granular shape, physicochemical and structural properties, sugars, starch.

ENP 179
FOAMING CHARACTERISTICS OF SAPONINS OF SEED PODS OF *Hibiscus sabdariffa* LINN. (RED VAR.)

***Pogu Yakubu and Oluwole Adebayo Sodipo**
Department of Biochemistry Faculty of Science University of Maiduguri P.M.B. 1069 Maiduguri
*Correspondence e-mail: yakubupogu25@gmail.com; Tel. No. 07064262495

Abstract

The foaming characteristics of saponins are relevant to their applications in detergents, cosmetics, food and other related industries. The aim of this study was to determine the foaming characteristics (foam power and foam stability) of saponins of seed pods of *Hibiscus sabdariffa* Linn. (red var.). The phytochemical screening was carried out to determine the probable presence of saponins and other secondary metabolites. The results showed probable presence of saponins in the seed pods of *Hibiscus sabdariffa* Linn. (red var.). Various methods of extraction were conducted and percentage yields were obtained from the extracts i.e. aqueous, methanol and n-butanol. The methanol extract possessed the highest yield of 12.92% compared to aqueous and n-butanol extracts of 6.61% and 1.11% respectively. The foaming heights and foaming times of n-butanol, aqueous, methanol extracts and detergents (Tween 80 and Triton X-100) were subjected to statistical analysis (ANOVA). The results showed no significant differences (at $p<0.05$) between the foam heights and foaming times of Tween 80 and varying significant differences at varying concentrations for the extract. The foam power of 0.5% of n-butanol extract solution was 43.75%, indicating that it was metastable compared with values of 87.28% and 73.57% for Triton X-100 and Tween 80 respectively. In view of this, saponins of the seed pods of *Hibiscus sabdariffa* Linn. (red var.) may be useful in detergent related industries.

ENP 180
ANTIOXIDANT AND ANTIHYPERLIPIDEMIC ACTIVITY OF METHANOL EXTRACT OF *Borassus aethiopum* FRUIT IN TRITONX-100 INDUCED HYPERLIPIDEMIC RATS

Umaru Hauwa Aduwamai[*], Bala Alfa Mahmud and Dahiru Daniel
Department of Biochemistry School of Life Sciences Modibbo Adama University of Technology Yola, P.M.B. 2076 Adamawa State, Nigeria
[*]Corresponding author email: umaruhauwa@yahoo.com , Telephone: +2348053473576, +2348182904504

Abstract

The antihyperlipidemic activity of methanol extract of *Borassus aethiopum* fruit was tested in Triton X-100 induced hyperlipidemic rats. The hyperlipidemia was induced by a single intraperitoneal injection of Triton X-100 (100mg/kg bwt). The qualitative and quantitative phytochemical analysis of the fruit extract revealed the presence of Flavonoid, saponin, steroids, phenols, tannins, terpenoids and alkaloid with flavonoid having the highest percentage. The GC-MS analysis carried out revealed the presence of alpha tocopherol, oleic acid, dibutyl phthalate, costunolide, citronellol, ascorbyl palmitate, ergosta-5, 22-dien-3, 9,19-Cyclolanost-24-en-3-ol and Ergost-22-en-3-ol. The antioxidant activity of the methanol extract was also determined using Hydrogen peroxide (H_2O_2), 2, 2-Diphenyl-l-Picryl Hydrazyl (DPPH) and Ferric Reducing Antioxidant Power (FRAP) assay at different concentrations. Result obtained revealed high antioxidant activity comparable to ascorbic acid in a dose dependent manner. Treatment of hyperlipidemia with methanol extract of *Borassus aethiopum* fruit at different concentrations significantly ($p\leq 0.05$) decreased the levels of lipid profile parameters and increased the level of high density lipoprotein cholesterol (HDL-C) when compared to control group in a dose dependent manner. Result obtained from this study indicates that the methanol extract of *Borassus aethiopum* fruit used in this research possess strong antihyperlipidemic activity comparable to the standard drug atorvastatin.

Key words: Hyperlipidemia, Lipid profile, Antioxidant activity, *Borassus aethiopum*, Triton X-100

ENP 181

ANTIOXIDATIVE PEPTIDE (VLPVPQK) FROM BUFFALO MILK CASEIN EXHIBIT ANTI-OSTEOPENIC EFFECTS IN ESTROGEN-DEFICIENT RAT MODELS

Sanusi Bello Mada [a, b], Srinu Reddi [b], Suman Kapila [b], Auwalu Garba [a], Muawiya Musa Abarshi[a], Hafsat Abdullahi Mohammed [a]

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria

[b]Animal Biochemistry Division, ICAR-National Dairy Research Institute, Karnal, India

* Corresponding author's e-mail address: sbmada@abu.edu.ng Phone Number: +2348038152143

Abstract

Oxidative stress has been implicated as a crucial pathogenic factor in the development of postmenopausal osteoporosis. Milk-derived antioxidative peptides are gaining much attention toward the development of prodrugs for alleviating several human diseases, including osteoporosis. The aim of the present study was to determine whether antioxidant peptides are good candidates for alleviating postmenopausal osteoporosis. In the present study, an ovariectomized (OVX) osteoporotic rat model was used to investigate the protective effects of buffalo milk casein-derived novel peptide VLPVPQK (PEP) against OVX-induced bone loss and the related mechanisms. The results of the present study indicated that daily administration of antioxidative peptide PEP at 50 and 100 mg/kg for eight weeks prevents body weight gain, uterine weight loss, and atrophy of endometrial lumen. Moreover, PEP increased femur dry weight, ash weight, bone ash calcium, and serum calcium and phosphorus level. Interestingly, PEP increased bone mineral density and improved trabecular microarchitecture in femur of OVX rats. Additionally, PEP increased bone strength, reduced serum bone turnover markers, inhibited bone resorbing cytokines and decreased malondialdehyde level in OVX rat. Furthermore, PEP-elevated serum transforming growth factor-β, increased, reduced glutathione levels, superoxide dismutase, and catalase activity altered by OVX. We demonstrated that PEP exhibits antiosteopenic effects via enhancement of antioxidant activity and reduction of bone-resorbing cytokines expression.

Keywords: Peptide (VLPVPQK)**,** antioxidative effect**,** postmenopausal osteoporosis, ovariectomized rat**,** oxidative damage**,** bone-resorbing cytokine.

ENP 182

IN VITRO AND *IN VIVO* ANTI-INFLAMMATORY ACTIVITY OF HYDROMETHANOLIC EXTRACT OF *Grewia crenata* LEAVES

A. N. Ukwuani-Kwaja[1], A. Abdulhamid[1] and S. O. Folami[1]*

[1]Department of Biochemistry, Faculty of Science, Kebbi State University of Science and Technology, Aliero, Kebbi state, Nigeria.

Corresponding Author Tel.: +2347063502938 E-mail address: medical4real@gmail.com

Abstract

Grewia crenata is a plant with acclaimed analgesic and anti-inflammatory property amongst traditional bone setters in north- west Nigeria. Hydromethanolic extract of *Grewia crenata* leaves (GCL) was assessed for its anti-inflammatory activity. *In vitro* anti-inflammatory activity was evaluated using membrane stabilization tests (heat and hypotonicity –induced haemolysis) and protein denaturation assay while the *in vivo anti-inflammatory* activity was assessed on egg-albumin induced oedema model in albino rats. The results showed that GCL at a concentration range of 50 – 400 µg/ml significantly ($p<0.01$) protects the HRBC membrane against heat-induced haemolysis though it was not significantly difference ($p>0.05$) when compared to standard drug (diclofenac). However, the effect of the extract on hypotonicity-induced haemolysis was significantly increased ($p<0.01$) when compared to that of the standard drug. Albumin denaturation were significantly ($p<0.01$) inhibited in a concentration-dependent manner in both the drug and the extract. In the *in vivo* study, the effect of graded doses of GCL extract (200 – 400mg/kg) on egg-albumin-induced oedema produced a time-dependent oedema inhibition ($p<0.05$) from the 60^{th} – 180^{th} minute while significant reduction ($p<0.05$) in oedema by diclofenac was observed from 120^{th} – 180^{th} minute. The results obtained in the present study suggest that hydromethanolic leaves extract of *Grewia crenata* could be a potential source of anti-inflammatory agent.

Keywords: (anti-inflammatory activity, *Grewia crenata*, HRBC membrane, haemolysis, percentage protection)

ENP 183
ANTI-INFLAMMATORY EFFECT OF ETHANOL EXTRACT OF *Combretum zenkeri* LEAVES

Nwodo Okwesilli Fred Chilietugo., *Ogbu Chidera Peace., Anaduaka Emeka Godwin., Joshua Parker Elijah and Okagu Innocent Uzochukwu

Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
*Address all correspondence to innocent.okagu@unn.edu.ng

Abstract

The anti-inflammatory activity of the ethanol extracts of *Combretum zenkeri* leaves was ascertained by evaluating its inhibitory effect on egg-albumin induced paw oedema in rats and also its effect on the *in vitro* activities of phospholipase A_2 and membrane stabilization. The acute toxicity test carried out on the extract gave LD_{50} value as 3807.89 mg/kg b.w. The extract at doses of 50 and 100 mg/kg b.w. and indomethacin 50 mg/kg b.w. were administered intraperitoneally to separate groups of the rats. Control group received 1 ml of normal saline. Ethanol extract of *C. zenkeri* significantly ($p < 0.05$) reduced, in a dose-dependent manner, fresh egg albumin-induced rat paw oedema comparable to that by indomethacin, the standard anti-inflammatory drug used. The extract significantly ($p < 0.05$) inhibited phospholipase A2 activity in a concentration-related manner compared to the control, with a range of 100 - 800 µg /ml inhibiting the enzyme activity by 54.94 – 60.24%. At various doses (100-800 µg/ml), the extract also significantly ($p < 0.05$) inhibited heat and hypotonicity-induced haemolysis of human red blood cells compared to control. The highest percentage inhibition of both heat-induced (90.6%) and hypotonicity-induced (59%) haemolysis were both obtained at 800 µg/ml of the extract. The anti-haemolytic effect at 100 mg/kg b.w. of the extract was comparable to that obtained for 200 mg/kg b.w of indomethacin. In a concentration-dependent manner, the extract significantly ($p < 0.05$) inhibited $CaCl_2$-induced platelet aggregation when compared to control. This study thus demonstrates that the ethanol extract of *C. zenkeri* leaves possess anti-inflammatory activity and its mechanism of action could be through the inhibition of phospholipase A_2, anti-platelet aggregation and by membrane stabilization.

Keywords: *Combretum zenkeri*; Anti-inflammatory; paw oedema; Phospholipase A_2; Membrane stabilization; platelet aggregation.

ENP 184
IN VITRO ANTIOXIDANT ACTIVITIES OF CRUDE POWDER, METHANOL AND AQUEOUS EXTRACTS OF FONIO MILLET (*Digitaria exilis*)

Omaji G. O*, Osibemhe M., Orji B.O., Ilouno L.E., Abdulrahman B.O. and Ajadi A.O.

Department of Biochemistry and Molecular Biology, Faculty of Science, Federal University Dutsin-ma, Dutsin-ma, Katsina state, Nigeria.
*Email of Corresponding Author: gomaji@fudutsinma.edu.ng +234 (0) 8104639613

Abstract

This study evaluated the *in vitro* antioxidant activities of the crude powder, methanol and aqueous extracts of *Digitaria exilis*. The antioxidant activity was determined by measuring reducing ability, and free radical scavenging activity by hydrogen peroxide method. Total phenols and total flavonoids contents were also evaluated. The total phenolic contents of the crude powder, methanol and aqueous extracts were 30.86 ± 0.68, 57.96 ± 6.85 and 44.98 ± 2.13 mg per gallic acid equivalent (GAE)/g respectively. The total flavonoid contents in crude powder, methanol and aqueous extracts were 16.67 ± 1.90, 38.75 ± 9.76, 28.75 ± 5.44 mg quercetin equivalent (QE)/g respectively. In the reducing ability and hydrogen peroxide free radical scavenging assay, all samples showed similar antioxidant activity compared to ascorbic acid, the standard antioxidant used. The results obtained in this study indicates that *Digitaria exilis* has antioxidant activity and may account for the use of the grains in traditional system of medicine.

Keywords: *Digitaria exilis*, antioxidant activity, hydrogen peroxide, reducing ability

ENP 185

PHENOL BIODEGRADATION BY A NEWLY IDENTIFIED BACTERIUM- *Pseudomonas* sp. AQ5-04

Abubakar Aisami[1, 2*], Siti Aqlima Ahmad[1], Nur Adeela Yasid[1]and Mohd Yunus Shukor[1]

[1]Department of Biochemistry, Faculty of Biotechnology and Bimolecular Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia
[2]Department of Biochemistry, Faculty of Science, Gombe State University, Gombe, Nigeria
*Corresponding Author: abubakar.aisami05@gmail.com, 08067750526

Astract

Phenol is mainly used by many industries to produce a variety of chemical products such as resins, textiles, pesticides, plastics and explosive. However, the wide usage of phenol and other phenolic compounds within the industries has made it a highly toxic environmental pollutant. Bioremoval is believed to be the most effective method to remove phenol compared to other physio-chemical methods. Identification was carried out using 16s rRNA sequencing. The isolates were inoculated in mineral salt media with 0.5 g/L phenol as the sole source of carbon. Physical and cultural conditions influencing phenol degradation such as pH, temperature, salinity and nitrogen source were optimised via one-factor-at-a-time. The highest degradation was achieved at pH 7.5 (phosphate buffer) with an optimum temperature of 30°C for *pseudomonas* sp. AQ5-04. Ammonium sulphate was found to be the best nitrogen source with the concentration of 0.4 g/L for *pseudomonas* sp. AQ5-04. Accession number KT693287 is assigned to the bacteria.

Keywords: Phenol, Biodegradation, *Pseudomonas*, 16s rRNA, one-factor-at-a-time

ENP 186

LIPID PROFILE OF *PYTHON* FAT AND ITS ANTI-INFLAMMATORY POTENTIALS

Ozougwu E. Vincent*, Sani B. Shadrach, Ferdinand C. Chilaka

Department of Biochemistry University of Nigeria, Nsukka, Enugu State, Nigeria.
*Corresponding author email: vincent.ozougwu@unn.edu.ng +2347036610711

Abstract

Ethnozoological studies have shown that *Python sebae*, is associated with medicinal uses in Nigeria. This study was designed to determine the chemical composition of the oil extracted from the body fat of *Python sebae* and to evaluate its anti-inflammatory potentials. The methyl esters of the fatty acids present in the samples were identified using GC-MS. The anti-inflammatory activity of oil was tested using egg albumin-induced paw oedema in rats and membrane stabilization (heat-induced and hypotonicity-induced haemolysis of human red blood cells (HBRCs). The chemical composition of the fixed oils of *Python sebae* identified 13 constituents representing 94.97% of the total sample. The percentages of saturated and unsaturated fatty acids were 17.91 and 74.76%, respectively, with the most abundant components being linoleic (34.54%). The *Python sebae* fat was found to significantly ($p < 0.05$) reduce the oedema induced by the phlogistic agent in rats in a dose-related manner and the reduction was during the early and later phases of the inflammation. Also, the fat was shown to exhibit membrane-stabilizing property, as it significantly ($p < 0.05$) reduced the levels of haemolysis of HRBCs exposed to heating and hypotonic solution. Fat extracted from the *Python sebae* revealed a potent anti-inflammatory activity due to its fatty acid compositions and can be exploited for pharmaceutical and industrial applications.

Keywords: *Python* fat, anti-inflammatory, lipid profile, membrane stabilizing property, oedema.

ENP 187
EFFECTS OF FRESH POME ON SOIL NUTRIENT STATUS AND THE GROWTH PERFORMANCE OF MAIZE

Daniel Onyedikachi Ugwu*[1], Obioma Uzoma Njoku[2], Parker Elijah Joshua[2]

1: Department of Animal Production Technology, Federal College of Agriculture, Ishiagu.
2: Department of Biochemistry, University of Nigeria, Nsukka.
Corresponding author: Email: ugwudaniel2016@gmail.com; Phone: +2348065671192

Abstract

Palm oil mill effluent (POME) is a serious environmental pollutant when discharged without treatment. Reports show that untreated POME alters soil properties in different ways and the toxicity of POME to the growth of plants is still under debate. In this study, the effect of untreated (fresh) POME on some soil nutrients was investigated. The result of the chemical properties of the fresh POME shows: pH (7.00 ± 0.00) organic matter (2.95 ± 0.28%), total nitrogen (1.88 ± 0.33%), phosphate (0.08 ± 0.00 mg/l), and potassium (0.37 ± 0.01 mg/l). Soil sample from a fallowed farm land in Inyi Community of Enugu State Nigeria was amended with different concentrations of the fresh POME; 0, 250, 500, 750, and 1000 ml of fresh POME per kg of soil, followed by planting of maize seedlings. After 28 days of plant growth, the effect of the fresh POME on the growth of maize and on soil organic matter, total nitrogen, available phosphorus and exchangeable potassium was determined. The soil parameters increased ($p < 0.05$) with increase in the concentration of fresh POME when compared to the control. However, the maize growth parameters: leaf length, leaf width, leaf area and number of leaves decreased significantly ($p < 0.05$) at higher concentrations (75 and 100 %) of fresh POME. Over all, fresh POME increased soil nutrients to an extent but was toxic to the growth of maize at high concentrations and was not able to significantly improve the growth and productivity of the maize crops.

ENP 188
PHYTOCHEMICAL CONSTITUENTS AND *IN VITRO* ANTIOXIDANT ACTIVITY OF AQUEOUS AND ETHYLACETATE EXTRACTS OF CAULIFLOWER (*Brassica oleracea*) LEAVES

*[1]Umar UA, [1]Onoja NA, [1]Abarshi MM, [1]Hassan MS, [2]Ali MU

[1]Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria-Nigeria
[2]Department of Biology, Kano University of Science and Technology, Wudil, Kano-Nigeria
*Correspondence author: talktoumarali@gmail.com; +2348060478320

Abstract

This study was carried out to investigate the *in vitro* antioxidant activity and phytochemical constituents of *Brassica Oleracea L. var. botrytis* (Cauliflower) leaves (aqueous and ethyl acetate) extracts. The *in vitro* antioxidant activity was determined by 1, 1-diphenyl-2-picrylhydrazyl (DPPH) and Hydrogen Peroxide (H_2O_2) radical scavenging assays. The results of phytochemical screening revealed the presence of unsaturated triterpenes, saponins, tannins and alkaloids in both extracts while unsaturated steroids and cardiac glycosides were only detected in ethylacetate extract. Anthraquinones were detected in aqueous extract only. Flavonoids were not detected in both extracts. The results of in vitro antioxidant activity showed higher DPPH and Hydrogen peroxide radical scavenging activity by ethylacetate extract compared to aqueous extract. The results of the present study shows that ethylacetate extract of Cauliflower leaves is rich in antioxidant phytochemicals thus, further study to evaluate the ethnopharmacological uses against metabolic syndrome is recommended.

KEYWORDS: Cauliflower leaves, Solvent system, Phytochemicals, Antioxidants, H_2O_2, DPPH

ENP 189

ANTIDEPRESSANT EFFECT OF AQUEOUS EXTRACT OF *MUCUNA PRURIENS* (SEEDS) ON SOME SERUM AND BRAIN NEUROTRANSMITTER LEVELS OF DEPRESSED RATS

*Halliru Umar Farouk[a], Jaafaru Sani Mohammed[a], Baraka Abdullahi[a], HajaraAminu[a], AuwalAdamu[b]
[a]Department of Biochemistry, Kaduna State University, 2339, Tafawa Balewa Way, Kaduna State,
[b]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
***Correspondence to**: Halliru Umar Farouk, Department of Biochemistry, Kaduna State University, Kaduna State, Nigeria. Telephone: +2348034584363; E-mail:ugyani14@gmail.com

Astract

The present study was aimed to evaluate anti-depressant activity of *Mucunapruriens* and to estimate serum and brain neurotransmitters level in rats. 66 male Wister rats were divided into 8 groups including undepressed and untreated, depressed and untreated and depressed and treated groups. Three doses of *Mucunapruriens* (100, 200 and 1000mg/kg) and a standard antidepressant drug imipramine at a dose of 30mg/kg were used for 30 days. Forced swimming test (FST) and open field test (OFT), Serotonin ELISA and Spectrophotometric method were used to measure the level of serotonin and norepinephrine in serum and brain respectively. *Mucunapruriens* showed a dose dependent increase in number of square cross/5min. At a dose of 200mg/kg, the number of square cross/5min was significantly ($p < 0.05$) increased in the order of 62.25±5.25; 71.25±2.21 and 77.75±2.06 at day10, day20 and day30 respectively. Similarly, at a dose of 1000mg/kg the number of square cross/5min significantly ($p < 0.05$) increased in the order of 71.00±1.82 78.0±2.94 and 85.25±2.50 at day10, day20 and day30 respectively. *Mucunapruriens*showed a dose dependent decrease in immobility time at 100, 200 and 1000mg/kg doses; however, it also tended to reduce immobility time significantly ($p < 0.05$) in the experimental model (FST) as compared to control group. In addition, Serotonin and norepinephrine levels also increased significantly ($p < 0.05$) in serum and brain but in a dose dependent fashion compared with control group. Thus, the foregoing findings compel the conclusion that *Mucunapruriens* may provide anti-depressant-like activity in animal models.

Keywords: Antidepressant, Mucunapruriens, imipramine, neurotransmitters

ENP 190

IN VITRO ANTI-TRYPANOSOMAL ACTIVITY OF METHANOLIC EXTRACT OF *MORINGA OLEIFERA* PLANT

Zainab Aliyu Alhafiz1* and Bulus, Timothy2
1Department of Chemistry, Faculty of Science, Federal University Gusau, Zamfara State,
2 Department of Biochemistry, Kaduna State University, Kaduna, and
***Corresponding Author**. Zainab AliyuAlhafiz. Department of Chemistry, Faculty of Science, Federal University Gusau, Zamfara State, Nigeria. E.mail. zainabalhafiz80@gmail.com. Tel. 2348032846276

Abstract

Methanolic extract of different parts of *Moringa oleifera* plant (root bark, leaves and stem bark) were investigated for *in vitro* anti-*Trypanosoma bruceibrucei*activity. *Trypanosoma bruceibrucei*was cultured in Dulbecco's Modified Eagle Medium (DMEM) and incubated at 37oC and 5% CO2. Subsequently, the cultured *T. bruceibrucei*were incubated with 500µg/ml concentration of different parts of *Moringa oleifera*. The anti-trypanosomal activities indicated that the root extract of the plant was the most active at 500µg/ml with inhibitory activity of 77.78% after a period of 6 hours. Results from this study insinuates that the root extract of *moringa oleifera* exhibited the most anti-trypanosomal activity.

KEY WORDS: *Moringa oleifera,* Anti-trypanosomal activity, percentage inhibition, *Trypanosoma bruceibrucei*

ENP 191

COMPARATIVE MICROBIOLOGICAL AND PHYSICOCHEMICAL ANALYSIS OF WATER FROM TAP, TANK AND RESERVOIR FROM STUDENTS' HOSTEL, USMANU DANFODIYO UNIVERSITY, SOKOTO

*Muhammad Nuradeen Sanda1, Muhammad Ummu-kulthum1, Aminu Yusuf Fardami1, Ibrahim Abdullahi Dalhatu1, Aliyu Ibrahim Dabai1 and Muhammad Kabir Nata'ala1.
1 Department of Microbiology Usmanu Danfodiyo University, Sokoto. PMB 2346, Nigeria
Corresponding author: deenysanda003@gmail.com. Tel:- +2348130113857

Abstract

The aim of this research was to determine the bacteriological and physicochemical quality of water samples from tap, tank, and reservoir collected from students' hostel UDUS. Total viable and coliform counts were evaluated using the standard plate count method and the most probable number (MPN) technique respectively. The physicochemical parameters were analyzed using standard methods. The total viable count of the water samples ranged as follows: tap water (1.5 x105) cfu/ml, tank water (2.0 x105) cfu/ml and reservoir (2.5 x105) cfu/ml. The total coliform count of the samples in (MPN/100 ml) ranged as follows: tap water (150), tank water (1100) and reservoir (>1100). The isolated and identified bacteria were *Bacillus firmus, Escherichia coli, Shigella boydii, Klebsiella pneumonia, Citrobacterkoseri, Bacillus laterosporus, Staphylococcus warneri, Salmonella typhi, Staphylococcus aureus* and *Streptococcus Species. E. coli* was found to have the highest frequency of occurrence (27.27%). The physicochemical values of the water samples ranged as follows: pH (6.13 to 7.0), dissolved oxygen (DO) (3.56 to 5.21), biochemical oxygen demand (BOD) (9.38 to 11.29), total hardness (2.17 to 2.65) mg L-1, Electric Conductivity (100.67 to 120.43) µS/cm, Temperature (25.0 to 29.0)0C. The water samples in the present study have good physicochemical attributes for human consumption but the presence of *E. coli* and other potential enteric pathogens indicated faecal contamination of the water implying that they are not suitable for human consumption.

Key Words: Water, Bacteria, Coliform, Enteric pathogens, *Escherichia coli*

ENP 192

PROXIMATE COMPOSITION, ANTIOXIDANT VITAMINS AND SOME MINERAL CONTENTS OF *Datura stramonium* L.LEAVES

***Shehu, S.[1], Aliyu, H.[2] and Muazu, M.I.[1]**
[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria
[2]Department of Biological Sciences, Al-Hikmah University, Ilorin, Nigeria
*(*Corresponding Author, E-mail: elmafary@gmail.com; Tel: +2348064881350)*

Abstract

Datura stramonium L (Devil's snare) is a well-known folklore medicinal plant from the *Solanaceae* family with both therapeutic and poisonous potentials. It is a hallucinogen; whose consumption occasionally result in anticholinergic reactions leading to toxicity and central nervous system depression. The plant also has promising pharmacological properties. The present study investigated the proximate compositions, antioxidant vitamins and some mineral contents of *Datura stramonium* leaves using standard analytical methods. The results revealed appreciable amounts of ash (6.67±0.57%), carbohydrate (26.14±1.87%), crude lipid (1.68±0.58%), crude proteins (2.19±0.22%), fibre (43.58±0.58%) and moisture (19.00±1.00%). The values for antioxidant vitamins estimated were 14.32±6.90, 12.2±0.12 and 6.33±0.21 mg/l for vitamins A, C and E respectively. The minerals determined were sodium, potassium, phosphorous, magnesium and calcium and were found as 73.33±2.89, 983.33±28.87, 2.79±0.15, 0.55±0.05 and 0.53±0.03 mg/kg respectively. These results showed that *D. stramonium* leaves are reliable source of important nutrients, vitamins and minerals as well. Hence, the neverthelesstroublesome plant has nutritional significance.

Key words: Proximate composition, vitamins, minerals, *Datura stramonium.*

ENP 193

EFFECTS OF JUICE EXTRACTS OF LEMON, APPLE AND CARROT ON LIPID PROFILE AND WEIGHT OF MALE ALBINO WISTAR RATS

[1]Kingsley ChukwudiOnuh, [2]Chika Joy Uchenna

[1]Department of Biological Sciences, Nigerian Defense Academy.[2]Department of Biochemistry, Institution: University of Jos.

Corresponding Email address: chukwudionuh@nda.edu.ng

Abstract

This study seeks to compare the effects of the juice extracts of apple, lemon and carrot on the lipid profile and weight of albino Wistar rats. Twenty male rats were randomly separated into six groups, A, B, C, D, E and F. A high lipid diet was introduced by feeding the rats with butter for a period of twenty eight (28) days after which 1ml of the various juice extracts were administered as follows; Group A fed with normal diet and no treatment (control), Group B fed with butter only and no treatment (control), Group C fed with butter and treated with lemon juice extract, Group D fed with butter and treated with carrot juice extract, Group E fed with butter and treated with apple juice extract, Group F fed with butter and treated with a mixture of lemon, carrot and apple juice extract. Analysis was carried out after administering treatment for twenty one (21) days to determine the effect of the various juices on Total Cholesterol, Triglyceride, High Density Lipoprotein (HDL), and Low Density Lipoprotein (LDL). The results obtained from this study show that treatment of test subjects in group C with lemon juice lowered significantly ($P<0.05$), triglyceride levels (0.730 ± 0.034 mmol/L) while treatment of test subjects in group D with carrot juice increased significantly ($P<0.05$), the HDL-High Density Lipoprotein (1.250 ± 0.033 mmol/L) value compared with values obtained from other treated test subjects. Test subjects in group E treated with apple juice showed a significant ($P<0.05$) decrease in LDL-Low Density Lipoprotein levels (0.338 ± 0.018) compared with other test subjects, it also showed a significant decrease in Total Cholesterol (1.870 ± 0.024) alongside test subjects in group F treated with a mixture of the juice extract of lemon, carrot and apple (1.870 ± 0.036). Test subjects in groups C and D treated with lemon and carrot juice respectively, also showed a decrease in percentage weight gain, 6.6% and 7.9% after treatment. The toxic effect of the juice extracts was also determined using biochemical enzymes markers and results showed that test subjects treated with carrot juice in group D showed a significant ($P<0.05$) decrease in ALP and ALT levels while in group C treated with lemon juice, test subjects showed a significant decrease in the levels of AST and ALT. The juice extracts of apple, lemon and carrots taken individually or together can therefore, form part of alternative solutions for lowering hyperlipidemia conditions as well as maintaining normal levels of the lipid profile.

Keywords- Lipid Profile, Hyperlipidemia, Lipoprotein, Triglyceride.

ENP 194

PHYTOCHEMICAL AND ANTIMALARIAL POTENTIAL OF METHANOL EXTRACT Treculiaafricana ROOT BARK FOR THEIR ANTIMALARIAL POTENTIALS

***IDRIS, H., Ajemba, C., Fadipe, L.A. and Ibikunle, G.**

Department of Chemistry, Federal University of Technology, PMB 65, Minna, Niger State, Nigeria
Corresponding author: ismi.idris@Julminna.edu.ng 07061285231

Astract

Malaria is one of the most common infectious diseases in the World. Currently, anti-malarial drug resistance has become one of the challenges to malaria control efforts and this warrant urgent search for new anti-malarial chemotherapeutics. Medicinal plants are backbone of traditional medicine and are rich sources for screening active phytochemicals against malarial. This study is intended at evaluating the anti-malaria activity of Treculiaafricana root bark a plant which is traditionally used in the treatment of malarial. Furthermore, its saponin and sapogenin content will also be evaluated for their anti-malaria potential. Crude methanol root .bark extract, was partitioned exhaustively with butanol. The butanol fraction (saponins) was tested for its anti-malarial efficacy in Plasmodium berghei infected Swiss albino mice. The anti-malarial screening involved treating infected mice with 200, 400 and 600 mg/kg body weight of extract and fraction, while the positive control group was given 25 mg/kg body weight of standard chloroquine drug. The butanol fraction showed a significant suppressive rate 600 mg/kg (76.8%) than those treated at 400 mg/kg (70.7%) and that of 200 mg/kg (36.5%). The suppression rate of the fraction was lower in comparison to chloroquine (93.9% at 25 mg/kg). Qualitative, quantitative and chromatographic studies of the butanol fraction revealed that the fraction exhibited higher saponins content. Acid hydrolysis was carried out on the butanol fraction (saponins content) to yield sapogenins. From the result obtained, butanol fraction revealed the efficacy of Treculiaafricana root bark as an anti-malarial agent.

Keywords; Anti-malaria, Treculiaafricana, Plasmodium berghei, bujanol, root bark.

ENP 195

PHYTOCHEMICAL SCREENING AND *IN-VITRO* ANTITYPHOID EVALUATION OF A NIGERIAN COMERCIAL POLY HERBAL PRODUCT

**[1]Muhammad, I; [1]Matazu, K.I; [1]Matazu, N.U; [1]Kankia I.H; [1]Usman, A; [1]Yaradua, A.I; [1]Yau', S; [1]Shamsu, S; [1]Nasir, A; [1]Suleiman, Z.A [1]Abdulhamid, Y; [1]Nasir, R; Abubakar, M; [1]Amina, H; Sa'adatu, H; Aliyu, B and Abubakar, W.H*

[1]Department of Biochemistry, Umaru Musa Yaradua University, P.M.B. 2218 Katsina, Nigeria.
**corresponding author: ismaila.muhammad @umyu.edu.ng 08065547740*

Abstract

In this research, phytochemical screening and anti-salmonlla activity of a popular commercial polyherbal formulation made from various ethno medicinal plants marketed in northern part of Nigeria by SACRA MULTI LINKS LTD (Baban Aisha Herbal formulation) were carried out against pure isolate of *Salmonellae Typhi* to evaluate its *in* vitro anti salmonella effects. The liquid herbal product was dried at a temperature of 40◦C to obtain its powdered form. The Antimicrobial activity was determined using disk diffusion technique, minimum inhibitory concentration (MIC) and minimum bactericidal concentration

(MBC) values were determined. Four different concentrations (50mg/ml, 100mg/ml, 150mg/ml, and 200mg/ml) of the herbal product were used against pure isolate of salmonella while Ciprofloxacin was used as control. The preliminary phytochemical investigation revealed the presence of alkaloids, flavonoids, saponins, glycosides and tannins in the herbal product. The anti-salmonella activity demonstrated susceptibility of the varying concentrations of the product as was evident in the different diameters of zones of inhibition displayed by the product. It showed an MIC of 8±0.0mm at 50mg/ml and18±2.0mm at 200mg/ml and MBC at 200mg/ml. The findings of this work suggests that sacra herbal product have considerable anti salmonella activity and is promising to act as potential formulation for treating typhoid fever from natural plant sources. Further investigations including exploration of mechanism of action of the herbal product is envisaged.

Key words: Sacra herbal product, phytochemicals, Salmonella, Ciprofloxacin.

ENP 196

EFFECTS OF METHANOLIC EXTRACT OF THE LEAVES OF *Hannoaklaineana* ON ETHANOL AND INDOMETHACIN-INDUCED GASTRIC ULCER IN RAT MODEL

Ibrahim Abubakar[a], Hassan Muhammad Yankuzo[b], YushauShuaibuBaraya[c],MuazuAbubakarGusau[a]*
[a]Department of Biochemistry, Faculty of Science, [b]Department of Medical Biochemistry, College of Health Sciences, [c]Department of Pathology, Faculty of Veterinary Medicine, UsmanuDanfodiyo University Sokoto, Nigeria.
*Corresponding author: +2358035052912, magusau@udusok.edu.ng

Astract

Gastric ulcer is a common gastrointestinal disease affecting 5% of the world's population. *Hannoaklaineana* is used locally in the treatment of various gastrointestinal diseases and fevers including malaria. This study aims at evaluating the toxicity profile and anti-ulcer effects of methanolic leaves extract of *Hannoaklaineana*(Simaroubaceae). Acute toxicity test of the extract was conducted according to Organization for Economic Cooperation and Development (OECD) guideline 423 using the limit test dose of 5000 mg/kg in Wistar rats for 14 days observation period. Sub-chronic toxicity test was carryout according to OECD guideline 407 by daily administration of 500 and 1000 mg/kg of the extract for 28 days. Anti-ulcer effect of the extract (100, 200 and 400 mg/kg b.wt) was evaluated using ethanol (Astudillo*et al.*, 2002) and indomethacin (Kakub and Gulfraz, 2007) induced ulcer models. In acute test, the limit test dose of 5000 mg/kg caused no mortality or any clinical sign of toxicity in the rats, thus, the LD_{50} value of the extract is > 5000 mg/kg. In sub-chronic toxicity test, the extract produced significant increase (p<0.01) in body weight and weight of the liver (p<0.001), spleen (p<0.001) and kidneys (p<0.01) of the rats. There was also significant dose-dependent decrease in serum AST ($p<0.01$), ALP (p<0.001), urea (p<0.001), uric acid (p<0.001) and creatinine (p<0.01) levels. Ethanol model, the extract produced significant (p<0.05) dose-dependent reduction in mean ulcer index, with inhibition (62.84%) of gastric lesion at 400 mg/kg. While indomethacin model, the test extract caused significant (p<0.001) dose-dependent decrease in mean ulcer index with percentage gastro protection (99.20%) at 400 mg/kg. This study suggested that *Hannoaklaineana*extract is safe for oral administration and exhibits strong anti-ulcer effects, thus validating the traditional use of the plant leaves in ulcer treatment.

Keywords:*Hannoaklaineana*, Toxicity, Anti-ulcer effects, Biochemical parameters.

ENP 197

PHYTOCHEMICAL COMPOSITION AND ANTIMICROBIAL POTENTIAL OF ETHYL ETHER CRUDE EXTRACT OF *Tephrosiaplatycarpa*

Ambugus O. Peter[1*]; Amaya J. Habila[1]; Grace O Idoko[2]; Halima Zubair[1]; Jumoke Kafayat[1]; Enyeribe Colins[1]; Gideon G. Gamde[1]; Danlami A. Danzarami[1]

[1]Directorate of Science and Technology Nigerian Institute of Leather and Science Technology, Zaria

[2]Directorate of Research and Development, Nigerian Institute of Leather and Science Technology, Zaria

***Corresponding Author:** E-mail—ambuguspeter@gmail.com, Phone—09067120318

Abstract:

Phytochemical composition and antimicrobial potential of ethyl ether crude extract of *Tephrosiaplatycarpa* was carried out using standard procedures. The following phytochemicals are present: alkaloids, phenols, steroids, tannins, terpenoids, cardiac glycosides, carbohydrates, proteins, amino acids, coumarins, triterpenoids, and quinone. On the antimicrobial potential, all the organisms tested were sensitive to the extract except *Candida albicans* at the Minimum Inhibitory Concentrations of 12.5, 25, 25, and 50mg/ml for *Staphylococcus aureus*, *Salmonellatyphi*, *Bacillus subtillis*, and *Escherichia coli* respectively. The extract was bactericidal against *Staphilococcus aureus*, *Salmonella typhi* and *Escherichia coli* at the Minimum Bactericidal Concentrations of 25, 50 and 100mg/ml in that order. From the result of the findings, the ethyl ether crude extract of *Tephrosiaplatycarpa* contains secondary metabolites with antimicrobial potential.

ENP 198

HYPOGLYCEMIC EFFECT OF ACROSTICHUM AUREUM (Golden leather fern)

***Faruq Usman, E.O Ogbadoyi, A. Abubakar**

Department Of Biochemistry, *Federal University of Technology Minna*

*corresponding author Email: faruqamin10@gmail.com +234-81 4884 5821

Abstract

The search for medicinal plants with hypoglycemic activity for the management of diabetes remains on the increase. Little attention has been given to marine plants as compared to their terrestrial counterparts despite recent discovery of their potentials in the management of diabetes. Acrostichum aureum (golden leather fern) is a marine plant found in the coastal areas of Africa and Asia. The hypoglycemic effect of Acrostichum aureum was evaluated via oral glucose tolerance test (ogtt) in normal and oral glucose-induced hyperglycemic rats. A single dose of 150mg/kg bodyweight of 70% methanolic extract of acrostichum aureum was administered to the glucose (2g/kg) induced hyperglycemic rats and the blood glucose was monitored at 0, 30, 60 and 90 minutes respectively. The results were expressed in mmol/L as mean ± standard deviation. From the results, 70% methanolic extract of acrostichum aureum showed greater activity (4.18 ± 0.41) as compared to the standard group (metformin) (4.67 ± 0.42), normal control group (5.823 ± 0.57) and glucose without treatment group (4.75 ± 0.57). Phytochemical screening of the plant revealed phytochemicals implicated in antidiabetic activity such as phenols, flavonoids and tannins. Antioxidant screening using DPPH scavenging activity shows the plant to posses high antioxidant activity. In all, the plant appears to be valuable with potentials for the management of diabetes.

ENP 199

CHEMOPREVENTIVE AND REMEDIATION EFFECT OF *Adansonia digitata L.* BAOBAB (BOMBACACEAE) STEM BARK EXTRACTS IN MOUSE MODEL MALARIA

Adeoye A.O[1, 2*] and Bewaji C.O[2]

[1]Department of Biochemistry, Faculty of Sciences, Federal University Oye Ekiti, Nigeria.
[2]Department of Biochemistry, University of Ilorin, Kwara, Nigeria.
Corresponding Email: akinwunmi.adeoye@fuoye.edu.ng Tel: +2348035597883

Abstract

This study investigated the efficacy of *A. digitata* stem bark extract in offering protection against experimental malaria and also examined its remediation effect when administered after established infection. *Materials and methods:* Weanling albino mice were used in the study and were transfected intraperitonially with an inoculums size of 1x 10^7 of chloroquine susceptible strain of *Plasmodium berghei* infected erythrocytes. Mechanisms of action of the extract were investigated by measuring the degree of tissue peroxidation and tissue antioxidant status. Severity of malaria was determined by measuring the serum C-reactive protein (CRP), tumor necrosis factor-alpha (TNF-α), and serum and tissue Alkaline phosphatase (ALP) activity. *Results:* There was a significant increase in serum CRP, TNF-α concentrations and serum and tissue ALP activity in the control mice following *P. berghei* infection.All the treatment had effect on the growth of *P. berghei* parasites in mice. The extracts showed a significant dose dependent increase packed cell volume (PCV), percentage chemosupression/clearance and a significant decrease in percentage parasitemia at the two doses when administered after established infection. Methanolic extract (MEAD) at 400mg/kg exhibited the highest chemosupressive activity. The extract significantly reduced the degree of tissue peroxidation, increased the level of reduced glutathione (GSH), catalase and superoxide dismutase activity. Administration of the extract after established infection reduced serum CRP and TNF-α concentrations and serum and tissue ALP activity. *Conclusion:* Our study suggests that *A. digitata* protects against *P. berghei* induced-malaria and that administration of the extract after established infection reduced malaria progression.

Keywords: Malaria, *Adansonia digitata*, Tissue peroxidation, C-reactive protein, Tumor necrosis factor-α.

ENP 200

DRUG REPURPOSING AND SCREENING OF LIBRARIES OF CHEMICAL COMPOUNDS TO IDENTIFY NEW ANTI-PARASITIC AGENTS

***ADEYEMI** Oluyomi Stephen[1, 3], **ESEOLA** Abiodun Omokehinde[2], **KATO** Kentaro[3]
[*1]Department of Biochemistry, Medicinal Biochemistry, Nanomedicine and Toxicology Laboratory, Landmark University, PMB 1001, Ipetu Road, Omu-Aran-251101, Nigeria.
yomibowa@yahoo.com; +2347034507902
[2]Institute of Inorganic and Analytical Chemistry, Friedrich-Schiller-Universität Jena, Humboldtstraße 8, 07743 Jena, Germany.
[3]National Research Center for Protozoan Diseases, Obihiro University of Agriculture & Veterinary Medicine

Abstract

Toxoplasma gondii is an intracellular parasite and the etiological agent of toxoplasmosis, a common parasitic disease capable of infecting a range of hosts, including nearly one-third of the human population. Available treatment options for toxoplasmosis patients are limited. They include the use of anti-malarial drugs or antibiotics, which often cause significant side effects. Currently, toxoplasmosis constitutes a large global burden that is further enhanced by the shortcomings of available therapeutic options, thus underscoring the urgent need to identify and develop new therapies. Non-biased screening of libraries of

chemical compounds including the repurposing of well-characterized compounds is emerging as viable approach in identifying lead candidates for early drug development against parasitic diseases. As a proof-of-principle screening to identify effective anti-parasitic agents, we evaluated libraries of natural product (503), FDA-approved (640) compounds as well as imidazole derivatives (27) for potential to inhibit *T. gondii* growth. We identified 39 new compounds that potently and selectively restrict the growth of *T. gondii*. The findings are new and promising, and do not only strengthens the prospects of drug repurposing and the screening of wide range of chemical compounds as a viable approach in drug discovery toward effective anti-parasite therapy but also support imidazole-based compounds as alternative source of effective anti-parasitic agents.

Keywords: Drug discovery; Library screening; Medicinal biochemistry; Toxoplasmosis

ENP 201

MEDICINAL AND TOXICOLOGICAL INVESTIGATION OF *Sesbaniacannabina*

Abubakar Lawal,* Mustapha AbdullahiLadan, and Nura Suleiman Gwaram
Department of Chemistry, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, P.M.B. 2218 Katsina, Nigeria.
*Email: abubakarlawal360@yahoo.com

Abstract
Over the years, the increase in resistance and side effects of pharmaceutical drugs have encourage more research on plants' secondary metabolites. The diverse bioactive molecules produce by plants results in the production of various kind of medicines. However, *Sesbaniacannabina* is a plant traditionally known for treatment of inflammation and other skin related illnesses. For these reasons, Phytochemical and toxicological (LD_{50}) investigations were carried out in the *Sesbaniacannabina* dried leaf extracts (methanolic, acetonitrile and aqueous). The qualitative results forthe analysis ofselected bioactive constituents indicated the presence of *alkaloids,* flavonoids, glycosides, saponins, saponin glycoside, steroids, tannins, and volatile oils in either one, two or all the three extracts.Moreover, The LD_{50} result of the extracts were higher than 3000 mg/kg for the tested animals, respectively. These results justify the edibility and medicinal application of *Sesbaniacannabina*, which could potentially serve as food (vegetables) and a raw material for the production of anti-inflammatory drugs due to the presence of antioxidants such as flavonoids.

Keywords: *Sesbaniacannabina* plant, Phytochemicals, Toxicology, Antioxidants, Anti-inflammatory drugs

ENP 202

PHYTOCHEMICAL SCREENING AND ANTIBACTERIAL ACTIVITY OF *MORINGAOLEIFERA* LEAF EXTRACT AGAINST CLINICAL ISOLATE OF *Staphylococcus aureus*

Hayatudeen M.R. and Farouq M.D.
Department of Microbiology, Umar Musa Yar'adua University, P.M.B 2218 Katsina.
*Correspondence author: hayatudeen.muhammad@umyu.edu.ng

Abstract
Moringa oleifera is a highly valued ethno-medicinal plant in many countries of the tropics and subtropics. It is a multipurpose plant grown and used in many countries including Nigeria. Bacterial eye infections are caused by many bacteria but *Staphylococcus aureus* is the most common causative agent, this study was an attempt to the phytochemical screening and antibacterial activity of Aqueous and ethanol extract of M. oleifera leaf used in the treatment of bacterial (Staphylococcus aureus) eye infections. The *Moringa oleifera* leaf extract using water and ethanol as solvents were screened and found to contain important bio-active components, including Alkaloids, Flavonoids, Steroids, Tannins, Glycosides and Saponins. The antibacterial activity was determined using the agar well diffusion method where the aqueous extract showed remarkable activity against the test organism with the highest zone of inhibition (20mm at

concentration of 250mg/ml) which is compared to the antibiotic Gentamycin (21mm at 10mg/ml), the ethanol extract shows lower zone of inhibition. From this finding we recommend further research to ascertain the use of *Moringa oleifera* for the treatment of bacterial eye diseases cause by *Staphylococcusaureus.*

Keywords: Antibacterial, Phytochemical, Extract, Moringaoleifera,Staphylococcus aureus

ENP 203

EFFECT OF THREE FORMS OF *Allium sativum* BIOACTIVE COMPOUNDSON BLOOD OF ADULT WISTAR ALBINO RATS

Nweze Chibuzo Carole*[1] , Muhammed Hassan Abdullahi[1] and Emecheta Miriam Awele[1]
Department of Biochemistry and Molecular Biology, Nasarawa State University, Keffi, P.M.B. 1022 Keffi, Nigeria
*Corresponding Authur phone number: 2348036091147
chibuzoihe@gmail.com[a],zagalo4ril91@gmail.com, awelemiriam@yahoo.com[c]

Abstract
The medicinal properties of *Allium sativum* have been known since the ancient times. Among its effects is a beneficial action on the development of atherosclerosis, hyperlipidemia, cholesterolemia, and hypertensive experimental paradigms both *in vivo* and *in vitro*. The present work compared the beneficial effects of three forms of garlic; raw *Allium sativum* (functional food), *Allium sativum* extract (nutraceutical), and synthetic *Allium sativum* (pharmaceutical) on lipoproteins and haematology of blood plasma. The study was carried out by feeding adult Wistar albino rats. Fourty adult Wistar albino rats divided into four groups of ten rats each. Group 1 was fed with functional food *Allium sativum*, group 2 with a nutraceutical *Allium sativum*, group 3 with nutriceutical*Allium sativum* and group 4 the control for six weeks. The blood sample was collected by cervical decapitation into plain test tube and EDTA test tube using a 2 ml syringe 24 h after the last feed, and then lipid profile and haematological parameters were analyzed. The results showed that functional food group 1 garlic significantly ($p<0.05$) increased the RBC, haemoglobin concentration and platelet counts and decrease in the WBC compared to the group treated with nutraceutical group 2 and nutriceutical groups 3. The functional food group 1 administration produced a significant ($p<0.05$) decreased in CHOL, TG and LDL with a significant increase in HDL level compared to group 2 and 3. Thus, the the functional food group 1 garlic improved the lipid profile and hematological activities of the adult wistar rats.

Keywords: *Allium sativum*, nutraceuticals, nutriceuticals, functional foods

ENP 204

INVESTIGATION OF THE SAPONINS AND SAPOGENINS OF *Treculiaafricana*ROOT BARK AND THEIR ANTIMALARIAL POTENTIALS

***IDRIS, H., Fadipe, L.A and Ibikunle, G.**
Department of Chemistry, Federal University of Technology, PMB 65, Minna, Niger State, Nigeria
Corresponding author:ismi.idris@futminna.edu.ng 07061285231

Abstract
Malaria is caused by the protozoan parasite *Plasmodium* and its transmitted by *Anopheles* mosquitoes infected with *Plasmodium* species. The five species that infect humans are *Plasmodium falciparum* (the most deadly), *Plasmodium vivax*, *Plasmodium knowlesiPlasmodium malariae* and *Plasmodium ovale.* Malaria is one of the most common infectious diseases in the World. Currently, anti-malarial drug resistance has become one of the challenges to malaria control efforts and this warrant urgent search for new anti-malaria chemotherapeutics. Medicinal plants are backbone of traditional medicine and are rich sources for screening active phytochemicals against malaria. This study is intended at evaluating the anti malaria activity of *Treculiaafricana* root bark, a plant which is traditionally used in the treatment of malaria. Crude methanol root bark extract was partition with butanol. The butanol fraction tested for its anti-malarial efficacy in Plasmodium berghei infected Swiss albino mice. The anti-malarial screening

involved treating infected mice with 200, 400 and 600 mg/kg body weight of extract and fraction, while the positive control group was given 25 mg/kg body weight of standard chloroquine drug. The butanol fraction showed a significant suppressive rate 600 mg/kg (76.8%) than those treated at 400 mg/kg (70.7%) and that of 200 mg/kg (36.5%). The suppression rate of the fraction was lower in comparison to chloroquine (93.9% at 25 mg/kg). Qualitative, quantitative and chromatographic studies of the butanol fraction revealed that the fraction exhibited higher saponins content. from the result obtained, butanol fraction revealed the efficacy of *Treculiaafricana* root bark as an anti-malarial agent.

Keywords; Anti-malaria, *Treculiaafricana*, Plasmodium berghei, butanol, root bark

ENP 205

ISOLATION AND CHARACTERIZATION OF HAEMOCYANIN FROM *Sudanonautes Africanus*

***Salawu, Musa Oyewole, Opaleye, David Oyetolaand Oloyede, Hussein OyelolaBukoye**
* Corresponding Author:- salawu.mo@unilorin.edu.ng, Tel:-+2348056168553
Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Kwara State

Abstract
Sudanonautes africanus is a freshwater crab found in Nigeria and West Africa. The characterisation of its haemocyanin (Hc) is yet to be documented, hence this study. Haemocyanin (Hc) is an important protein in invertebrates having copper at its binding sites for binding and transporting oxygen. The objective of this study was to isolate and characteriseHc from the haemolymph of *S. africanus.*Haemolymph was collected from ten live crabs via carapace puncture and then fractionated into plasma and haemocytes by centrifugation. The plasma was extracted with 50% $(NH_4)_2SO_4$ into albumin and globulin fractions. The absorption spectrum was plotted and λ_{max} was found to be 295 nm from the absorption spectrum. Gel filtration was used to extract haemocyanin from the globulin. The fractions of the eluted Hc with the highest absorbance peak were pooled together and then concentrated using ultra-filtration. From the SDS-PAGE, two bands of protein of molecular weights of 54 kDal and 108 kDal respectively representing 23 and 12 hexamers sub-units were detected with a calculated minimum molecular weight of 829.5 kDal having 0.00383 % copper content, Hc 2. The protein has histidine concentration of 4.29 g in 100 g and a specific rabbit erythrocyte haemagglutination activity of 0.612. Its low specific activity gave a clear distinction between the Hc 2 and other isolates from the gel filtration, that were probably lectins having higher specific activities. It was concluded that the *S. africanus*haemocyanin is a protein with calculated Mw of 829.5 kDal.

Keyword: *Sudanonautes africanus*, Haemolymphs, Haemocyanin

ENP 206

N-ACETYLCYSTEINE IMPROVES BONE MINERALS CONTENTS VIA AUGMENTATION OF ANTIOXIDANT DEFENSE SYSTEM IN DEXAMETHASONE-INDUCED OSTEOPENIC RATS

S. B. Mada[a*], A. Garba[a], A. Muhammad [a], M. M. Abarshi[a], S. Aminu[a], M. Sabiu[a], I. Garba[b], B. Sanusi [a], B. Musa[a], H. A. Mohammed[a]
[a] Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
[b] Department of Medical Microbiology, UsmanuDanfodiyo University Sokoto, Nigeria.
*****Corresponding author's email address and mobile: sbmada@abu.edu.ng +2348038152143

Abstract
Glucocorticoid therapy has been linked with several of adverse effects which ultimately lead to diabetics, hyperlipidemia and osteoporosis. The aim of this study is to investigate the effect of N-acetylcysteine (NAC) against dexamethasone-induced renal dysfunction alteration of hematological and bone minerals indices in rats. The animals were divided into four (4) groups of six (6) rats each. The body weights were measured weekly and at the end of the treatment, serum urea, creatinine, sodium, potassium and antioxidant defense markers in liver tissues were assayed. Moreover, hematological parameters and bone mineral contents (BMC) were measured using plasma and left femur bone respectively. In order to investigate RANKL and NAC interactions molecular docking was performed using a web server docking algorithm (PatchDock). The interaction was analyzed based on the overall predicted Atomic Contact

Energy (ACE) and inhibition constant (Ki). The result indicated that treatment of rats with 50 and 100 mg/kg NAC significantly ($p<0.05$) prevented dexamethasone-induced body weight loss, renal dysfunction and restored hematological parameters. Moreover, NAC significantly ($P<0.05$) increased the activities of antioxidant enzymes and reduced oxidative damage induced by dexamethasone. Furthermore, NAC maintain the integrity of bones by restoring bone mineral contents. Thus, *in silico* docking analysis revealed strong negative binding interaction between RANKL and NAC. Altogether, the present findings indicated that NAC was able to restore renal function, hematological parameters and improve bone mineral contents via augmentation of antioxidant defense system.

Keywords: Dexamethasone, oxidative stress, osteoporosis, antioxidants, NAC, RANKL, in silico analysis

ENP 207

IN VITRO STUDIES ON TRYPANOLYTIC ACTIVITY OF AFRICAN HEDGEHOG (*Atelerix alviventris L.)* SERUM AND PLASMA AGAINST *Trypanosoma brucei brucei*

*** Abubakar Abdullahi Lema[1,2], Adamu Isyaku[1], Aminu Basher Yusuf [2,3] and Khadija Idris Jere [1]**

[1]Biological Science Department, Al-Qalam University, Katsina, Nigeria.

[2]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.

[3]Nigerian Institute for Trypanasomiasis and Research (NITR), Kaduna State Nigeria

+2348038276718, abubakar.alema@auk.edu.ng

Abstract

Protozoan parasites of the Order Trypanosomatidae infect wide range of multicellular organisms, causing devastating and potentially fatal diseases. There are growing concerns that the parasites are expanding their reservoirs among wild animals, which habours the trypanosomes and withstand the infection, from which tsetse flies transmit the parasites back to humans and livestock. The normal human serum, as well as sera from some primates, has been discovered to have lytic effect on most species of African trypanosomes, similarlythe serum of hedgehog is reported to have trypanolytic activity against *T. congolense.* Therefore these studies aim to determine the trypanolytic activity of African hedgehog serum and plasma against *Trypanosoma brucei brucei*. We investigated the serum and plasma prepared from ten adult hedgehogs for the possible presence of trypanoloytic factors and found that the blood of these animals contains factors that rapidly killed trypanosomes even when diluted 1000 times. It is here demonstrated that hedgehog blood has significant trypanoloytic activity against *T.b. burucei*.

Key words: Trypanolytic factor, African Hedgehog, Trypanosomiasis, *T. b. brucei*, Serum and plasma.

ENP 208

TOXICOLOGICAL PROFILE OF METHANOL LEAF EXTRACT OF *Annogeissus leiocarpus* (DC.) GILL AND PEER IN ALBINO WISTER RATS

D. A. Innalegwu[1], O. Amuda[2, 3] and T. Y. Gara[1]

[1*]Department of Biochemistry, Federal University of Technology P.M.B 65, Minna, Niger State,

[2]Department of Microbiology, Federal University of Technology P.M.B 65, Minna, Niger State, Nigeria

[3]Dental Department of Niger State General Hospital Minna, Niger State, Nigeria

*Corresponding author: a.daniel@futminna.edu.ng

Abstract

Toxicity of medicinal plants and dose quantification is one of the major challenges confronting its acceptance and usage. This research is aimed at evaluating the toxicological profile of methanol leaf extract of *Annogeissus leiocarpus* in Albino Wister Rats. Acute and sub-chronic toxicity of the extract were carried out using Lorke's methods and Organisation for Economic Cooperation and Development (OECD) guidelines respectively. Gross pathology and microscopic examination of the liver and kidney was carried out using standard methods. Acute toxicity of the extract gave an LD_{50} of 1789mg/kg bodyweight while the sub-chronic toxicity profile of the extract for 10 weeks shows mild effects on the haematological, biochemical and renal parameters of the animals with a significant correlation ($p<0.01$

and $p<0.05$) between the treated and the control group. There was a significant difference ($p<0.05$) between the serum enzymes of the control and treated group throughout the 10 weeks of treatment with the extract. Microscopic examination of the live and kidney shows no alteration in the histoarchitecture of the organs. Further study is therefore required to validate the safety and usage of *Annogeissus leiocarpus* leaf.

Key words: Toxicity, *Annogeissus leiocarpus*, Acute toxicity, Sub-chronic toxicity, Histoarchitecture, Gross pathology

ENP 209

PERFOMANCE EVALUATION OF GEOGRAPHICAL COVERAGE OF COMMUNITY MANAGEMENT OF ACUTE MALNOURISHED CHILDREN AT JIBIA OTP CENTER IN JIBIA LOCAL GOVERNMENT AREA OF KATSINA STATE, NIGERIA

[1] Bello U, [2]I Hamisu

[1]Department of Biochemistry Umaru Musa Yar'adua University, Katsina, Nigeria.

[2]Department of geography Umaru Musa Yar'adua University, Katsina, Nigeria.

Corresponding Author Email: usman.bello@umyu.edu.ng, PhoneNumber: 07036147378.

Abstract

Community Management of Acute Malnutrition (CMAM) is a community-based integrated approach to management of acute malnutrition and there is a wide geographic and treatments coverage across the state whereby CMAM Programmed operate. Retrospective and on the spot (present) assessment of performance of community management of acute malnutrition program was carried out in two Outpatient Therapeutic Programme (OTP) centers in jibia communities of Jibia local government area of Katsina state with the aim of assessing the performance of the programmein the locality. Access, Geographical coverage and other performance indicators of CMAM programme, For the retrospective study, data already available at the OTP center were collected and used while for the present study, acute malnourished children admitted into the OTP were monitored for 8 weeks period within which their anthropometric data were collected.All the indices measured for the assessment of georaphical coverage: Point (92.64%), treatment (90.60%) and period (89.92%) point (90.41%) were significantly ($p<0.05$) higher than the 50% (rural coverage) and 70% urban coverage stipulated by the SPHERE standard and there was no significant difference ($p>0.05$) in the geographical coverage data between the retrospective study and present study. The. Similarly, significant ($p<0.05$) improvements were recorded in the recovery perfermance indicators in both study groups at the point of discharge and the average relapse rates determined for SAM children at the OTP center was 13%. From these results, the CMAM programmed at jibia OTP center in jibia LGA of Katsina State is running well in alleviating the SAM burden in the coverage area.

Key Words, CMAM, SAM,.OTP, MAM.

ENP 210

ANTI-ULCEROGENIC ACTIVITY OF *SecurinegaVirosa* AQUEOUS LEAF EXTRACT ON INDOMETHACIN-INDUCED GASTRIC ULCER IN WISTAR RATS

***Salawu, Musa Oyewole, Yekeen, Abdsamad and Oloyede, Amuzat, Aliyu Olalekan and Oloyede, Hussein Oyelola Bukoye**

Corresponding Author: salawu.mo@unilorin.edu.ng Tel.:- +2348056168553

Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Kwara State

Abstract

This study investigated the anti-ulcerogenic activities of *Securinegavirosa* aqueous leaf extract on indomethacin-induced gastric ulcer in albino rats. Thirty rats weighing 120 - 200 g were grouped into six of five rats each. All groups except the uninduced-untreated (group A) were starved for 24 hours prior to indomethacin administration. After 4 hours of 30 mg/kg b.w. indomethacin administration, the groups (A, B, C, D, E and F) received once daily oral doses of distilled water (5ml/kg b.w.), cimetidine 60 mg/kg (b.w.), and extract at doses of 35, 70 and 140 mg/kg b.w. respectively for 11 days. At the end of the treatment, animals in groups B, C, D, E and F were starved for 18 hours then sacrificed. The extract significantly ($p < 0.05$) decreased gastric secretion volume, mean ulcer index, total acidity, total protein, and pepsin secretion relative to the induced-untreated rats. The extract significantly ($p<0.05$) increased the gastric pH and total carbohydrate content relative to the induced-untreated. These results were similar to those achieved by treatment with cimetidine. Catalase and SOD activities in the 35, 70 and 140 mg/kg bw extract-treated groups were increased significantly ($p<0.05$) over the induced-untreated group. Similarly, the extract reversed the indomethacin-induced decrease in reduced glutathione level (GSSH) and the increase in malondialdehyde concentration in the serum. The histological analysis showed positive effect of the extract on the indomethacin-induced ulceration.

Keywords: *Securinegavirosa*, Anti-ulcerogenic activity, gastric ulcer, indomethacin, cimetidine, antioxidant enzymes, rats.

ENP 211

ANTIMALARIAL ACTIVITY OF *NEW Bouldia LAEVES* AQUEOUS STEM BARK EXTRACT IN *Plasmodium berghei* INFECTED MICE

***Salawu, Musa Oyewole, Raji, Nike Hussainat and Oloyede, Hussein Oyelola Bukoye**

Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin

*Corresponding Author: salawu.mo@unilorin.edu.ngmusasalawu@yahoo.com

Abstract

This study investigated the antimalarial activity of aqueous stem bark extract of *Newbouldialaevis*in *Plasmodium berghei*-infected mice. The phytochemical screening of the extract was carried out. Thereafter, thirty Swiss albino mice weighing between 18 – 27 g were randomly assigned into six groups of five mice each. Group A (uninfected untreated), Group B (Infected and treated with chloroquine 20 mgkg/bw) Group C (Infected untreated), Group D, E and F were administered with 29.5, 59 and 118 mg/kg bw of the extract for four days post-inoculation. The percentage reduction in parasitaemia was determined. The activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), were determined in the serum, liver and kidney. Also, uric acid, urea, creatinine, albumin, bilirubin and total protein concentrations as well as haematological parameters were determined. The activities of the enzymes in the extract-treated mice compared favorably with those of the control mice, while the infected untreated group and in some cases the 29.5 mg/kg bw extract-treated mice were significantly different ($p<0.05$). Furthermore, the most effective dose (59/mg/kg) extract showed a decrease in parasitaemia (68% chemosuppression), urea, creatinine and uric acid kidney function indices suggesting high clearance of these metabolic wastes products out of the body via the urine. However, there was significant decrease ($p<0.05$) in ALT, AST, ALP activity in the kidney of the group administered 59 mg/kg b.wt of *N. laevis*when compared to the control. This study concludes that the extract has antimalarial activity and relatively non-toxic to the liver.

Keywords: chemosuppression, antimalarial, *Newbouldialaevis*, stem bark, aqueous extract

ENP 212

ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED FOR THE MANAGEMENT OF WOMEN REPRODUCTIVE HEALTH IN KATSINA STATE, NIGERIA.

Amina T., A. Sulaiman S.K and Umar, L*.
Department of Biology, Umaru Musa Yar'adua University Katsina, Nigeria.
Corresponding author Email: umar.lawal@umyu.edu.ng Tel:080-34006631

Abstract
In spite of the many achievements in women reproductive health in the current century as witnessed by the rapid progress and expansion of modern medicine, people in Nigeria like in most of the developing countries lack regular access to essential medicines. Medicinal plants are commonly used because of their easy accessibility and affordability. An ethnobotanical survey was carried out to document medicinal plants used for the management of women reproductive health in Katsina State, Nigeria. The research method used in this study was semi-structured questionnaire where 180 respondents were interviewed, 30 respondents from each of the six local governments of the three senatorial districts of the State. The interviewee's involves; herbalists, traditional medical practitioners, traditional midwives, housewives, farmers and other people who have practiced and used medicinal plants. The results showed that 221 plant species belonging to 81 families mostly Fabaceae (40) and Moraceae (10) used for 11 ailments were documented. Informant consensus factors (ICF) were used to identify the level of agreement among informants on the species to be used in the treatment within a category of illness. Absence of menstruation has the highest Informant Consensus Factor (ICF) 0.926, *Scopariadulcis*has the highest Relative Frequency of Citation (RFC) (0.59%). Futhermore, 74.21% of the plant material was obtained from the wild, Bark (28.43%) was the most commonly harvested plant parts and the most common growth forms harvested were trees (37.10%).Herbal remedies were mostly in powder foam (23.17%) and administered mostly in oral route (23.17%). Biological and pharmacological studies will be necessary as well as the isolation of active compounds for the maximal use of these medicinal plants.

Keywords: Ethnobanical survey, Katsina State, reproductive health, Medicinal plants, therapeutic/folkloric use.

ENP 213

ANGIOTENSIN-1 CONVERTING ENZYME AND ALPHA-AMYLASE INHIBITORY AND ANTIOXIDANT ACTIVITIES OF *Anarcadium occidentale* NUT GLOBULIN AND ALBUMIN HYDROLYSATES

***Akiode, Saheed O.[1,2], Babaita, Aminat K.[1] and Arise, Rotimi O.[1]**
[1]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, P.M.B. 1515, Ilorin,
[2]Biotechnology Advanced Research Centre, Sheda Science and Technology Complex, Garki, Abuja, Nigeria
*Corresponding author: Tel: +2348039477853, +2347050926596 E-mail: so.akiode@shestco.gov.ng;

Abstract
The albumin and globulin fractions of Cashew (*Anarcardiumoccidentale*) nut protein hydrolysates (CNPHs) were investigated for their *in vitro* antioxidant, angiotensin 1-converting enzyme (ACE) and alpha-amylase inhibitory activities. The cashew (*Anarcardiumoccidentale*) nut protein hydrolysates (CNPHs) were obtained from its albumin and globulin protein fractions using Alcalase, pancreatin and trypsin.The degree of pancreatic hydrolysis of cashew seed protein was significantly higher ($p < 0.05$) than those of trypsin and Alcalase hydrolysis. Cashew nut albumin and globulin hydrolysates displayed dose-dependent ACE inhibition. The study revealed that the pancreatic hydrolysate was the most effective ACE inhibitor in both albumin (CNAH) and globulin (CNGH) fractions. At 1.2 mg/ml, ACE-inhibitory activity of pancreatic CNGH (51.65 ± 1.2%) was significantly higher than those of Alcalase (34.603 ± 0.65%) and tryptic (29.92 ± 0.73%) CNGHs. Meanwhile, the percentage ACE-inhibitory activity of pancreatic Cashew nut albumin hydrolysate (CNAH) (66.03 ± 0.82%) was significantly higher ($p < 0.05$) than those of tryptic (51.82 ± 0.37%) and Alcalase (57.03 ± 0.85%) CNAHs. Hydrolysates of the albumin fraction demonstrated concentration-dependent alpha-amylase inhibition (IC_{50} 0.17 ± 0.02 – 0.41 ± 0.021mg/ml) with tryptic CNPH having the strongest alpha-amylase inhibition (0.17 ± 0.04mg/ml). The pancreatic hydrolysates also displayed the strongest DPPH radical scavenging activity in both fractions while Alcalase hydrolysates displayed the highest superoxide scavenging activity. These results suggest that CNPH can be used as a potential nutraceutical with antioxidant capacity, inhibitory activity against ACE and alpha-amylase.

Keywords: Bioactive peptides, antioxidant, ACE, Cashew nut, Pancreatin, Trypsin, Alcalase.

ENP 214

ANGIOTENSIN-I CONVERTING ENZYME-INHIBITORY AND ANTIOXIDANT ACTIVITIES OF ENZYMATIC PROTEIN HYDROLYSATES, AND ULTRAFILTERED PEPTIDE FRACTIONS FROM TWO EDIBLE PERIWINKLE SPECIES: *Tympanotonus fuscatus* var radula (L.) and *Pachymelania aurita* (M.).

Abraham PAUL[a], Queensley EGHIANRUWA[b], Olayemi OPARINDE[a], Adetunji ADESINA[a], Omolaja OSONIYI[a*]

[a] Department of Biochemistry and Molecular Biology Obafemi Awolowo University Ile-Ife, Nigeria
[b] Department of Biochemistry, Faculty of Basic Medical Sciences, University of Uyo, Uyo, Nigeria
[*] Corresponding author.**E-mail address:** rosoniyi@oauife.edu.ng; **Phone number**: 08079948755

Abstract

Inhibition of angiotensin I converting enzyme (ACE) has become a promising target in the management of hypertension because of the critical roles played by ACE in the progression of hypertension and vascular oxidative stress which are hallmarks of cardiovascular diseases. Multifunctional food protein-derived peptides offer a high promise in health maintenance and disease management, because of the high chances of finding multiple activity in a single compound. Here, the ACE-inhibitory and antioxidant activities of simulated gastrointestinal digestion (SGID) hydrolysate and ultrafiltered (UF) fractions of *Tympanotonus fuscatus* var radula and *Pachymelaniaaurita* were determined. Human SGID of the protein extract of *T. fuscatus* and *P. aurita* was carried out using pepsin, trypsin and chymotrypsin, and the hydrolysate was fractionated into two by centrifugal ultrafiltration. The ACE inhibition, total antioxidant capacity, ferric ion reducing capacity, metal chelating activity and DPPH radical scavenging activity of the crude hydrolysate and UF fractions were tested. The UF permeate was observed to have relatively higher activities and so was subjected to gel chromatography on Sephadex G-50. The chromatographic fractions showing absorbance at 215, 225 and 280 nm were assayed for DPPH radical scavenging activity. The effect of degree of hydrolysis (of the extracts) and fractionation of the (hydrolysate) on ACE inhibition and antioxidants properties carried out were reported. Findings from these studies were discussed in the light of the potential health benefit of consuming *Tympanotonus fuscatus* var radulaand *Pachymelania aurita* in maintenance of cardiovascular health.

Keywords: *Tympanotonus fuscatus*; *Pachymelaniaaurita;* Nigerian periwinkles; ACE-inhibitory peptides, marine functional foods; DPPH radical scavenging activity; bioactive peptide

ENP 215

NEW COMPLEXES OF CR(III) WITH MONODENTATE SCHIff BASE LIGANDS FORMED FROM 3-NITROACETOHENONE WITH P-ANILINE DERIVATIVES: SYNTHESIS, CHARACTERIZATION, BIOLOGICAL ACTIVITIES AND THEORETICAL INVESTIGATION

Gideon Adamu Shallangwa[1*] and Musa Suleiman[1]

1. Department of Chemistry, Ahmadu Bello University, Zaria, Kaduna State, Nigeria
*Corresponding Author; Email:gashallangwa@gmail.com; Phone: +2348023902967

Abstract

Schiff bases were synthesized by refluxing equimolar amount of 3-nitroacetohenone with p-chloroaniline and p-nitroaniline. The Schiff bases were subsequently reacted with chromium(III) chloride to form the corresponding metal complexes. The compounds were characterized using FT-IR, UV-Visible, melting point/decomposition and solubility test. The purity of the compounds were determined using thing layer chromatography. The solubility test of the compounds showed that they are soluble in most organic solvents and the melting point/decomposition temperature were found to be within the range of 151-192 ℃ for the Schiff base ligands and 172-200 ℃ for the metal complexes. The IR spectroscopic data indicated that the Schiff base ligands acted as monodentate and coordinated via imine nitrogen. The result also confirmed the presence of coordination with water molecules.The antimicrobial studies of the

synthesized ligands and their chromium(III) complexes were carried out in *vitro* against two fungal species (*Aspergillus niger* and *Candida albican*), two gram gram positive bacteria (*Staphylococcus aureus* and *Bacillus subtilis*) and two gram negative bacteria (*Eschaerichia coli* and *Samonella typhi*).The results indicated that the complexes were more active than the ligands but less active compared to standard drugs(ciprofloxacin and econazole). The study also theoretically investigated geometries and bondings in the Schiff bases and their metal complexes

Keywords: Schiff bases, Chromium(III) complexes, Biological activities, Theoretical investigation

ENP 216

EFFECTS OF CO-ADMINISTRATION OF BETA-SITOSTEROL AND CHLOROQUINE ON HEPATIC AND RENAL FUNCTIONS OF *Plasmodium berghei* INFECTED MICE

***Auwal Adamu[a], Abdulmalik Abdullahi Salman[a], [b]Hauwa M.S. Haruna and [b]Hauwa Umar**

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
[b]Department of Applied Chemistry, Kaduna Polytechnic, Kaduna
***Correspondence to:** Auwal Adamu, Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria. Telephone: +23408063184617; E-mail:auwaladamu06@yahoo.com

Abstract

On account of the globally observed resistance against Chloroquine, the World Health Organization discouraged malaria monotherapy and recommended that antimalarial formulations should be composed of at least two pharmacophores. The present study investigated effect of co-administration of Beta-sitosterol (BS) and chloroquine (CQ) on hepatic and renal functions of *Plasmodium berghei* infected mice. Mice were intraperitoneally infected with *P. berghei* and orally treated with BS and/or CQ for one week. At the end of the experiment, animals of all groups were sacrificed; blood samples were collected, processed and stored for biochemical analysis. The levels of parasitemia, urea, creatinine and activities of serum liver enzymes were evaluated. From the results, co-administration of BS and CQ did not significantly ($p>0.05$) reduce the parasitemia level in mice infected with *P. berghei*, but treatment with BS alone did significantly ($p<0.05$) lower the level of parasitemia. Furthermore, the activities of alanine aminotransferase, aspartate aminotransferase and alkaline phosphatase as well as urea and creatinine levels were significantly ($p<0.05$) elevated upon *P. berghei* infection, although the BS treatment significantly ($p<0.05$) lowered activities of the aminotransferases, the phosphatase, and levels of urea and creatinine, no significant ($p<0.05$) alteration was observed in these parameters following co-administration of BS and CQ. The co-administration of BS and CQ caused a significant ($p<0.05$) decrease in creatinine levels in reference to infected-untreated mice. The forgoing findings compel the conclusion that BS may serve as an antiplasmodial agentand could also reverse hepatic and renal damages associated with *P. berghei* malaria.

Keywords: Beta-sitosterol, Chloroquine, *Plasmodium berghei*, Liver function

ENP 217

EFFECT OF COMBINED TREATMENT OF B-SITOSTEROL AND CHLOROQUINE ON THE ANTIOXIDANT STATUS OF *Plasmodium berghei* INFECTED MICE

*Auwal Adamu[a], Muhammad Auwal Saliu[a], Hauwa M.S. Haruna[b] and [b]Hauwa Umar
[a]*Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria*.
[b]*Department of Applied Chemistry, Kaduna Polytechnic, Kaduna*
***Correspondence to:** Auwal Adamu, Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria. Telephone: +23408063184617; E mail:auwaladamu06@yahoo.com

Abstract
Malaria is a debilitating infectious disease affecting people of different ages worldwide. At present, malaria control via chemotherapy is jeopardized by parasite resistance against available drugs. The present study was aimed at investigating the effect of combined treatment of β-sitosterol (βS) and chloroquine (CQ) on the antioxidant status of mice infected with *Plasmodium berghei*. Mice were infected with *P. berghei* and treated with βS and/or CQ for a period of one week. At the end of the experiment, mice of all groups were sacrificed; spleen was collected from each mouse and used for the determination of antioxidant parameters. Following *P. berghei* infection, a statistically significant ($p<0.05$) rise in spleen Malondialdehyde (MDA) level was observed in comparison to normal mice, however, a corresponding significant ($p<0.05$) decrease of the MDA was associated with the group of mice that received treatment of βS alone and in combination with CQ. Contrariwise, *P. berghei* infection led to a significant ($p<0.05$) decrease in spleen glutathione level which was significantly ($p<0.05$) increased upon combined treatment of βS and CQ as well as treatment with βS alone. There was no significant ($p>0.05$) alterations in the activities of catalase and superoxide dismutase upon *P. berghei* infection likewise combined treatment of βS and CQ. We concluded that βS alone possesses antioxidative potential and that the combined treatment of βS and CQ has the ability of reversing oxidative damage associated with *P. berghei* infection in mice.
Keywords: Antioxidant status, β-sitosterol, Chloroquine, Malondialdehyde, *Plasmodium berghei*

ENP 218

STIGMASTEROL ATTENUATES OXIDATIVE STRESS IN THE LIVER, KIDNEY, SPLEEN AND HEART OF *Trypanosoma congolense* INFECTED RATS

Mohammed Auwal Ibrahim[1]*, Auwal Adamu[1], MurtalaBindawa Isah[2], Aminu Usman[2], Raphael Aminu[1], Hassan Ibrahim[1], Khadija Aminu[1], FauziyyaLawal Ahmad[1]and Abdurrahman Usman[2]

[1]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[2]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
Corresponding Author's email and phone no.: mauwalibrahim@gmail.com; 07031104932

Abstract
Stigmasterol have shown positive effects against *Trypanosoma congolense* induced organ pathological changes in rats. Therefore, to assess the possible mechanism of this action, effect of stigmasterol on oxidative stress in the liver, kidney, spleen and heart of *T. congolense* infected rats was investigated. Rats were infected with *T. congolense* and on day 11 post infection, the infected rats were treated with 100 and 200 mg/kg body weight (bw) of stigmasterol for 14 days. At the end of the experiment, the levels of malondialdehyde, reduced glutathione as well as the activities of superoxide dismutase and catalase were analysed in the homogenates of liver, kidney, spleen and heart obtained from the stigmasterol-treated infected rats and compared to non-infected and infected non-treated controls. The data showed an evidence of induction of oxidative stress in all the organs caused by the infection. Treatments with the 100 and 200 mg/kg bw of stigmasterol attenuated the *T. congolense* induced oxidative stress in all the organs as indicated by significant amelioration ($P < 0.05$) of the levels of most of the markers. Similar trend was observed with diminazineaceturate used as a standard drug. It is concluded that, stigmasterol could attenuate *T. congolense* induced oxidative stress which might be due to a direct free radical scavenging effect or a consequence of the reported parasite clearance.

ENP 219
EFFECT OF QUERCETIN AND ITS 7-METHOXY DERIVATIVE ON THE ANTIBACTERIAL ACTIVITY OF CIPROFLOXACIN IN SOME SELECTED BACTERIA

[1]Sada, H*., [1]Habila, J. D., [1]Sallau, M. S, and [2]Musa, A. M.,

1 Department of Chemistry, Ahmadu Bello University, Zaria.
2 Department of Pharmaceutical and Medicinal Chemistry, Ahmadu Bello University, Zaria.
Correspondence Author: sadahadiza@gmail.com, 08030707700.

Abstract
Infectious diseases account for approximately one-half of all deaths in tropical countries and the rate at which antibiotic resistant bacteria emerge is not matched by the rate of development of new antibiotics to combat them. Flavonoids is an important class of compounds with diverse biological activities which include interesting areas such as anti-oxidant, anti-aging, anti-cancer, anti-bacterial and anti-viral. The aim of this study is to determine the potential synergistic effect of Quercetin and 7-methoxyquercetin on antibacterial activity of Ciprofloxacin. Agar well diffusion method according to the National Committee for Clinical Laboratory Standard (NCLSI, 2011) was adopted for the study and organisms tested include: Vancomycin resistant *Staphylococcus aureus* (VRSA), methicillin resistant *Staphylococcus aureus* (MRSA*), Bacillus substilis*, *Salmonella typhi*, *Klebsiella pneumonia* and *Escherichia coli*.The compounds Quercetin and 7-methoxyquercetin potentiate the antimicrobial activity of 15 µg/ml ciprofloxacin (zone of inhibition ranging from 32-37 mm) as against ciprofloxacin (30 µg/ml) alone(zone of inhibition ranging from 30-32 mm).The above findings suggest that the compounds can be used to enhance the antibacterial activity of ciprofloxacin.

Keywords: Antibacterial, synergy, Ciprofloxacin, Quercetin,7-methoxyquercetin.

ENP 220
CHROMATOGRAPHIC ANALYSES OF PHYTOCHEMICAL CONSTITUENTS IN AQUEOUS EXTRACTS OF ROOT, NODULES, AND LEAVES OF *Asparagus africanus* LAM: A COMPARATIVE APPROACH

Abubakar El-Ishaq[a,b], Mohammed Abdullah Alshawsh[a], and Zamri Chik[a*]
[a]Department of Pharmacology Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia
[b]Department of Science Laboratory Technology, School of Science and Technology, Federal Polytechnic, P.M.B.1006 Damaturu, Nigeria.
Correspondence should be addressed to: ishaq_abubakar@yahoo.com

Abstract
Asparagus africanus Lam plant are used traditionally as a food supplement and medicine. Nevertheless, insignificant statistics is available about its composite phytochemicals. The aim of this study is to screen the root, nodules and leaves parts for the presence of bioactive phytochemicals. Analyses was carried out with the aid of Gas chromatography coupled with mass spectrometry (GC/MS). The obtained chromatograms and other spectra data were analysed for compounds identification, with help of NIST library. Findings revealed that steroidal saponins are mainly found in root and nodules while the leaves was devoid of such phytochemicals. Those phytochemicals are; sarsasapogenin, stigmasterol and spirostans. In conclusion, *A. africanus*root and nodules contains some potential steroidal compounds, which could explain the traditional uses of the root and nodules parts for medicinal purposes, however this finding needs further analytical approaches to confirm the acclaimed activities in health-related applications with respect to specific ailment.

Keywords:*Asparagus africanus,* chromatography, contraceptive, glycosides, medicinal, phytochemicals, steroidal saponins.

ENP 221

STUDIES ON THE NUTRITIONAL AND PHYTOCHEMICAL COMPOSITION OF METHANOL LEAF EXTRACT OF *Justiciacarnea hooker*

Fodeke H.[1*], Feka D. P.[2], Hassan, S. M.[1], Olamide, R. M. [1], Usman, A.[1], Medugu, J. N., Saidu, F. H. [1]

[1] Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria
[2] Department of Science Laboratory Technology, Nigerian Institute of Leather and Science Technology, Zaria, Nigeria.
*Corresponding Author: Fodeke Helena; helenafodeke@gmail.com; +234(0)8080865686

Astract

Justiciacarnea commonly known as Brazilian-plume and flamingo flower is a flowering plant, exploited for its medicinal properties. It is widely used in Nigeria to treat anaemia, inflammation, and heart diseases. This study was carried out to determine the nutrient composition of the leaf and the presence of some phytochemicals in the methanol leaf extract of *Justiciacarnea hooker* in order to relate its nutritional potentials to its ethnomedicinal use as a method of alleviating malnutrition. The dry plant material was macerated and used for the proximate analysis. Some of the dry plant material was macerated in 70% aqueous methanol extract for 72 hours and the dry extract was used for the phytochemical screening using standard protocols. The proximate analysis revealed the moisture content (44.85±8.04%), protein (24.81±0.58%), ash (18.22±1.03%), fiber (4.12±0.07%) and the carbohydrate (total sugar) was undetected. The vitamin A content was 11.49±0.08 g/ml. The phytochemical study indicated the presence of Tannin, while phytate, oxalate and cyanide were undetected. The food and chemical components may have acted in synergy to give rise to its medicinal uses. In conclusion, the *Justiciacarnea*leaves contain beneficial nutrients in comparison with other leafy vegetables and may help to combat malnutrition.

Keywords: *Justiciacarnea*, Proximate, Vitamin A, Phytochemical

ENP 222

MODERATION OF WEIGHTS, LIPID PROFILES AND ATHEROGENIC INDICES OF DOXORUBICIN TREATED WISTAR RATS BY AQUEOUS EXTRACTS OF *Pleurotustuberregium*sCLEROTIA AND *Cnidoscolusaconitifolius* leaves

Ikewuchi, Catherine Chidinma, Ikewuchi, Jude Chigozie* and Ifeanacho, Mercy Onuekwuzu

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Port Harcourt, Nigeria
*Corresponding author: e-mail: ecoli240733@yahoo.com

Abstract

This study investigated the ability of aqueous extracts of *Pleurotustuberregium*sclerotia and *Cnidoscolusaconitifolius* leaves, to prevent or attenuate dyslipidaemia, and adverse alterations in cardiac cholesterol and triglyceride levels, weight gain and heart weight indices, and atherogenic indices, which was induced by intra-peritioneal administration of doxorubicin (15 mg/kg) to Wistar rats. Metformin was administered at 250 mg/kg; and the extracts were administered at 50 mg/kg to Treatment 1 (*P. tuberregium*sclerotia extract) and Treatment 4 (*C. aconitifolius* leaf extract); 75 mg/kg to Treatment 2 (sclerotia extract) and Treatment 5 (leaf extract); and 100 mg/kg to Treatment 3 (sclerotia extract) and Treatment 6 (leaf extract). In both the ameliorative and protective studies, the heart weight, cardiac cholesterol, triglyceride, and plasma triglyceride, total-, non-HDL-, VLDL- and LDL cholesterol concentrations, as well as the atherogenic coefficient, cardiac risk ratio, atherogenic index of plasma and Castelli's risk index II of the Test control was significantly (p<0.05) higher than those of all the other groups. However, the plasma HDL cholesterol concentration of the Test control was significantly (p<0.05) lower than those of all the other groups. Therefore, the administration of the extracts and metformin safeguarded (in the protective study) or restored (in the ameliorative study) the doxorubicin induced dyslipidaemia, as well as the cardiac cholesterol and triglyceride levels. These results suggest that, at least in part, due to hypolipidaemic properties, aqueous extracts of *Pleurotustuberregium*sclerotia and *Cnidoscolusaconitifolius* leaves may potentially reduce the risk of doxorubicin-induced cardiovascular disorders.

Keywords: *atherogenic indices; cholesterol; heart weight index; Cnidoscolusaconitifolius; lipid profile; Pleurotustuberregium; triglyceride.*

ENP 223

ORGANS FUNCTION TESTS OF EXPERIMENTAL ANIMALS FED WITH PROCESSED SEEDS OF *Cadaba farinosa* FORSSK.

Inuwa, I.M.[1], Atiku, M.K.[2] and Mashi, J.A.[2]

[1]Department of Food Technology, Kaduna Polytechnic, Kaduna.

[2]Department of Biochemistry, Bayero University, Kano.

Abstract

Cadaba farinosa Forssk is a wild plant which its seeds are cooked and eaten as a famine the north east of Nigeria. In this research, the seeds were processed by cooking, cooking with addition of potash, fermentation and sprouting. The products were fed to experimental animals for four weeks to study their effects on the organs function. The blood sample was collected after anaesthesizing the animals and centrifuged at 1500rpm for 10 minutes to obtain the serum which was then subjected to tests for liver, kidney and heart functions according to the standard methods. The results revealed that the alanine aminotransferase levels of all groups range from 17.15 IU/L to 36.76 IU/L. These values are within the normal range for rats (10-40 IU/L). The groups on fermented and sprouted diets showed lower aspartate aminotransferase than the normal range of 50-150 IU/L. Also, all groups showed high levels of total bilirubin. Serum creatinine levels ranged from 0.07mg/dL in the group on diet cooked without potash to 0.17mg/dL in those on the fermented diet. These values are within the normal range of 0.4-2.3mg/dL which suggests normal kidney function. Also, creatine kinase activities of animals in all groups were normal. The seeds of Cadabafarinosa, when processed by cooking with addition of potash, fermentation or sprouting can be consumed without showing toxic effect.

Keywords: *Cadaba farinosa*, processed, organs function.

ENP 224

IN-VIVO ANTIPLASMODIAL ACTIVITY OF LEAF AND STEM BARK FRACTIONS OF *Diospyrosmespiliformis*METHANOL EXTRACTS ON *Plasmodium bergheiberghei (Nk*65) INFECTED MICE

M. Oguche[1] and H. C. Nzelibe[*]

1. Department of Biochemistry, Faculty of Natural Science, Kogi State University Anyigba, Nigeria.

*Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.

Corresponding author: zeechuks6@gmail.com

Abstract

This study was set to evaluate the quantitative phytochemical analysis and *in-vivo*antiplasmodial activities of Leaf and Stem Bark Methanol Extracts of *Diospyros mespiliformis* and fractions against *Plasmodium berghei* in mice. 130 mice were randomly divided into thirteen (13) groups each of five (5) mice per group**.** Results shows that quantitative phytochemical analysis of the fractions of leaf and stem bark extract were, saponins (0.57±0.06 mg/gl), (0.36±0.21 mg/gl), alkaloids (0.12±0.04 mg/gl), (0.67±0.01 mg/gl), tannins (0.73±0.36 mg/gl), (0.51±0.22 mg/gl), with glycoside having the highest concentration of (1.15±0.10 mg/gl), (0.97±0.33 mg/gl). At the end of the four days suppressive test, Leaf and stem bark extract of *D. mespiliformis* have shown potent parasite suppressive effects on *P. berghei* infected mice .PCV and Hb showed significance increase (P<0.05) in the group infected but treated with chloroquine. Relative organ weight showed significant (P<0.05) increase in the group treated with *n*-butanol and aqueous fractions. The non-significant decrease in PCV in the treated groups, suggest that, the extract may contain some haemopoetic potentials. Hence, *D.mespiliformis* possess antimalarial properties which provides scientific basis to the traditional claim of the plant in the management of this ailment.

Keywords: Antiplasmodial activity*; D. mespiliformis*, *P. bergheiberghei*, methanol fractions.

ENP 225

ANTIHEMOLYTIC AND ANTIOXIDANT POTENTIAL OF HEMAGGLUTININ PURIFIED FROM THE ROOT TUBER OF *Dioscoreapreussii* Pax

Sunday Isaiah AKANNI and Oludele Olyemi ODEKANYIN*
Biochemistry and Molecular Biology Department, Obafemi Awolowo University, Ile-Ife, Nigeria.
* Corresponding Author: dekanyin@oauife.edu.ng, +234806-287-9457

Abstract
The research was conducted to isolate and purified hemagglutinin with antioxidative potential and protective effect on erythrocytes.The presence of the hemagglutinin was detected in the crude extract of *D. preussxii*by hemagglutinating assay. Sugar specificity was determined by using hapten inhibition test and the protein was purified using ammonium sulphate precipitation along with gel filtration on Sephadex G-100. The physicochemical properties were determined using various standard methods. The antioxidant activity was evaluated using DPPH radical scavenging, metal chelating, ferric reducing antioxidant and lipid peroxidation assays. The hemagglutinin antihemolytic potential was also investigated. Hemagglutinating assay showed the presence of a non-specific hemagglutinin that agglutinated all human blood group and rabbit erythrocytes. The physicochemical properties revealed a heat stable hemagglutinin that was active at wide pH range (pH 5-13), EDTA has no effect on its activity but was severely affected by various denaturant agents used. The half maximum inhibitory concentration for DPPH radical scavenging and metal chelating activity were 0.727 ± 0.04 mg/ml and 0.583 ± 0.08 mg/ml respectively. The protein could not prevent lipid peroxidation and its antihemolytic activity was highly effective only at concentration lower than 60µg/ml. The study concluded that *Dioscoreapreussii* hemagglutinin showed physicochemical properties similar to other *Dioscorea*species, and also possessed antioxidant and antihemolytic activities which can be of great health and nutraceutical benefits.

ENP 226

NUTRIENTS, ANTINUTRIENT, MINERAL AND SECONDARY METABOLITES COMPOSITIONS OF DRY *Parquetina nigrescens* LEAF POWDER

[1]*Oyeniyi Deborah Abosede, [2]Jigam, A.A, &[3]Abubakar, A.
[1]*Department of Biochemistry, Federal University of Technology Minna, Niger state
*Corresponding author's Email: deboye17@gmail.com, +234-7030825984

Abstract
Parquetina nigrescens (Afzel.) Bullock is an herbal perennial climber which belongs to the family *Asclepiadaceae*. The plant is widely used by the traditional healers in the treatment of gastrointestinal disorders, sickle cell anaemia, gonorrhea, menstrual disorders and schizophrenia. It has also been reported to increase uterine contraction stimulations similar to the effect of oxytocin. This study was undertaken to evaluate leaf powder of *Parquetina nigrescens* for phytochemicals, antinutrients, nutrients, mineral, and vitamin compositions, in order to provide scientific values and knowledge on its benefits and safety to human health. Standard chemical procedures were used. The results showed, nutrients composition in percentage; moisture (8.00), ash (10.50), crude protein (21.02), crude lipid (7.00), crude fibre(5.80), and total carbohydrate content (47.68). Mineral compositions were Fe (13.50 mg/100g), Zn (95.40 mg/100g), Ca (84.60 mg/100g), Mn (3.95 mg/100g), Cu (1.45 mg/100g) and Mg (62.30 mg/100g). The values obtained for vitamins were A (0.13 µg/g), C (7.35 mg/100g) and E (2.25 mg/100g). Flavonoids (18.06 mg/100g), phenols (183.08 mg/100g), tannins (473.59 mg/100g), oxalate (0.50 mg/100g), phytate (352.50 mg/100g) and cyanide were detected in levels that are safe for oral administration. Antioxidant activity was also significant. Generally, the results indicate possible correlations between the diverse chemical compounds in *Parquetina nigrescens* leaf powder and its application in folkloric medicine.

Key words:*Parquetina nigrescens*, proximate, phytochemicals, antinutrients, minerals, vitamins, antioxidant, folklore medicine.

ENP 227

EFFECTS OF PHYLLANTHUS AMARUS ON GARLIC-INDUCED HEPATOTOXICITY

Hans Friday Hunaleyo[1], Lawan Bala Buratai[1*], Bintu Mohammed Mofio[2], Hadiza Kubura Lawan[3], Ali Abdulrahman Ali[1]

[1]Department of Biochemistry, University of Maiduguri, Maiduguri, Nigeria
[2]Department of Biological Sciences, Faculty of Science, University of Abuja, Abuja, Nigeria
[3]Department of Food Science and Technology, University of Maiduguri, Maiduguri, Nigeria
*E-Mail for correspondence: lawanbburatai@gmail.com

Abstract

Phyllanthusamarus is highly valued in African traditional medicine for its hepatoprotective, anti-inflammatory and several related ailments. The present study investigated the effects of the administration of *P. amarus* on garlic-induced hepatotoxicity in rats. Albino rats were randomly divided into five Groups of six. Group I received orally 1 ml/kg body weight of distilled water while Groups II, III, IV and V were administered orally same volume of garlic homogenate corresponding to 5 g/kg body weight on a daily basis for 14 days to induce liver toxicity. Similarly, Groups III, IV and V were orally administered with 100, 200 and 400 mg/kg body weight of *P. amarus* aqueous leaf extract, respectively, for another 7 days. The levels of serum alkaline phosphatase (ALP), aspartate transaminase (AST), alanine transaminase (ALT) and total bilirubin (TB) were determined by standard methods. Histopathological analysis of the liver tissue was carried out as described by Druby and Wallington. Statistical analysis was performed using one-way ANOVA and Bonferroni post hoc test was used to determine the difference between means at 95% level of significance. The results showed that all the doses of the extract of *P. amarus* significantly decreased ($P < 0.05$) the levels of ALP, ALT and AST and TB relative to those administered 5 g/kg body weight of garlic only (Group II). The histopathological analysis of the liver samples also confirmed the hepatocurative potential of *P. amarus* against the hepatotoxicity caused by garlic. The ameriorative effect of *P. amarus* is suspected to be due to the presence of some antioxidants as determined and quantified in the present work. It was concluded that *P. amarus* showed hepatocurative effect having ameliorated the lobular necrosis and inflammation of the liver induced by garlic homogenate in albino rats.

Key words: And antioxidants, garlic, hepatoprotection, hepatotoxicity, *Phyllanthusamarus*, Schum and Thonn.

ENP 228

PHYSICOCHEMICAL ANALYSIS OF PROCESSED AND SEMI-PROCESSED SHEA BUTTER (*Vitellaria paradoxa*).

EsewOnyeyirichi*[1], UduakobongIme Idio[1], Evelyn Hope Odeke[1], Ayotunde Sunday Abe[1], Alexander Okpokwu Ogabidu[1], Mercy Onyiyioza[1], Umiom Okon Edem[1], Maris Ochigbo-Ejembi[1], Victoria Chisolu Okezie[2], and Victor Ochigbo[1].

[1] Scientific and Industrial Research Department, National Research Institute for Chemical and Technology, Zaria, Kaduna-State
[2] Nigerian Natural Medicine Development Agency.
Corresponding Author: ihuomachichi@gmail.com, 08037001218

Abstract

Shea butter (*Vitellaria paradoxa*) fruits were harvested from its natural habitat in NARICT (The National Research Institute for Chemical Technology, Basawa Zaria) premises and processed to obtain the butter. The physical and chemical properties of the semi processed and processed butter was carried out and the results showed that the processed Shea-butter has the following chemical properties: acid value (9.12 mgKOH/g), iodine number (23.98 I_2g/100), peroxide value (6.05 meq/kg), saponification value (9.8175 mgKOH/g) and free fatty acid value (4.21%). However, the semi-processed Shea butter has the following chemical properties: acid value (18.24 mgKOH/g), iodine number (23.86 I_2g/100), peroxide value (4.16 meq/kg), saponification value (18.23 mgKOH/g) and free fatty acid value (9.12%). The physico-chemical characteristics of Shea butter indicate its suitability as raw material for food, cosmetics and pharmaceutical products.

Keywords: semi processed; processed; physico-chemical properties; Shea- butter .

ENP 229

*IN VITRO*ANTIBACTERIALAND ANTIOXIDANT PROPERTIES OF THE LEAF EXTRACTS OF *Opuntia ficus indica*

[*1]Shehu Abba, [2]Abubakar Bilyamini Mu'azu, [1]Abdullahi Muhammad,[1]Muhammad Adamu Nababa, [3]Muktari Isa Shago, [1]Mu'azu Alkali Adamu.

[1]Department of Biochemistry, Bayero University, Kano
[2]Department of Biochemistry, Yobe State University, Damaturu
[3]Department of Chemistry, Yobe State University, Damaturu
*Corresponding author:shehuabba123@gmail.com, 07086363050

Abstract

The study was aimed at investigating the *invitro* antibacterial and antioxidant properties of leaf extracts of *Opuntiaficus-indica,* the antibacterial activity were tested using methanol, ethanol and aqueous extracts against isolates of *S.aureus, S. pneumonie, K. pneumonie. E. coli, and S. typhi* using well diffusion method. Similarly, the antioxidant activity was carried out using methanol extractby antioxidant capacity assay, reducing power assay and concentrations of total phenolics, and carotenoids. The leaf extracts showed various levels of activity on different test organisms, methanol extract showed highest antibacterial activity against all tested organisms followed by ethanol extract and aqeuos extract with least antibacterial activity against the tested bacterial specie, the measured zone of inhibition inmethanol extract has 17.5±0.66mm in *S. Pneumonia*, ethanol extract has 15.2±0.76 mmin *S. Aureus*and aqeuos extract has (10.7±0.76 mm) in both *E. coli* and *S. typhi.* The minimum inhibitory concentrationin methanol extract has least value in *K. pneumonie* with 6.2±0.03 mg\mL, followed by ethanol extract with 12.4±0.32mg\mL in *S.typhi*, and aqeuos extract with 29.5±0.12mg\mL in *E.coli*.The antioxidant activity showed considerable amount of total phenolics and carotenoids of 128.7±0.39µg\g (GAE) and 93.6±0.88µg\g (BCE) respectively, which showed the reducing power and total antioxidant capacity of the methanol extract and subsequently pronounced it's antioxidant property. The results of this study suggests that the methanol leaf extract of *Opuntia ficus indica* contain compounds that can form the basis for the development of chemopreventive agent against free radical damage, andnovel broad spectrum antibacterial compounds.

ENP 230

PHYTOCHEMICAL SCREENING AND PROXIMATE ANALYSIS OF BAOBAB LEAVES (*Adansoniadigitata*L.)

***[1]Sufiyanu Saminu., [1]Hassan Usman., [1]Suleiman Nura. and [2]Zaharadeen Abdullahi.**

[1]Department of Biological Sciences, Federal University Gusau, Zamfara State.
[2]Department of Chemical Sciences, Federal UniveristyKashere, Gombe State.
*Corresponding Author E-mail: sufiyanumorai2014@gmail.com Tel: +23464469052

Abstract

Baobab (*Adansoniadigitata*L) belongs to the malvaceae family and is a deciduous tree native to arid central Africa. It has a large distribution spread across large area of sub-Sahara Africa's semi-arid and sub humid regions as well as in western Madagascar. Baobab has a long history of traditional uses and it provides food, shelter and medicine. This research was carried out between August and September 2018 in Biochemistry Laboratory of Federal University Gusau. The leaves of Baobab tree was collected from Mortgage area Gusau, Zamfara State. The leaves were washed using clean water and air dried for two weeks, the sample was grounded into powder using mortar and pestle and the powder was used for the analysis. Phytochemical and Proximate contents were analysed using standard procedures. Data obtained were Statistically analysed using T- test on SPSS Statistical Software. Results on phytochemical screening of baobab leaves indicates the presence of tannins, glycosides, cardiac glycoside, steroid, saponin, flavonoids, glycosides, balsams, anthraquines, while alkaloid and volatile oil were absent. Results on proximate contents revealed that, Carbohydrate had the highest value of 14.90 ± 0.46 followed by Ash content with 10.41 ± 0.42 and Moisture content with 8.34± 0.35. The lowest content was obtained in crude lipid with 4.53 ± 0.34. It has been concluded that, the leaves of Baobab tree investigated had higher nutritional and bioactive compounds that are good for human health, therefore, it is recommended for human consumption and medicinal purposes.

Key words: Phytochemical, Proximate, Baobab, Leaves, Zamfara.

ENP 231

ISOLATION AND CHARACTERIZATION OF SECONDARY METABOLITES FROM DICHLOROMETHANE EXTRACT OF ROOT BARK OF *M. elliptica*

Wakawa HY*[1], Fasihuddin BA[2] and Khong HY[3]

[1]Biochemistry Department, School of Life Sciences Modibbo Adama University of technology Yola Adamawa State Nigeria.

[2]Chemistry Department, Faculty of Resource Science and Technology Universiti Malaysia 94300 Kota Samarahan Kuching, Sarawak Malaysia

[3]Faculty of Applied Sciences, UniversitiTeknologi Mara 94300 Kota Samarahan Kuching, Sarawak Malaysia

Abstract

M. elliptica (locally known as "Mengkudukecil" in Malay) is a plant used for medicinal purposes in Malaysia, but little work has been known about it. Therefore, the aim of this study is to isolate bioactive compounds from the root bark extract of *M. elliptica* which is scarcely investigated. The air-dried root bark was pulverized to powder and subjected to serial extraction using four different solvents in order of increasing polarity (hexane, dichloromethane, ethyl acetate and methanol). Benzaldehyde, 2-hydroxy-1-methoxyanthracene-9,10-quinone, dehydroabietic acid and 3-(4-ethoxy-3-methoxyphenyl)-1-phenylprop-2-en-1-one were isolated from the dichloromethane fraction of the root bark extract using different chromatographic methods. These include TLC, column chromatography and chromatotron. The compounds were analyzed using Gas Chromatography-Mass Spectral (GC-MS) analysis and further with IR, ^{13}CNMR and ^{1}HNMR for proper characterization and elucidation of the compounds. Benzaldehyde, 2-hydroxy-1-methoxyanthracene-9,10- quinone and dehydroabietic acid were identified and reported the first time in the root bark extract of *M. elliptica*. These compounds may contribute to the medicinal potential of *M. elliptica.*

Keywords: *M. elliptica,* bioactive compounds, spectral characterization, root bark extract.

ENP 232

CASSAVA BASED MODIFIED STARCH: POTENTIALS AND PROSPECTS IN INDUSTRIALISATION AND GDP GROWTH OF NIGERIA

***Zulaiha Gidado Mukhtar[1,5], Yusuf Ibrahim Ibrahim[1,5], Lawal Suleiman Bilbis[2], Muhammad Jibril[3], Adamu J. Alhassan[4], Kadir Demirelli[5], Zainab Rabiu[6],Ishaq Bala[1]and Dorsun Ozer[5]**

[1]Dept. of Science Lab. Tech., School of Technology, Kano State Polytechnic, Kano.

[2] Dept. of Biochemistry, Faculty of Science, Usman Danfodio University, Sokoto.

[3]National Technology Incubation Centre, Abuja,

[4]Dept. of Biochemistry, College of Allied Health Sciences, Bayero University, Kano

[5]Dept. of Chemistry, Faculty of Science, Firat University, Elazig.

[6]Dept. of Biochemistry, Faculty of Science, Yusuf MaitamaSule University, Kano.

*Corresponding author: zgmukhtar.80@gmail.com; +2348033240470

Astract

The exponential rise in the Nigerian population without proper implementation of strategic plans to accommodate it has fostered challenges like unemployment, insecurity and environmental degradation in the country. The Starch industry is under-exploited in Nigeria despite its unlimited potential for driving agribusiness. Nigeria is the largest producer of Cassava (*Manihortesculentus*) in the world, producing 45 million metric tonnes of cassava annually yet contributes 2% of the global starch market. Starch, the

second most abundant biomass in nature, offers a highly versatile polymer that is readily modified to enhance its functional properties to suit any of pharmaceutical, paper, textile, food and beverage industries and bio-products like bio-plastics for packaging, construction and design can be produced. It is used to sweeten; influence or control such characteristics as texture, moisture, consistency and shelf stability. It can be used to bind or to disintegrate; to expand or to densify; to clarify or to opacify; to attract or to inhibit moisture; to produce smooth or pulpy texture, soft or crisp coatings; stabilize emulsions or to form oil-resistant films. In line with the 2003 Presidential initiative on cassava, with a goal to bring its potential to the national limelight, this paper reviews the past, present and also future of starch in Nigeria. It also highlights why it is imperative to invest in research of cassava starch to develop raw materials for indigenous industries, providing employment as well as sustainable source of foreign exchange to Nigeria.

ENP 233

***Pleurotustu berregium* SCLEROTIA AND *Cnidoscolus aconitifolius*LEAF EXTRACTS ATTENUATES AND PREVENTS OXIDATIVE STRESS IN DOXORUBICIN-INDUCED CARDIOTOXICITY, BY BOOSTING ENDOGENOUS ANTIOXIDANTS**

Ikewuchi, Jude Chigozie, Ikewuchi, Catherine Chidinma* and Ifeanacho, Mercy Onuekwuzu
Department of Biochemistry, Faculty of Science, University of Port Harcourt, Port Harcourt, Nigeria
*Corresponding author: e-mail: okaraonye@yahoo.com

Abstract

The ameliorative/preventive effects of aqueous extracts of *Pleurotustu berregium*s clerotia and *Cnidoscolus aconitifolius* leaves, against doxorubicin-induced cardiac oxidative stress was examined in Wistar rats. Oxidative stress was induced by intra-peritioneal administration of 15 mg/kg doxorubicin. Metformin was administered at 250 mg/kg; and the extracts were administered at 50 mg/kg to Treatment 1 (*P. tuberregium*s clerotia extract) and Treatment 4 (*C. aconitifolius* leaf extract); 75 mg/kg to Treatment 2 (sclerotia extract) and Treatment 5 (leaf extract); and 100 mg/kg to Treatment 3 (sclerotia extract) and Treatment 6 (leaf extract). In both the ameliorative and preventive studies, the cardiac and plasma concentrations of ascorbic acid and reduced glutathione; as well as cardiac activities of catalase, glutathione peroxidase and superoxide dismutase of Test control were significantly (p<0.05) lower than the others. However, cardiac and plasma malondialdehyde concentrations of Test control were significantly (p<0.05) higher. Administration of metformin and the extracts prevented or attenuated the increased levels of oxidative stress in the heart, and caused a subsequent protection or recovery towards normalization. These results suggest that, at least in part, due to antioxidative properties, aqueous extracts of *P. tuberregium*s clerotia and *C. aconitifolius* leaves, may provide a significant protective effect against acute doxorubicin-induced cardiotoxicity.

Key words: doxorubicin; endogenous antioxidants; malondialdehyde; oxidative stress; reduced glutathione

ENP 234

CHEMICAL CONSTITUENTS AND ANTIOXIDANT POTENTIALS OF *Bauhinia* GENUS

Abubakar B. Aliyu[*1], Mohammed A. Ibrahim[2], Murtala B.Isah [3], Aminu Mohammed[2], Anas Yusuf[3] and Adebayo O. Oyewale[4]

[1] Departments of Chemistry Ahmadu Bello University Zaria Nigeria

[2]Department of Biochemistry Ahmadu Bello University Zaria Nigeria

[3]Department of Biochemistry Umaru Musa Yaradua University Katsina

[4]Department of Pharmaceutical and Medicinal Chemistry Ahmadu Bello University Zaria Nigeria

[*]Corresponding author; e-mail: aliyubabando@gmail.com

Astract

There is clearly an increasing interest in the antioxidant potentials of the *Bauhinia* genus almost as much as there is in the overall free radical biochemistry. Indeed, there is a promising breakthrough on the medicinal potentials of the species as antidiabetics, anticancer and antihyperlipidemic agents especially in *B. forficata, B. purpurea, B. racemosa, B. tomentosa*and *B. variegata.* The fact that all the diseases are closely associated with oxidative stress tempts some researchers to conclude that the plants actually exert their medicinal effects via antioxidant mechanism. Data have accumulated in different *in vitro* and *in vivo* modelsto validate theantioxidant properties of the plants. *B.galpinii, B.kockiana, B.purpurea, B.vahlii*and*B.variegata* are among the most investigated species. Various alkaloids, flavonoids, steroids, saponins, triterpenes, and polyphenols are the most frequently isolated compounds proposed to confer the plants with their antioxidant properties. At least 22 compounds including kaempferitrin, kaempferol and quercetin were frequently isolated from the anti-oxidant-rich fractions of various parts of the *Bauhinia* species investigated. Novel compounds isolated in the *Bauhinia* genus such as isoacteosidefrom *B. tarapotensis* showed remarkable antioxidant activity and could have potential in antioxidant regimens.

Keywords: *Bauhinia*, antioxidant, medicinal use of, compound, mechanism of action

ENP 235

IN-VIVO ANTITYPHOID EVALUATION OF A NIGERIAN COMERCIAL POLY HERBAL PRODUCT ON SALMONELLA TYPHI INDUCED TYPHOID FEVER IN ALBINO RATS

[*1]Muhammad, I; [1]Matazu, K.I; [1]Matazu, N.U; [1]Kankia I.H; [1]Usman, A; [1]Yaradua, A.I; [1]Yau', S; [1]Shamsu, S; [1]Nasir, A; [1]Suleiman, Z.A [1]Abdulhamid, Y; [1]Nasir, R; Abubakar, M; [1]Amina, H.

[1]Department of Biochemistry, Umaru Musa Yaradua University, P.M.B. 2218 Katsina, Nigeria.

*corresponding author: ismaila.muhammad @umyu.edu.ng 08065547740

Abstract

Typhoid fever is a systemic infection caused by the bacterium Salmonella enterica subspecies enterica serotype typhi. Baban Aisha Herbal Product (SACRA HERBS) is a popular commercial polyherbal formulation made from various ethno medicinal plants marketed in northern part of Nigeria by SACRA MULTI LINKS LTD. According to the label, the herbal product is indicated for the treatments of several ailments including Waste pain,Typhoid, Ulcer and Toilet infection. The objective of this study was to investigate *in-vivo the* anti-salmonella validity of SACRA HERBAL PRODUCT on salmonella typhi induced typhoid fever in albino Rats. Twenty wister albino rats weighing 150 -200g without sex discxrimination were distributed into four groups *(*Normal, Drug, Sacra, and Tyfoid) of five rats each. The animals were divided into four groups *(*Normal, Typhoid, Drug, and Sacra group). The animals were inoculated with a single contagious dose of pure isolate of *Salmonella typhi* bacteria. After the animals were confirmed infected by widal test. The Normal and the Typhoid group were treated with distilled

water (2ml/200kg b.w), the Drug group were treated with 500mg/70kg of Ciprofloxacin, and the Sacra group were treated with 400mg/kg, of the Sacra herb. All the rats were treated for a period of seven days. Subsequently, the rats were sacrificed using diethyl ether anesthesia and blood samples taken for widal test. Administration of contagious dose of pure isolate of *Salmonella typhi* bacteria caused typhoid as evidenced by the increase titer values of the widal test (H=1/160; O=1/160) compared to the normal control group (H=1/40; O=1/20). Administration of 400mg/kg of the Sacra herb for one weeks significantly reverse the marked increase in the titer values of the widal test to near normal. Based on these results, the data obtained suggests that Sacra harb exhibits an effective treatment for salmonellosis, including typhoid fever in albino rats. However, it is necessary to extrapolate these results in large animals, in further studies.

Keywords: Ssacra harbs, anti-typhoid, Ciprofloxacin, *Salmonella typhi, Albino rats.*

ENP 236
BENEFICIAL EFFECT OF CASSIA SIEBERIANA LEAF EXTRACTS ON HAEMATOLOGICAL INDICES OF ALLOXAN INDUCED DIABETIC RATS

Tijjani Salihu Shinkafi*[1], Mohammed Hussaini Ruga[1] Maryam Bashir Dodo[1], Sulaiman Rabiu[1] and Ibrahim Hamza Kankia[2]

[1]Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University Sokoto, Nigeria
[2]Department of Biochemistry, Faculty of Science, Umar Musa Yar'adua University, Katsina, Nigeria
Corresponding author email: tijjani.salihu@udusok.edu.ng

Abstract

Diabetes mellitus has become a major public health concern, especially in developing countries. The current orthodox treatment modalities for diabetes mellitus have many drawbacks including undesirable side-effects and the high cost of long-term treatment. The aim of this study was to determine the effects of aqueous extract and fractions of Cassia- sieberiana leaves on the haematological indices of alloxan-induced diabetic rats. Rats were divided into 6 groups; group 1(normal control), group 2 (diabetic control), group 3 (administered with 300 mg/kg of aqueous extracts of Cassia sieberiana), group 4 (administered with 300 mg/kg of methanolic extracts of Cassia sieberiana), group 5(administered with 300 mg/kg of ethyl acetate extracts of Cassia sieberiana), group 6 (administered with 150 mg/kg of Metformin). The standard drug metformin and Cassia sieberiana were given oral daily for two weeks to the alloxan-induced albino rats. Fasting blood glucose levels were determined weekly for two weeks. At the end of the two weeks, the animals were sacrificed and blood samples were taken from all the groups for the determination of haematological parameters. The preliminary phytochemical screening of the aqueous, methanolic and ethyl acetate extracts of Cassia sieberiana revealed the presence of alkaloids, flavonoids, and saponins. Treatment with Cassia sieberiana showed a significant decrease in haematological indices (RBC, Hb, PCV, and MCHC) of diabetic control group compared to both normal control and treated groups. Group 3 and 4 showed a significant ($p<0.05$) increase in the levels of WBC, RBC and haemoglobin. Cassia sieberiana is found to improve the blood sugar level as well as the hematologic indices of diabetic rats.

Keywords: Medicinal plants, diabetes, alloxan, Cassia siebriana, haematological indices

ENP 237

NEEM LEAVES ETHANOLIC EXTRACT REDUCES BREAST CANCER PROLIFERATION THROUGH INHIBITION OF NRF2 PATHWAY

[1*]Ibrahim Hamza Kankia, [1]Jamilu Sani, [1]Nana Zahariyya Bala, [1]Umar Nasidi Danladi, [1]Auwal Abdullahi [1]Zainab Suleiman, [1]Salahuddeen Ya'u, and [2]Abdulhamid Yusuf

[1]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
[2]SPRS Unit, Umaru Musa Yar'adua University, Katsina, Nigeria
*Author of Correspondence: ibrahim.hamza@umyu.edu.ng; +2348066225056

Abstract

Nuclear factor (NRF2) and HER family regulate the normal cellular proliferation and maintenance and determining the cancer initiation and progression. Overexpression of NRF2 is reported in breast cancer and studies have implicated NRF2 in resistance of numerous cancers to chemotherapeutic agents. Neem leaves ethanolic extract contains bioactive flavanoid antioxidant molecule which has recently been shown to induce growth inhibition and apoptosis of human liver cancer. Human breast cancer cell lines SKBR3 was maintained in DMEM media supplemented with 10% foetal bovine serum (FBS) and 1% pen/strep in 5% CO_2 and incubated at 37°C. Before experimental treatments, cells were grown for 24 h in RPMI 1640 media and then treated with either tert-Butylhydroquinone (tBHQ; Sigma) or Neem leaves ethanolic extract to a final concentration as required with media. Following this, cytotoxicity assay, ROS detection, Glutathione assay and immunoblotting were performed in this study. We demonstrated that Neem leaves ethanolic extract inhibited the NRF2 activity, which led to decreased cell growth of SKBR3 cells. Furthermore, inhibition of NRF2 led to increase in ROS level and depletion of total glutathione in SKBR3 cells. Taken together, these data suggest that neem leaves ethanolic extract may inhibit the cell growth of breast cancer cells through inhibition of NRF2 and could be a novel avenue Neem leaves ethanolic extract induced NRF2 inhibition, which lead to inhibition of cancer cell growth.

Key word: Neem leaves ethanolic extract, Cytotoxicity, NRF2, Glutathione, ROS

ENP 238

ANTIMICROBIAL RESISTANCE PATTERNS OF *Campylobacter jejuni* and *Salmonella typhi* SOURCED FROM READY-TO-EAT VEGETABLE SALADS HAWKED IN KANO METROPOLIS

Mohammed, B[1]. and Muhammad, A. U.
Department of Microbiology, Faculty of Life Sciences
Bayero University Kano. Correspondence e-mail:bshchemiron@yahoo.com
Tel. 07012789177

Abstract

A total of 200 samples of Ready – to – Eat (RTE) vegetable salads were aseptically purchased randomly from hawkers in eight Local Governments of Kano, Nigeria. The Aerobic mesophilic bacterial count was conducted according to standard techniques. Samples were further screened for *Salmonella typhi* and *Campylobacter jejuni* using standard procedures. Isolates of the two bacterial species were subjected to antimicrobial sensitivity testing using Kirby Buer disk diffusion techniques. The total aerobic bacteria count ranged from 1.200×10^5 to 1.70×10^5cfu/g. A total of 36 bacterial isolates from the RTE vegetables were identified as *Campylobacter jejuni* (18%) and 97 as *Salmonella typhi* (48.5%). Ninety percent of the bacterial isolates were found to be resistant to the antibiotics used (augmentin, cefixime, cefuroxime, ceftazidime, ofloxacin, nitrofurantoin and ciprofloxacin. *Campylobacter jejuni* was highly sensitive to gentamicin (98.4%). TEM genes were detected in 40% of the *Campylobacter jejuni* isolates while 60%were detected in *Salmonella typhi* isolates. It can be concluded that the RTE vegetable salads hawked in the study areas are highly contaminated with bacteria among which are *Campylobacter jejuni* and *Salmonella typhi*. The isolates were resistant to most of the antibiotics tested. It is recommended that people should avoid consumption of RTE vegetable salads sold in the study areas.

Keywords: Vegetable salads, Aerobic mesophilic bacterial counts, Campylobacter *jejuni* and *Salmonella typhi,* Kirby-Baeur disc diffusion technique

ENP 239
QUALITATIVE AND QUANTITATIVE PHYTOCHEMICAL ANALYSES OF CHLOROFORM LEAF EXTRACT OF *FICUS POLITA*.

[*1]Nasir, A., [2]Alhassan, A.J., [2]Imam, A.A., [3]Muhammad, I.U., [1]Yaradua, A.I., [1]Matazu, K.I., [1]Kankia, I.H., [1]Suleiman, Z.A., [1]Muhammad, I. and [1]Umar, M.I.

[1]Department of Biochemistry, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, P.M.B. 2218, Katsina, Nigeria.
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano, Nigeria.
[3]Department of Medical Biochemistry, College of Medical Sciences, Yobe State University, P.M.B. 1144, Damaturu, Yobe State, Nigeria.
*Corresponding Author Email: amnuf81@gmail.com Phone: +2348036851879

Abstract
Phytochemicals are compounds that occur naturally in plants. They contribute to the colour, flavour and smell of plants. In addition, they form part of a plants' natural defense mechanism against diseases. The presence of these secondary metabolites in plants probably explains the various uses of plants in traditional and herbal medicine. Extracts from various parts of *Ficus polita* had been demonstrated to exhibit various medicinal activities. The work is aimed at analysing phytochemical contents of the chloroform leaf extract of *F. polita*. Qualitative and quantitative phytochemical analyses of the chloroform leaf extract were performed by using standard methods. Phytochemical screening revealed the presence of phenolics, flavonoids, quinones, terpenoids, steroids, and coumarins. Quantitative analysis revealed high amount of phenolics and terpenoids, and appreciable amount of flavonoids. Trace amount of steroids was found. The results show that the chloroform leaf extract of *F. polita* contains some phytochemicals of pharmacological importance.

Keywords: Phytochemicals, chloroform, leaf, *F. polita.*

ENP 240
NUTRITIONAL CHARACTERIZATION OF DUNG BEETLE LARVAE (*Aphodius rifipes*).

[1*]Sanusi, A.M., [1]Akanya H.O., [1]Shittu O.K

Department of Biochemistry, Federal University of Technology, Minna, Niger State.
*Corresponding author Email: abdulmajidsanusi28@gmail.com +243-7069520821

Abstract
Insects are small creatures that can be found everywhere with numerous benefits to man and the environment. Dung beetle larvae is commonly found in the dung of cows, horses and sheep. The larval is commonly consumed as a delicacy. In this study, the proximate, mineral, amino acid, anti-nutrient and vitamin composition of dung beetle larvae was investigated. Proximate and anti-nutrient analysis was determined using standard procedures while mineral and amino acid determination were carried out using Absorption Spectrophotometer and amino acid analyzer respectively. Vitamin constituent was also carried out using Absorption Spectrophotometer. The result showed the presence of 10.58% moisture, 4.33% Ash, 24.46% crude protein, 30.50% crude fibre, 29.68% oil extract and 3.67% carbohydrate. Six vitamins constituent identified include vitamin A (6.426mg), vitamin E (88.10mg), vitamin K (3.524mg), vitamin B_1 (1.742mg), vitamin B_6 (2.424 mg) and vitamin B_{12} (1.399mg). Also the larva shows presence of anti-nutrient such as tannin (47.775mg/100g), saponin (524.568mg/100g), phytate (506.277mg/100g), oxalate (1.413mg/100g) and cyanide (2927.267mg/100g). The insect was found to contain 461.90mg/kg calcium, 2.81mg/kg zinc, 11.64mg/kg iron, 121.30mg/kg magnesium and 21.52mg/kg sodium. Also, an appreciable amount of total essential amino acid (36.53g/100g protein) and total non-essential amino (51.15g/100g protein) were present. Hence, due to the vitamin, amino acid, mineral and essential nutrient revealed from this study, dung beetle larva could serve as a good source nutrient or supplement in the management of disease.

Keywords: Dung beetle larvae (*Aphodius rifipes*), Amino acid, Mineral, Vitamin, Anti-nutrient.

ENP 241

NUTRITIONAL PROFILING AND FUNCTIONAL PROPERTIES OF HERBAL TEA INFUSIONS OF GUAVA LEAVES SUPPLEMENTED WITH MORINGA AND GINGER POWDER

***Yusuf, A. B[1]. and Sahabi M. A[1].**

[1]Department of Biochemistry and Molecular Biology, Federal University, Birnin Kebbi, Kebbi State,
Email of corresponding author: yusuf.abdulrahman@fubk.edu.ng +2348160240925

Abstract

Herbal teas are receiving increasing attention from consumers because of their perceived nutritional and health benefits. Therefore, the current study formulated and evaluated guava leaf teas supplemented with moringa and dry ginger powder as supporting and activating herb respectively. The formulated herbal combinations were packed as dip tea bags designated M1 and M2. Nutritional composition, functional properties, and antinutritional factors were investigated using standard analytical methods of Association of Official Analytical Chemist. Data were analysed by ANOVA and results expressed as means and standard deviation. Result of proximate composition indicates that ash and moisture content were within ASEAN recommended standard. Amino acid profile revealed that the formulations contain appreciable amount of all essential amino acids. Functional properties indicate that bulk density ranged from 0.37-0.38, swelling index 2.8-3.7, reconstitution index 6.6-6.8, water absorption capacity 83.52-89.65, and pH 6.11-6.22. Selected micronutrient estimated suggest that the composite blends are good sources of minerals like Zn, Ca, and Fe which are of public health importance. Based on the results of this study, it can be concluded that guava leaves tea supplemented with moringa and ginger are reservoir of macro and micronutrients and may be an alternative to commercial tea (*Camellia sinensis*) with various health benefits.

Key words: Guava leaves, Herbal tea, Nutritional profile and Functional properties

ENP 242

ANTIOXIDANT ACTIVITY OF BIO-ENHANCED METHYL GALLATE AND PALMATINE COMBINATION AGAINST OXIDATIVE STRESS IN THE LIVER AND ERYTHROCYTE OF *Plasmodium berghei*-INFECTED MICE

Adegunloye, A.P. and Adebayo, J.O*

Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria
*Corresponding author. E-mail: topebayo2002@yahoo.com; Phone: +2347035487636

Abstract

Oxidative stress, marked by increased lipid peroxidation and reduced levels of antioxidants, is a common pathophysiological feature of malaria. Methyl gallate and palmatine are compounds with known *in vitro* activities against drug-resistant strains of *P. falciparum*. However, these compounds have not been evaluated for their abilities to ameliorate the oxidative stress associated with malaria. Thus, the response of antioxidant defense system of *Plasmodium berghei* NK65-infected mice to methyl gallate and palmatine combination (3:2 ratio; MGPAL3:2) in the presence of a bio-enhancer was investigated. Seventy mice were randomly assigned into seven groups (A - G) of ten mice each. Group A (control) mice were uninfected while mice in groups B, C, D, E, F and G were inoculated with *P. berghei* NK65. Mice in groups A and B were orally administered 5% DMSO while group C mice were administered 10 mg/kg body weight of chloroquine. Mice in groups D, E, F and G were administered 6.25, 12.5, 25 and 50 mg/kg body weight of MGPAL3:2 respectively with 20 mg/kg body weight of piperine (bio-enhancer). Administration started 24 h post-inoculation and was done once daily for three days. Antioxidant parameters of erythrocyte and liver were evaluated on days 4 and 8 post-inoculation. Results revealed that malondialdehyde concentrations in the liver and erythrocyte were significantly increased ($p<0.05$) in untreated infected and chloroquine-treated mice compared to both uninfected control and bio-enhanced MGPAL3:2-treated groups. Activities of superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase and glutathione-S-transferase and concentration of reduced glutathione in the liver and erythrocyte were significantly reduced ($p<0.05$) in untreated infected and chloroquine-treated mice compared to mice treated with bio-enhanced MGPAL3:2, except at the lowest dose. The results suggest that administration of bio-enhanced MGPAL3:2 may stimulate antioxidant defense of biological systems against oxidative stress associated with malaria.

Keywords: Methyl gallate, Palmatine, Malaria, Antioxidant, Oxidative stress, Bio-enhancer

ENP 243

EFFECT OF DIFFERENT LIGHT COLOR ON THE GROWTH OF TOMATO (*Solanum lycopersicum*) AND COWPEA (*Vigna unguiculata*) USING ARTIFICIAL LIGHT SOURCES

USMAN AFFAN

[1]Department of Human Anatomy, College of Health Science, Umaru Musa Yar'adua University, Katsina,
Corresponding author: usman.affan@umyu.edu.ng; +2348034409926

Abstract

Solar radiation is radiant (electromagnetic) energy from the sun it provides light and heat for the Earth and energy for photosynthesis. This radiant energy is necessary for metabolism of the environment and its inhabitants. The aim of the study is to assess the vegetative growth of Tomato *(Solanum lycopersicum)* and Cowpea (*Vigna unguiculata*) plants specie using artificial light sources of Compact Fluorescent Light (CFL) and Light Emitting Diodes (LED) under indoor experiment in Katsina State. Tomato and Cowpea plant were placed in a growth Chamber of 40 watts Compact Fluorescent Light (CFL) and 12 watts Totek Light Emitting Diodes (LEDs) for 9WAS and 8WAS respectively. Lamps emitted light colors: White, Green, Blue and Red. It was found that the growth of Tomato and Cowpea Plant was dependent upon the lamp type and light color. The highest tomato plant height, number of leaves, was obtained under the Blue LED and the least in red and green LED, while highest chlorophyll content under White LED and least under blue CFL. The highest cowpea plant in height and number of leaves was obtained in Red CFL and the least in Red and Green LEDs while the highest chlorophyll content, under the sunlight (Control) and least under Red and Green LEDs. Precise use of grow light may hold a promise in maximizing plant production, quality of vegetables grown in controlled environment.

Key words: Compact Fluorescent Light, Light Emitting Diodes, Katsina, Chlorophyll.

ENP 244

ANTIOXIDANT ACTIVITY OF CRUDE AND FLAVONOID EXTRACTS OF *Ocimum gratissimum* AND *Hyptis suaveolens* LEAF

E.A. Ayanda[1], F.S. Adefolalu[1] and T.Y. Gara[1]

[1*]Department of Biochemistry, Federal University of Technology, Minna, Niger State, Nigeria
*Corresponding author: t.gara@futminna.edu.ng

Abstract

Antioxidants are natural substances that can inhibit oxidation or delay cell damage. In this study the antioxidant activity of crude and flavonoid extracts of *Ocimum gratissimum* and *Hyptis suaveolens* leaves were evaluated. The crude leaf extract of *ocimum gratissimum* and *Hyptis suaveolens* leaf were obtained by cold maceration and the flavonoid content extracted from the crude extracts. The antioxidant activity for the crude and flavonoid extracts were investigated using 1, 1-Diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity. The result obtained in the study indicated higher flavonoid content in *Ocimum gratissimum* 568.92 mg/100 g than *Hyptis suaveolens* leaf extract 454.86 mg/100 g. The crude extract of *Hyptis suaveolens* leaves exhibited a stronger radical scavenging activity with IC_{50} value of 109.12 µg/mL than the flavonoid extract of *Hyptis suaveolens* leaf, the crude extract of *Ocimum gratissimum* leaf and flavonoid extract of *Ocimum gratissimum* leaf with IC_{50} values of 189.24, 138.72 and 182.84 µg/mL respectively. The result suggest that the flavonoid from the two plants used in this study can scavenge for free radicals and may aid in enhancement of health against reactive oxygen species.

Key words: *Ocimum gratissimum, Hyptis suaveolens,* Flavonoid, Antioxidant, DPPH.

ENP 245

EFFECTS OF JUICE EXTRACTS OF LEMON, APPLE AND CARROT ON LIPID PROFILE AND WEIGHT OF MALE ALBINO WISTAR RATS

Kingsley Chukwudi Onuh[1]and Chika Joy Uchenna[2]*

Biological Sciences, Institution: Nigerian Defense Academy.
Department: Biochemistry, Institution: University of Jos.
*Corresponding Authour : Email:joyuche1990@gmail.com

Abstract
This study seeks to compare the effects of the juice extracts of apple, lemon and carrot on the lipid profile and weight of albino Wistar rats. Twenty male rats were randomly separated into six groups, A, B, C, D, E and F. A high lipid diet was introduced by feeding the rats with butter for a period of twenty eight (28) days after which 1ml of the various juice extracts were administered as follows; Group A fed with normal diet and no treatment (control), Group B fed with butter only and no treatment (control), Group C fed with butter and treated with lemon juice extract, Group D fed with butter and treated with carrot juice extract, Group E fed with butter and treated with apple juice extract, Group F fed with butter and treated with a mixture of lemon, carrot and apple juice extract. Analysis was carried out after administering treatment for twenty one (21) days to determine the effect of the various juices on Total Cholesterol, Triglyceride, High Density Lipoprotein (HDL), and Low Density Lipoprotein (LDL). The results obtained from this study show that treatment of test subjects in group C with lemon juice lowered significantly ($P<0.05$), triglyceride levels (0.730 ± 0.034 mmol/L) while treatment of test subjects in group D with carrot juice increased significantly ($P<0.05$), the HDL-High Density Lipoprotein (1.250 ± 0.033 mmol/L) value compared with values obtained from other treated test subjects. Test subjects in group E treated with apple juice showed a significant ($P<0.05$) decrease in LDL-Low Density Lipoprotein levels (0.338 ± 0.018) compared with other test subjects, it also showed a significant decrease in Total Cholesterol (1.870 ± 0.024) alongside test subjects in group F treated with a mixture of the juice extract of lemon, carrot and apple (1.870 ± 0.036). Test subjects in groups C and D treated with lemon and carrot juice respectively, also showed a decrease in percentage weight gain, 6.6% and 7.9% after treatment. The toxic effect of the juice extracts was also determined using biochemical enzymes markers and results showed that test subjects treated with carrot juice in group D showed a significant ($P<0.05$) decrease in ALP and ALT levels while in group C treated with lemon juice, test subjects showed a significant decrease in the levels of AST and ALT. The juice extracts of apple, lemon and carrots taken individually or together can therefore, form part of alternative solutions for lowering hyperlipidemia conditions as well as maintaining normal levels of the lipid profile.

Keywords- Lipid Profile, Hyperlipidemia, Lipoprotein, Triglyceride.

ENP 246

HEMATOLOGICAL AND BIOCHEMICAL PARAMETERS IN CYCLOPHOSPHAMIDE-INDUCED ALBINO RATS ADMINISTERED WITH *Momordica charantia* METHANOL LEAF EXTRACT

[1*]Muhammad, F. M., [1]Jigam, A. A. [1]Abubakar, A. & [1]Innalegwu D. A

[1*]Department of Biochemistry, Federal University of Technology, Minna, Niger State.
[*]Corresponding author's Email: pharteama@gmail.com +234-8138066989

Abstract
Modulation of the immune system denotes any change that involves induction, expression, amplification or inhibition of any part or phase of the immune response according to therapeutic goals following the administration of a drug or compound. Cyclophosphamide is an alkylating cytotoxic drug that is toxic to cancer cells and proliferating lymphocytes. *Momordica charantia* (bitter gourd) belongs to the family cucurbitaceae, it is used as a vegetable and offers protection against various ailments. The study was carried out to determine the hematological and biochemical parameters of methanol leaf extract of *Momordica charantia* in cyclophosphamide-induced albino rats. Twenty five (25) albino rats of either sex were divided into five groups comprising of five animals each (n=5): Group i was administered

normal saline, group ii Cyclophosphamide at 200mg/kg body weight (bw) intraperitoneally, group iii levamisole (standard drug 50mg/kgbw), groups iv and group v 200 and 250 mg/kgbw of *Momordica charantia* extract respectively. Hematological and biochemical parameters were determined 14 days after treatment in blood samples collected by retro-orbital puncture at sacrifice. There was a significant ($p<0.05$) difference in the hematological parameters: Packed cell volume (PCV), Red blood cells(RBC), White blood cells(WBC), neutrophils, lymphocytes, eosinophils, basophils and mean corpuscular hemoglobin (MCH) when compared with the untreated group. There was no significant ($p>0.05$) difference in cholesterol and alkaline phosphatase (ALP) while a significant ($p<0.05$) difference was seen in total proteins, albumin, globulin, bilirubin, aspartate amino transferase (AST), alanine amino transferase (ALT) and creatinine levels. Thus, methanol leaf extract of *Momordica charantia* possess immunostimulatory activity in cyclophosphamide immunosuppressed Rats.

Keywords: *Momordica charantia*, Cyclophosphomide, Levamisole, Hematological.

ENP 247

PHYTOCHEMICAL SCREENING, THIN LAYER CHROMATOGRAPHY AND ELEMENTAL ANALYSIS OF *Cussonia barteri* SEEMAN (ARALIACEAE)

***Galadanchi, F.A[1], Ambi, A.A[1]., Bisallah M[2], Abdulhamid Y[3] and Idris Z.Y[1]**

[1]Department of Pharmacognosy and Drug Development, Ahmadu Bello University Zaria-Nigeria
[2]Department of Veterinary Pathology Ahmadu Bello University Zaria-Nigeria
[3]Department of Microbiology, Umaru Musa Yar`adua University, Katsina, Nigeria
* Correspondent author: fateemahag@gmail.com Tel: +2348066401994

Abstract

Cussonia barteri (Seemann), commonly called Octopus cabbage tree. It is known in Hausa as *Gwabsa*, Fulani as *Burmalahi* and Yoruba as *Sigo.* It is used traditionally in the treatment of infectious diseases, painful menstruation, gastrointestinal problems, malaria, inflammation and sexually transmitted diseases. The study establishes some important qualitative screening of *Cussonia barteri* stem bark with the hope of assisting in its proper standardization for quality and sample purity. The plant was collected in Basawa village Sabon-gari Local Government Area, Zaria Kaduna state. The preparation of the powdered samples and methanol extract of the stem bark was carried out according to WHO guideline on method of assessing crude drugs. Phytochemical and thin layer chromatographic analyses of the methanol extract of the stem-bark of *C.barteri* revealed the presence of steroids/ triterpenes, flavonoids, tannins, anthraquinones while alkaloid was found to be absent. The elemental analysis carried out on the powdered sample of *C.barteri* stem bark revealed the presence of cadmium in minute quantity. Chromium, magnesium, calcium, iron, manganese, copper and lead where found to be present, while cobalt and zinc where found to be absent. The study evaluated the Qualitative standards of *C.barteri* stem bark which will be useful for the compilation of a suitable monograph and guide towards its pharmaceutical utilization.

Keywords: *Cussonia barteri,* Phytochemical screening, Thin layer chromatography.

ENP 248
ANTI-ULCER ACTIVITY OF METHANOLIC LEAF EXTRACT OF *Pennisetum pedicullatum* IN ALBINO RATS

A. N. Ukwuani-Kwaja [1]*, B. S. Muhammed[1] and S.O Folami[1*]

[1]Department of Biochemistry, Faculty of Life Science, Kebbi State University of Science and Technology, Aliero, Kebbi State, Nigeria
*Corresponding Author: Tel.: +2347063502938, E-mail: Medical4real@gmail.com

Abstract
Pennisetum pedicellatum is an aggressive weed applied traditionally as a first aid treatment to cuts and wounds sustained in the forest while hunting, fetching firewood, collecting fodder or farming by the rural dwellers in Kebbi state. The aim of this study is to evaluate the antiulcer activity of methanolic leaf extract of *Pennisetum pedicellatum* in albino rats model. The effect of graded doses (150-600mg/kg) of methanolic leaf extract of *Pennisetum pedicullatum* (MLEPP) on ulcer index, stomach acidity, pH and volume of gastric contents was evaluated in ethanol-induced ulcerated rat models. Standard phytochemical methods were used to screen the presence of its phytoconstituents. The result showed that MLEPP exhibited a significant ($p<0.05$) dose-dependent antiulcer activity via reduced stomach acidity, increased pH and decrease ulcer index compared to the untreated control and may be attributed to its phytochemical constituents such tannin, saponins, alkaloid, cardiac glycoside and anthraquinone. The percentage inhibition of cimetidine (61.22%) was not comparable to MLEPP treated groups (14.29%, 11.18%, 44.89%) respectively. In conclusion, *Pennisetum pedicellatum* leaves possess anti-ulcer effect and could be a potential source of anti-ulcer agent for future research.

Key words: Anti-ulcer, *Pennisetum pedicullatum*, Ulcer Index, Ethanol-induced.

ENP 249
PHYTOCHEMICAL ANALYSIS, ANTIOXIDANT AND ANTI-DIABETIC POTENTIAL OF THE METHANOL EXTRACT AND FRACTIONS OF *Ethulia conyzoides*.

Helen Omasan Okotie*, Gilead Ebiegberi Forcados, Ijeoma Okolo, Micheal Tayo Anjuwon, Oluwafemi Abiodun Adepoju and Dorcas Bolanle James.

Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
Correspondence: Email-helenookotie@gmail.com , Phone number-07030276568.

Abstract
Ethulia conyzoides is a plant used traditionally in Nigeria for the management of diabetes. Unfortunately, the anti-diabetic potential of *E. conyzoides* has not been scientifically examined. The anti-diabetic and anti-oxidant potential of *Ethulia conyzoides* was investigated in this study to evaluate its effectiveness. *E. conyzoides* was subjected to 70% methanol extraction. The obtained methanol extract was partitioned using n-hexane and ethyl acetate to obtain three fractions (n-hexane fraction, ethylacetate fraction and residual aqueous fraction). The extract and fractions were then subjected to phytochemical analysis, in-vitro DPPH radical scavenging activity assay and *in vivo* anti-diabetic effects in mice. The levels of fasting blood glucose, weight change, feed and fluid intake was determined in the experimental mice using standard procedures. GCMS analysis was also carried out on the most potent fraction to determine the compounds present. Phytochemical screening of extract and fractions revealed the presence of phenolics, cardiac glycosides, tannins, saponins and alkaloids. The result showed that residual aqueous fraction (RAF) had the nearest inhibitory concentration (IC_{50}) of 0.011µg/ml to the standard ascorbic acid with 0.010µg/ml when compared with other extract and fractions. RAF significantly ($p<0.05$) lowered

the levels of fasting blood glucose by -47.59% after treatment at 100 mg/kg b.wt for 14 days. GCMS analysis of the residual aqueous fraction revealed compounds with reported antioxidant, anti-inflammatory and anti-diabetic properties. This study revealed that the residual aqueous fraction of *Ethulia conyzoides* possess anti-diabetic effects against T2D induced mice.

Keywords: Phytochemical, antioxidant, inflammation, *Ethulia conyzoides*, extract, fractions

ENP 250
ISOLATION AND MORPHOLOGICAL CHARACTERIZATION OF *Trichoderma Spp.* AND BIOCOMPATIBILITY ASSESSMENT WITH *Mycorriza Spp.* FOR IMPROVE ORGANIC FARMING PRACTICE

[a]Mustapha Isah*, [b] Zaharradeen Umar, [b]Rayhan Mohammed

[a]Department of Biochemistry, Sokoto State University, Sokoto State-Nigeria
[b]Department of Biotechnology, Universiti Teknologi Malaysia
corresponding author: mustyeeser029@gmail.com, +2347031207826

Abstract
Trichoderma spp. is an endophytic, symbiont and a genus of asexual fungi grown in almost all conditions. Mainly found in soil, roots, leaves and decayed organic matter. In this research, the *Trichoderma spp.* were isolated from the soil sample and morphologically identified as *Trichoderma harzianum* and then cocktailed with *Mycorrhizae spp*. both of which are beneficial fungi to plants. The result indicated that some of these fungal species are compatible to one another through cocktailing them together by visual observation of inhibition zone and this can be experimented for agricultural purposes that can produce safer and healthier crop compared to the chemical counterpart such as fertilizer, insecticide and pesticides that are deleterious to the ecosystem upon prolong usage.

ENP 251
PROTECTIVE EFFECT OF *Ficus sycamore* Berries METHANOL EXTRACT ON ASPIRIN INDUCED GASTRIC MUCOSAL INJURY

[1*]Nwogo Ajuka Obasi, [2]Stella Eberechukwu Obasi, [1]Chinyere Aloke, [1]Patience Nkemjika Ogbu and [3]Ikechuku Okorie Igwenyi

[1]Department of Medical Biochemistry, Alex Ekwueme Federal University, Ndufu-Alike, Ebonyi State,
[2]Department of Science laboratory Technology, Akanu Ibiam Federal Polytechnic Unwana, Ebonyi State, Nigeria
[3]Department of Biochemistry, Ebonyi State University Abakaliki, Ebonyi State, Nigeria
*Corresponding author: Dr N.A. Obasi, naobasi@yahoo.com +234(0)8037320579

Abstract
This study investigated the anti-ulcer activities of methanol extract of *Ficus sycamore* berries (FSBE) on aspirin induced gastric mucosa injury in Albino Wistar rats using standard protocols. In Phase I, oral doses of 250, 500 and 1000 mg/kg body wt. / day of FSBE was employed at different time intervals for 3 and 7 days and then treated with 400mg/kg.body.wt suspended in (0.5% carboxy methyl cellulose) of aspirin orally. Phase II study comprised four groups. Group I, normal control did not receive any treatment, Group II received aspirin treatment only, Group III received aspirin + 1000 mg/kg body.wt/day of FSBE and Group IV received 1000 mg/kg/body wt/day of VDBE only. Acute toxicity showed no death at varying oral doses up to 5000 mg/kg body wt of VDBE. The results showed that FSBE caused a dose

dependent significant (P < 0.05) decrease in ulcer index in aspirin induced albino wistar rats with 1000 mg/kg body.wt/day causing highest decrease in 7 days. The results showed significant increase (P< 0.05) of lipid peroxidase in rats with acute gastric mucosal injury and a significant decreased (P< 0.05) in the activities of antioxidant defense enzymes by oral gastric administration of aspirin. The decreased levels of antioxidant enzymes and increased mucosal injury were altered to near normal status upon pretreatment with VDBE when compared to the ulcer induced rats. These results indicate that FSBE exhibit anti-ulcer potential and may exert its gastro-protective effects by a free radical scavenging action.

Keywords: *Ficus sycamore*, Gastric ulcer, Aspirin, Scavenging activities, Treatment

ENP 252
EVALUATION OF THE EFFECT OF *Telfairia occidentalis* AQUEOUS EXTRACTS COADMINISTERED WITH ASCORBIC ACID, ON SOME BIOCHEMICAL PARAMETERS IN 2, 4 -DINITROPHENYLHYDRAZINE INDUCED ANAEMIC MICE

Fodeke H.[1*], Feka D. P.[2], Hassan, S. M.[1], Koom M. P. [1], Danazumi, A. U.[1], Ahmed, K. [1]

[1] Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[2] Department of Science Laboratory Technology, Nigerian Institute of Leather and Science Technology, Zaria, Nigeria.
*Corresponding Author: Fodeke Helena; helenafodeke@gmail.com; +234(0)8080865686

Abstract
The plant *Telfairia occidentalis* has shown anti-anaemic potential and contains carbohydrates, fat, proteins, calcium as well as vitamins A, B2, B5 and thiamine. The leaves have shown antioxidant, antimicrobial and hepatoprotective properties. This study evaluated some biochemical parameters in Phenylhydrazine (PHZ) induced haemolytic anaemic mice administered oral aqueous leaf extract of *Telfairia occidentalis* alone and in combination with ascorbic acid. Thirty-two (32) BALB/c mice weighing between 18-25 g were used for this study and grouped into eight groups of four mice each (n=4). Anaemia was induced in the mice by oral gavage of PHZ (40mg/kg body weight). Treatment included the administration of 100 mg/ml and 200 mg/ml of *T. occidentalis* alone and in co-administration with ascorbic acid (100 mg/kg). The positive control group was treated with Astyfer (50 mg/kg) after anaemia induction, the anaemic control group was induced with anaemia and remained untreated while the normal control was left uninduced and untreated. The results showed that after treatment, the weight of the animals in the groups were not statistically significant ($p<0.05$). The alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alanine phosphatase (ALP) levels revealed that co-administration of *T. occidentalis* with ascorbic acid did not show significantly higher ($p<0.05$) hepatoprotective properties from the administration of *T. occidentalis* alone. It can be concluded that *T. occidentalis* exhibits hepatoprotective property.

Keywords: *Telfairia occidentalis*, 2, 4 –Dinitirophenylhydrazine, Ascorbic acid, liver enzymes, Anaemia

ENP 253
ANTIPLASMODIAL, ANALGESIC AND ANTI-INFLAMMATORY ACTIVITIES OF ALKALOIDS FROM *Maytenus senegalensis* LEAF EXTRACT IN MICE

***Racheal Musa, Ali A. Jigam, Abdulkadir Abdullahi**

Department of Biochemistry, Federal University of Technology, Minna
Corresponding author: Racheal Musa Email: rachealmusa09@gmail.com Phone No: 07030945663

Abstract
The treatment inadequacy and toxicity associated with conventional anti-malarial, anti-inflammatory and analgesic agents has called for the search of alternatives from medicinal plants, particularly, their phytochemicals with inherent pharmacological properties. In the present study, alkaloid fraction of *M.*

senegalensis leaf was evaluated for anti-malarial, anti inflammatory and analgesic properties at doses of 200 and 300 mg/kg bw. The alkaloid fraction of *M. senegalensis* leaf showed dose dependent antiplasmodial activity with curative effects of 15.24±0.89%, 45.70±3.43% and 48.50±4.56% at 75, 150 and 300 mg/kg bw against *Plasmodium chabaudi* and curative effects of 44.25±3.21%, 72.74±6.54% and 76.30±8.32% respectively against *Plasmodium berghei.* Alkaloid fraction also exhibited 53.16±4.09% and 60.76±7.54% anti-inflammatory effect, 43.35±4.98% and 44.83±3.86% analgesic effect at 75 and 150 mg/kg bw respectively. The alkaloidal fraction of *M. senegalensis* leaf exhibited promising antimalarial, analgesic and anti-inflammatory activities. Thus, could serve as a template for the synthesis of new drugs with higher activity and safety.

Keywords: Alkaloids, Anti-plasmodial, Anti-inflammatory, Analgesic, *Maytenus senegalensis*

ENP 254

SYNTHESIS, IDENTIFICATION AND EFFECTS OF PINEAPPLE PEEL EXTRACT-MEDIATED SILVER NANOPARTICLES ON GERMINATION OF *Celosia argentea* SEEDS

***[1]Amadu Kayode Salau, [2]Suaib Olasupo Osineye, [1]Alimat Oyeronke Oyawoye, [1]Taofeekat Omolola Busari, OLolade Yetunde Odediran, O. Y. and [1,3]Mercy Omolola Olukoya**

[1]Antioxidants, Toxicology and Phytomedicine Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, P.M.B. 4491, Osogbo, Nigeria.
[2]Plant Biochemistry Research Laboratory, Biochemistry and Nutrition Unit, Department of Chemical Sciences, Fountain University, P.M.B. 4491, Osogbo, Nigeria.
[3]Department of Biochemistry, Adeleke University, P.M.B. 250, Lookin-Ogberin Road, Ede, Nigeria.
*Author for Correspondence: Phone: 08064810736, Email: ka_salaudeen@yahoo.com,

Abstract

This study focuses on the synthesis, identification and germination-modulating activities of silver nanoparticles (AgNPs) on *Celocia argentea* seeds. AgNPS were synthesized from $AgNO_3$ and *Ananas comosus* (pineapple) peel extract and thereafter identified by UV-Vis spectrophotometry and Fourier Transform Infra-Red (FTIR) spectroscopy. The UV-Vis absorption of the synthesized AgNPs peaked at 410 nm while the FTIR peaks were strongest at 3441.12 and 1631.83 cm^{-1} which indicated involvement of proteins and phenolic compounds. AgNPs of 0.03, 0.06 and 0.125 µg/L were utilized in the germination of *Celosia argentea* seeds while water, $AgNO_3$ and pineapple peel extract were used as control. Delayed germination was observed for water and $AgNO_3$ controls while the AgNPs-treated groups germinated within 24 hours of planting but with significant ($p<0.05$) reductions in root and shoot lengths. Malondialdehyde and nitric oxide levels were significant ($p<0.05$) lower in the AgNPs groups than the water and $AgNO_3$ controls while the activities of superoxide dismutase, catalase and glutathione-*S* transferase were significantly ($p<0.05$) higher in the AgNPs- and water-treated groups than the $AgNO_3$ group. Reduced glutathione was significantly ($p<0.05$) lower in the extract-treated group than others while total protein content was significantly ($p<0.05$) higher in the $AgNO_3$ and extract-treated groups than the AgNPs groups. Overall, pineapple peel extract mediated-AgNPs were able to break seed dormancy and reduce cellular oxidative stress in the germinating *C. argentea* seeds.

Keywords: Silver nanoparticles, Germination, Antioxidant, *Ananas comosus*, Enzymes, *Celocia argentea*.

ENP 255
IN VITRO ANTIOXIDANT STATUS AND POLYPHENOL ANALYSIS OF *Vitex doniana* LEAVES EXTRACT

[*1]Memi Gabriel Galadima, [2]Onubiyi Joy Ada, [1] Ndukwe Nelson Nwachukwu, [1]Tyohemba Samuel Terhide and [3]Zaharadeen Abdullahi.

[1] Department of Biological Sciences, Federal University of Kashere, Gombe State
[2]Department of Biochemistry, Modibbo Adama University of Technology Yola, Adamawa State
[3]Department of Chemical Sciences, Federal University of Kashere, Gombe State
Corresponding email: gmemimemorial@gmail.com, +2348142923372

Abstract
Free radicals are generated in all living cells as part of normal cellular function, also generation of excess free radical either from exogenous or endogenous sources are responsible for many diseases. Antioxidants are machines that scavenge or neutralised free radical directly or indirectly. This study was designed to evaluate the antioxidant and phytochemical activities of *Vitex doniana leaves.* Hexane, ethyl acetate, acetone and methanol were used as extractive solvents. Total flavonoids, phenolic and extracts scavenging actitiviy on DPPH were determined spectrophotometrically at different wave lengths. Solvents yielded (5.24), (6.85), (7.48) and (7.99) % w/w respectively. Preliminary phytochemical screening revealed the presence of alkaloids, flavonoids, steroids, tannins, saponins, anthraquinones and phenols. Flavonoids highest value (59.99±2.23) was seen in methanol while least value (29.88±2.15) in hexane. Also phenolic value in methanol (12.22±0.20) and least value (5.19±0.61) was recorded in hexane. Methanol scavenging activity on DPPH was (83.8±0.85%) and least value (43.51±3.42%) was observed in hexane. This study revealed that *Vitex doniana* possessed antioxidant status, quantitatively, flavonoids demonstrated higher solubility than phenols also, phytoconstituents present could be responsible for the observed effects.

Keywords: *Vitex doniana*, scavenging, Antioxidant and Polyphenolics

ENP 256
ANTIOXIDANT ACTIVITY, TOTAL FLAVONOID AND TOTAL PHENOLIC CONTENT OF ETHYL-ACETATE AND N-BUTANOL FRACTIONS OF *Detarium microcarpum* STEM BARK

Gara T.Y[a], Ameh D.A[b], Anigo K.M[b] and Innalegwu D.A[a]
[a]Department of Biochemistry, Federal University of Technology Minna, Nigeria.
[b]Department of Biochemistry, Ahmadu Bello University Zaria, Nigeria.
*Email: yebogana@yahoo.com

Abstract
Flavonoids and phenolic are natural antioxidants found in plants that can scavenge free radicals. The present study was aimed to investigate the antioxidant activity, total flavonoid and total phenolic content of ethyl-acetate and n-butanol fractions of *Detarium microcarpum* stem bark. Aqueous extraction was carried out on *Detarium microcarpum* stem bark and the crude extract was further fractionated sequentially using ethyl-acetate and n-butanol solvents. For ethyl-acetate and n-butanol fractions, the total flavonoid content were 45.76±2.59 and 234.42±0.71 mg/g quercetin equivalents while total phenol content were 11.54±0.20 and 2.97±0.31 mg/g Gallic acid equivalents respectively. Ethyl acetate fraction showed the highest DPPH free radical scavenging activity with 65.31% inhibition while n-butanol showed the highest reducing power and H_2O_2 free radical scavenging activities with 65.31% and 52.55% inhibition at a higher concentration. This result suggests that an extract from this plant could be used as a natural antioxidant supplement.

Keywords: Antioxidant activity, *Detarium microcarpum* stem bark, total flavonoid, total phenol, reducing power

ENP 257
A BIOCHEMICAL EVALUATION OF THE ANTI-DIABETIC AND ANTIOXIDANT ACTIVITIES OF *Tetrapleura tetraptera*

[*]Ubaoji, K.I.[1], Anaetoh, C. M., Ekuma, T. E., Ineh, M., Adibe, C. B., Nmoye, P. James, C. J., Nwaokike, G. E., and Udechukwu, O. L.

[1]Department of Biochemistry and Molecular Biology, Nasarawa State University, Keffi
Department of Applied Biochemistry, Nnamdi Azikiwe University, PMB 5025 Awka, Anambra State,
[*]Corresponding address: Ubaoji KI. ki.ubaoji@unizik.edu.ng

Abstract
The anti-diabetes and antioxidant activities of the methanolic extract of *Tetrapleura tetraptera* fruits and seeds were investigated. The dried fruits and seeds of *T. tetraptera* were separately collected, grounded and extracted in methanol and water. Alpha–amylase inhibitors are used to achieve greater control over hyperglycermia in type-11 diabetes mellitus. The present study tends to screen alpha amylase inhibitors from natural sources like plants (*T. tetraptera*) in order to minimize the toxicity and side effects of the inhibitors currently used to control hyperglycermia. Similarly, the retinol, ascorbic acid, tocopherol, terpinoids, phenols, flavonoids, beta-carotene and lycopene contents of *T. tetraptera* were also studied using standard methods. Inhibition of Fe^{2+}-induced lipid peroxidation in brain homogenate was evaluated on the seed, as free radical scavenging activity was determined on the fruit using DPPH (2,2-diphenyl-1-picryhydrazyl) method. Results for alpha-amylase inhibition show that the %inhibition (IC_{50}) of *T. tetraptera* fruit as compared to the standard acarbose were 4.276ug/ml and 4.087ug/ml respectively. Whereas that of *T. tetraptera* seed as compared to standard acarbose were 15110.00ug/ml and 521.89ug/ml respectively. *T. tetraptera* fruit showed high free radical scavenging activity as against the standard Butylhydroxyanisol (BHA) with effective concentrations (EC_{50}) of 423.467ug/ml and 307.50ug/ml for extract and BHA respectively. Similarly, *T. tetraptera* seed had a good inhibition on lipid peroxidation as compared to standard BHA with %inhibition (IC_{50}) of 575.75ug/ml and 728.75ug/ml for sample and standard respectively. In addition, results also showed that *T. tetraptera* contained 7.92±65mg/100mg and 7 ascorbic acid, 6.34±0.65mg/100g retinol, 4.86±0.57mg/100g tocopherol, 11.19±4.72GAE/100g phenols, 0.48±0.22CE/100g flavonoids, 18.67mg/g B-carotene and 6.825.00mg/100g terpenoids. These results suggest that *T. tetraptera* fruits and seeds can be used in the management of diabetes as well as oxidative stress reduction.

Keywords: *Tetrapleura tetraptera*, antidiabetes, antioxidant, alpha-amylase, hyperglycermia.

EPN 258
PRODUCTION AND CHARACTERIZATION OF ANTI-MICROBIAL SOAP FROM NEEM SEED OIL

***[1]Abubakar Mannir Rawayau, [2]Jibril Shuaibu,[2]Hamza Mustapha Yusuf,**
1-Department of Biochemistry Umaru Musa Yaradua University, Katsina.
2-Department of Chemistry Umaru Musa Yaradua University, Katsina.
*Corresponding Author: Abumannirrawayau101@gmail.com +2348187601105

Abstract
Animal or vegetable derived oils, made into salts are known as soaps. Soaps play an important role in removing and killing bacteria. Although fats and oils are general ingredient of soaps but some detergents are added to enhance the antibacterial activities of soaps. Neem oil contains polysaccharides and limonoids that reduce tumors and cancers. This research work is aimed at testing the action of the produced neem soaps against bacterial and fungal organisms and to compare the properties of the soaps with the market soaps. Soap production method involved weighing of 302.4g oil. The oil was heated to 70^{o}C and cooled to 50^{o}C, 41.5g of NaOH was weighed and dissolved in 138.3g of deionised water the NaOH solution was added to the oil and while stirring the mixture until the mixture traces (raised lines of soap appear when the stirrer is run across the surface, and it is noticeably thicker) additives were added at this stage as the case may be. The tracing mixture was poured into mould and the soap is made. Formability tests, PH test and anti-microbial susceptibility test was carried out on both produced neem

soap and the control commercial soap. The two produced Neem soaps were found to have compared favorably in terms of pH and formability with the two market soaps, the produced neem soaps were found to have exactly the same effect in the inhibition of bacteria *(B.sereus)* with the antimicrobial soap in comparison. Conclusively the research work shows that neem soap can effectively replace commercial antimicrobial soaps in treating skin bacteria. It is therefore recommended that feasibility analysis should be carried out to further ascertain its suitability and use.

Keywords: Soap, anti-microbial, neem seed, oil, PH, neem soap

EPN 259

COMPARATIVE STUDY OF BIOGAS GENERATION FROM KITCHEN WASTE AND COW DUNG AND AS AN ALTERNATIVE TO FOSSIL FUEL

[1]Rawayau Abubakar Mannir., *[2]Hamza Mustapha Yusuf., [2]Jibril Shuaibu.,
1-Department of Biochemistry Umaru Musa Yaradua University, Katsina.
2-Department of Chemistry Umaru Musa Yaradua University, Katsina.
*Corresponding Author: Myhamza002@gmail.com +2348160136292

Abstract
Renewable energy has remained one of the best alternatives for sustainable energy development. Renewable energy resources appear to be one of the most efficient and effective source of energy. Anaerobic digestion of organic waste lead to the formation of biogas. Biogas is a colorless, flammable gas produced via anaerobic digestion of animal, plant, human, industrial and kitchen wastes amongst others, to give mainly methane (50-70%), carbon dioxide (30-40%) and traces of other gases such as nitrogen, hydrogen, ammonia, hydrogen sulphide, water vapouretc This study aims investigates the anaerobic digestion in the production of biogas a renewable energy from the digestion and co-digestion of two different types of biodegradable waste (cow dung and kitchen waste). This was carried out using a 25 liters capacity plastic biogas plant, constructed to investigate the anaerobic digestion in generation of biogas. The experiment was batch operated and daily gas production from the digesters was monitored for 20 days. The slurry temperature, volatile fatty acid, total solid, BOD, and the pH were also monitored and presented. The digesters were charged with these ratios of 1:1, of waste and water respectively. The results obtained showed that the co-digestion of cow dung and kitchen waste produced the highest biogas of 83.8 liters, followed by kitchen waste of 78.4 liters and cow dung within this retention period. During this digestion period, processes continues volatile fatty acid are produced which causes decrease in pH of the slurry. The study recommends that biogas is not just a renewable energy source but also an appropriate way of managing waste, having potentials to replace fossils fuel.

Keywords: Anaerobic Digestion, biogas, renewable energy, bio-degradable waste

ENP 260

ANTIOXIDANT, TOTAL PHENOLIC AND FLAVONOID CONTENTS OF THE METHANOL WHOLE PLANT EXTRACT AND FRACTIONS OF *Plantago rugelii* DECNE (PLANTAGINACEAE)

[*1]Ogbiko Cyril., [2]Eboka Chukwuenweniwe Jonathan and [1]Yelwa Abubakar Sani
[1]Department of Pure and Applied Chemistry, Usmanu Danfodiyo University Sokoto, Sokoto State Nigeria
[2]Department of Pharmaceutical Chemistry, University of Benin, Benin City Edo State Nigeria
[*]Corresponding Author: E-mail: cyril.ogbiko@udusok.edu.ng; Tel: +2348080398933

Abstract
Plantago rugelii Decne. (Plantaginaceae) is used in Nigeria folk medicine as used as topical for wounds, bites, stings, bronchial infection, hepatitis, and jaundice among others. This study evaluated scientifically the total phenolic and flavonoid of the crude and fractionated extracts with a view to validate its folkloric usage. *In vitro* antioxidant properties of the extract and fractions were evaluated using the free radical scavenging activities by 1, 1-diphenyl-2-picryl-hydrazyl (DPPH) with ascorbic acid as control. Total phenol and flavonoid contents of the various extracts were determined using the Folin-Ciocalteu method and aluminum chloride colorimetric method with gallic acid and quercetin as positive controls. The total antioxidant activity results indicated that the ethyl acetate fraction has the highest inhibition percent with the least IC_{50} value (1.90 µg/mL)

thou not comparable to that of ascorbic acid standard (IC_{50} value 1.20 µg/mL) while the crude methanol extract has the least IC_{50} value (2.20 µg/mL) in the DPPH assay. The GAE and QE plots showed that the ethyl acetate fraction contained a significantly higher concentration of total phenols and flavonoids in comparison with other fractions. The present study confirmed that, there was correlation between the DPPH antioxidant activity and the phenolic and flavonoid contents in the plant extracts. These findings confirm that the extracts possess significant antioxidant properties which may validate some of its trado-medicinal applications.

Keywords: Antioxidant, Flavonoid, Phenolic, *Plantago rugelii*.

ENP 261

INHIBITION OF QUORUM SENSING IN *Chromobacterium violaceum* BY *Centaurea praecox* EXTRACTS

Abubakar Babando Aliyu[1*] Murtala Bindawa Isah [2], Mohammed Auwal Ibrahim[3], Aminu Mohammed[3] Ibrahim Hamisu and Nasir Tajudeen[1]

[1]Department of Chemistry, Ahmadu Bello University, Zaria
[2]Department of Biochemistry, Umaru Musa Yar'adua University, Katsina
[3]Department of Biochemistry, Ahmadu Bello University, Zaria
*Corresponding author: aliyubabando@gmail.com Phone: +2349098655974

Abstract

The search for effective treatment against resistant bacteria has led to emergence of quorum sensing (QS) mechanism as a viable research strategy for screening plant extracts as anti-virulent agents**.** The aim of this research is to extract *Centaurea praecox* using hexane (HEX), dichloromethane (DCM), ethyl acetate (EA), ethanol (ET) and water (AQ), test for secondary metabolites and investigate the antibacterial and QS inhibitory effects of the extracts on violacein production inhibition. *Centaurea praecox* extracts were subjected to antibacterial screening on selected bacteria using disc diffusion method, and quantitative QS inhibitory studies of extracts were carried out on *Chromobacterium violaceum* (CV)12447 biosensor by violacein production inhibition using spectrophotometry. The antibacterial efficacies of extracts were poor compared to standard drugs used. However, QS inhibition of DCM extract at 0.3 mg/ml showed the most potent activity with 79.4% on CV biosensor organism. The EA extract also demonstrated effective QS inhibitory activity with 71% at 0.3 mg/ml. The QS inhibitory efficacy of extracts is generally in the order: DCM >EA >HEX >ET=AQ with ≥ 90% obtained at ≥ 0.6 mg/ml. In conclusion *C. praecox* extracts contains phytochemicals with QS inhibitory properties, and this indicates their antipathogenic potentials towards combating virulence of drug-resistant bacteria.

Keywords: *Centaurea praecox*, *Chromobacterium violaceum*, quorum sensing,

ENP 262

GC-MS ANALYSIS OF ENTEROPOOLING FRACTIONS FROM *Annona senegalensis* ROOT AND STEM BARK.

Ahmed M.U[1], Arise R.O[2] and Zaruwa M.Z[1]

[1] Dept. of Biochemistry,Adamawa State University, Mubi, Adamawa State.
[2]Dept. of Biochemistry, University of Ilorin, Ilorin, Kwara State**.**

Abstract

This study was carried out to identify the possible enteropooling compound(s) in *Annona senegalensis.* Bio-activity guided fractionation of three (3) different solvents (hexane, dichloromethane and aqueous) root and stem bark extracts was carried out to determine the enteropooling property of the fractions. GC-MS analysis was used to identify the compounds present in the fraction. Two fractions; Dichloromethane stem fraction (DS 3) and aqueous-dichloromethane root bark fraction (ADR 2) showed good enteropooling activity by decreasing both the weight and volume of intestinal fluid. GC-MS analysis of ADR 2 revealed 4 compounds; 3-tetradecen-5-yne (19.36%), androstan-3-one (51.98%), butanimide, N-(3 methylphenyl) -2,2,3,3,4,4,4,heptafluoro (9.52%) and pyrazolo (3-4-b) pyridine-3 (2H) –one (19.14%). 23 compounds were identified from DS fraction. The major constituents are androstan-16-ene-3-one (50.33%), atis-16-ene (11.76%), cis 13-octadecanoic acid (9.11%), alloaromandendrene 2.56%, prasterone (2.74%), 5α-preg-13 (8) en-20-one (3.48%) and N-acridine-9-yl, n-(4 fluoro-phenylhydrazine) (3.54%). The steroid, androstan-3-one was identified as the major constituent in both fractions, thus, maybe responsible for the enteropooling activity.

Keywords: Enteropooling, fractions, antidiarrheal, steroid, fluid

Correspondence: maryamahmed566@gmail.com

SUB-THEME

ENZYME TECHNOLOGY (ET)

ET 001
EFFECT OF MODIFIED ASCORBIC ACID ON SERUM AND BRAIN TISSUE ACTIVITIES OF ANTIOXIDANT ENZYMES AND MDA OF TBI RATS

Yusuf Zayyana[1], Ibrahim Abubakar[1],Umar Farouq Saidu[1],Nasiru Suleiman[2],Ibrahim Bulama[3] Onu Andrew[1], Abbas Abdullahi Yahya[1]*, Saidu Yusuf[1], Bilbis Lawal Suleman[1]

[1]Department of Biochemistry, Faculty of Science, Usmanu Danfodiyo University, Sokoto, Nigeria.
[2]Department of Veterinary Physiology and Biochemistry, Faculty of Veterinary, Usmanu Danfodiyo University Sokoto, Sokoto, Nigeria
[3]Department of Veterinary Physiology and Biochemistry Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria.
*Author of correspondence Email:ayabbas2002@yahoo.com Phone: +2348035052927

Abstract
Oxidative stress have been implicated as the major contributor to the pathogenesis of complications caused by traumatic brain injury (TBI) leading to depletion in antioxidants defense system. This study evaluated the effect of Ascorbyl Palmitate (AP) in the management of traumatic brain injury induced on Wistar albino rats. AP was chemically synthesized and TBI was induced using weight drop model. Twenty five rats (Weighing 180-230g) were randomly divided into five groups. Group I, II, and III received AP, Ascorbic acid (AA) and dimethyl sulfoxide (DMSO) at 100mg/kg for two weeks after TBI induction respectively, the remaining two groups (IV and V) were traumatized non-treated (TNT) and non-traumatized non-treated (NTNT) controls. Activities of antioxidant enzymes glutathione peroxidase (GPx), superoxide dismutase (SOD) catalase (CAT) and level of lipid peroxidation biomarker Malondialdehyde (MDA) from serum and brain were determined using standard analytical procedures. In both serum and brain, all the enzymes showed a significant higher activity in AP and AA treated group compared to TNT control group. SOD,GPx and CAT were found to have significant ($P<0.05$) increased activity in AP treated group compared to AA treated group. AP was able to significantly reduce MDA concentration compared to TNT group. No significant difference was observed between AP and AA treated group. The implications of these findings to the management of TBI will be discussed.

ET 002
ISOLATION AND CHARACTERISATION *OF ASPERGILLUS NIGER* AND *SACCHAROMYCES CEREVISIAE* FOR BIOETHANOL PRODUCTION.

Abe, A.S[1]*.,Idio U.I[1]., Odeke E.H[1]., Adudu, J.A[1]., Otori, M.O[1]., Okezie C.V[2]., Anyim, P.B[1]., Edem, U.O[1].

[1]Scientific and Industrial Research Department, National Research Institute for Chemical Technology, Zaria, Kaduna-State. Nigeria
[2]Quality Control Department, Nigeria Natural Medicine Development Agency, Lagos, Nigeria
*Corresponding author email: ayexcel100@gmail.com Phone number: 07035593898

Abstract
Production of ethanol using microbes is a very popular concept in order to solve the increase energy demand nowadays. In this regards, two fungi: *Aspergillus niger* and *Saccharomyces cerevisiae* were isolated from soil and palmwine respectively. *Aspergillus niger* was screened for cellulase production based on its cellulose hydrolyzing ability and used for hydrolysis of sawdust sample. *Saccharomyces cerevisiae* was characterized for alcoholic fermentation. The fermentation of sugars was optimized with respect to pH,temperature, fermentation time and substrate concentration. The optimum results obtained from the parameters were: temperature 30^0C, pH 6.0, 3 days fermentation time and 15% substrate concentration. Stress tolerance tests showed *Saccharomyces cerevisiae* is highly thermo-tolerant pH-tolerant and ethanol-tolerant. Conway method for estimating percentage of ethanol was employed. Under optimized conditions, *Saccharomyces* cerevisae produced 65.5% of ethanol concentration.

Keywords: Bioethanol, Fermentation, Sawdust, Palmwine, Hydrolysis, Microbes, Cellulase, Concentration.

ET 003

AN OVERVIEW ON EFFECTS OF ANTIBIOTICS TO THE DEVELOPMENT AND COLONIZATIONOF PRETERM GUT MICBIOTA.

***Abdulkadir B. [1] and Isah U.[1]**

[1] Department of Microbiology Umaru Musa Yaradua University Katsina

***Corresponding Author**: bashir.abdulkadir@umyu.edu.ng (+2348065137374)

Abstract

The gut microbiota plays a vital roles in the development of immune system, nutrient absorption, and pathogen colonization resistance. Antibiotics are among the many factors that affect and influence the establishment of the microbiota. Antibiotics are largely administered during the first critical years of gut microbial development, it is important to understand the effects of these antibiotics in reshaping and colonization of intestinal microbiome. Neonates, particularly those born prematurely, represent an interesting population because they receive early and often extensive antibiotic therapy in the first year of life. Reviewed literature, recently demonstrated that antibiotic therapy in preterm infants can dramatically affect the gut microbiome. The early establishment of the gut microbiome is suspected to have a particularly profound impact protecting the gut from infectious disease and on long-term subsequent health by predisposing individuals to atopic or autoimmune disease later in life. This review gather relevant literatures on the effects of antibiotics on the preterm gut microbiota both on their composition and development. During this review it was found that some antibiotic treatments were associated with decreased species richness. Treatment with antibiotic enriched the presence of resistance genes and multidrug resistant organisms. Antibiotics regimens bring about population shiftsand reshape the abundant microbial colonization. We therefore, demonstrated the impacts of antibiotics on the composition of microbial community and its establishment from the gut of preterm infants during their early days of life.

Key Words: Antibiotics, Colonization, Gut, Microbiota, Neonate and Preterm.

ET 004

PLANT GROWTH PROMOTING POTENTIALS OF PHOSPHATE-SOLUBILIZING BACTERIA ISOLATED FROM RUMEN CONTENT OF WHITE FULANI CATTLE, INDIGENOUS TO NIGERIA

Adebayo, A. A.[1,2], Faleye, T. O. C.[2,3], David, O. M.[2], Odeyemi, A. T.[2], Adeosun, O. M.[2], Alhaji, A. A.[1]

***Egbe, N. E. L.[1]**

[1]Department of Biological Science, Faculty of Science, Nigerian Defence Academy, Kaduna, Nigeria

[2]Department of Microbiology, Faculty of Science, Ekiti State University, Ado-Ekiti, Nigeria

[3]Department of Virology, College of Medicine, University of Ibadan, Oyo-State, Nigeria

*Corresponding author: loegbe@yahoo.com

Abstract

Phosphate-solubilizing bacteria (PSB) with other plant growth promoting (PGP) traits are among options to reduce fertilizer application and enhance sustainable agriculture. Tith the aim to search for bacteria capable of promoting the growth of plants, the rumen contents of indigenous White Fulani cattle were sampled. The phosphate solubilizing potentials of the isolates on media containing tricalcium phosphate (TCP) was assayed for 7 days and their multiple PGP activities were enumerated using standard techniques. A Total of 23 bacteria were selected from the total bacterial counts which ranged from $5.20\pm0.36 \times 10^5$ to $4.00\pm0.01 \times 10^6$ CFU/g) for the sample of rumen content. Out of the 23 isolates, 14(61%) exhibited varying phosphate solubilization efficiency (144 - 687.75µg mL^{-1}) and thus were assessed *in vitro* for multiple PGP activities. The 16SrRNA gene sequencing analysis suggested that 8(57%) of the isolates with prominent PGP ability are strains of *Pseudomonas aeruginosa* and *Escherichia coli*. *Escherichia coli* AKRC16 took the lead as potential PGP bacteria among member of the genus Escherichia with 345 µg mL^{-1} soluble phosphates liberated. Overall, *P. aeruginosa* AKRC7 showed highest PGP activity by liberating highest (687.75µg mL^{-1}) soluble phosphate at pH 4.2 after 120hrs, IAA (39.27µg mL^{-1}), ammonia (3.89µmol mL^{-1}) and also displayed ability to fix nitrogen. The findings of this study demonstrate the rumen content of cattle as reservoir of PSB and also report *P. aeruginosa* AKRC7 as a potential plant growth promoting bacteria.

Keywords: *Escherichia coli* AKRC16, *Pseudomonas aeruginosa* AKRC7, Rumen content, Phosphate-solubilizing bacteria (PSB), Tricalcium phosphate (TCP).

ET 005
PARTIAL PURIFICATION OF PHOSPHATASE EXTRACTED FROM *Aspergillus tubingensis* ISOLATED FROM CRUDE OIL CONTAMINATED SOIL.

Ezema, B.O [1*], Oguguo, V.C [2]; Omeje, K.O [2]; Ozioko, J.N [1] and Eze, S.O.O [2]
[1]Biochemistry Unit of the Department of Science Laboratory Technology, University of Nigeria, Nsukka
[2]Enzymology Unit, Department of Biochemistry, University of Nigeria, Nsukka.
Corresponding E-mail: ezema.onyebuchi@unn.edu.ng

Abstract
Crude oil contamination constitutes the major environmental problem in crude oil producing areas. One group of enzyme present in micro-organisms involved in bioconversion of toxic pollutant to less toxic byproduct is phosphatase (phosphomonoester hydrolases). In this study fungi were isolated from crude oil contaminated soil collected from Nembe in Bayelsa state south-south Nigeria. The fungi were cultured on potato dextrose agar media. Positive fungi isolates were screened by observing yellow halo zones around the isolate on a bromophenol blue agar media. The specie was molecularly identified as *Aspergillus tubingensis* through DNA sequencing and blast analysis internal transcribed sequence (ITS) region. Phosphatase production was carried out in a submerged fermentation culture using groundnut husk as carbon source. Maximum phosphatase production was observed on the third day of fermentation. The extracted enzyme was partially purified through Ammonium sulphate precipitation, dialysis and gel filtration chromatography to a purification fold of 2.5 and 23.2% yield. Optimum temperature of 45^{o}C and 40^{o}C; optimum pH of 6.5 and 9.5 were observed indicating the presence of acid and alkaline phosphatases respectively. While the kinetic parameters of Km and Vmax were 2.5mM and 0.56µM/ml respectively. The fungi isolate when inoculated on crude oil spiked medium was able to degrade the crude oil component using the crude oil as a carbon source.ss

Keywords: *Aspergillus tubingensis*, groundnut husk, phoshpatases and identification.

ET 006
ISOLATION AND MOLECULAR CHARACTERIZATION OF *Aspergillus sp.* PRODUCING GLUCOSE OXIDASE

[1]*Onosakponome I., [1]Okoye, G.I., [1]Ezugwu, A.L [1]Ezike, T.C., [1]Eze, S.O.O. and [1]Chilaka, F.C.
[1]Department of Biochemistry, University of Nigeria, Nsukka Enugu State, Nigeria
*Corresponding author Email: onosken@yahoo.co.uk Phone: +2348094863429

Abstract
Glucose oxidase (GOx) has been produced from different fungal sources, mainly from the genus *Aspergillus* and *Pencillum*. GOx is a commercial enzyme due to its application in food, pharmaceutical, chemical and textile industries. The aim of the study was selective isolation of GOx producing strain of microorganism and the evaluation of their GOx activities. Twelve (12) fungal isolates from garden soil were qualitative screened for glucose oxidase production in a plate assay containing Horse Radish Peroxidase (HRP) using indicator compounds; *o*-dianisidine. Isolates were also screened for glucose oxidase production using submerged fermentation. One (1) isolate showed positive GOx producer on Vogel's broth medium in comparison to other isolates. The positive GOx producing fungi was identified using morphological and molecular characterization. DNA was extracted and amplified using primer pairs ITS 1(5'-TCCGTAGGTGAACCTGCGG-3') and ITS 4 (5'-GCTGCGTTCTTCTTCATGATGC-3') PCR products. DNA sequencing was done and analyzed using the same set of primers as for the PCR reactions. The DNA sequences were subjected to BLAST (Basic Local Alignment Search Tools for Nucleotides) search algorithm and aligned using Multiple Sequence Alignment based on Fast Fourier transform (MAFFT) version 5. Phylogentic analysis of the ITS sequence data was also conducted using molecular evolutionary genetic analysis (MEGA) version 7. GOx producing isolate strain was identified as *Aspergillus fumigates* AFS4 strain. The strain gave GOx activity of 1.30U/ml after 7 days of fermentation period at room temperature and at an optimum medium pH of 6.5. The result of this study showed that the strains are better GOx producing fungi and are promising for GOx biotechnological application.

ET 007

PARTIAL PURIFICATION OF PEROXIDASE EXTRACTED FROM *Aspergelliusflavus* ISOLATED FROM CRUDE OIL CONTAMINATED SOIL

Ozioko, J.N.[1], Iketaku, I.C.[2], Ezema, B.O.[1], Omeje, K.O[2] and Eze, S.O.O.[2]
[1]Department of Science Laboratory Technology, University of Nigeria, Nsukka.
2. Department of Biochemistry, University of Nigeria, Nsukka.

Abstract
In this study, fungi were isolated from crude oil contaminated soil which was collected from Nembe in Bayelsa state. The fungi specie was cultured on Potato Dextrose Agar(PDA) media. Optimization parameters of variation in carbon source (orange peel, groundnut husk and sawdust) and the days of maximum enzyme production were determined using standard methods. The fungi were molecularly identified as *Aspergellius flavus*. Peroxidase was extracted from the organism on the day of maximium enzyme production using submerged fermentation where sawdust served as the carbon source. Ammonium sulphate precipitate and gel filtration were used in partially purifying the extracted enzyme.Optimum temperature and pH of the partially purified enzyme was 30^0C and 6.0 while the kinetic parameters of Km and Vmax of hydrogen peroxide was 0.20Mm and 0.20µ/ml while that of O-dianisidine was 0.50mM and 0.20µ/ml for Km and Vmax respectively. The fungi *Aspergellius flavus* which was inoculated on the crude oil was observed to have the ability to degrade it.

ET 008

OPTIMIZATION AND CHARACTERIZATION OF GLUCOSE ISOMERASE OBTAINED FROM *BACILLUS* SPECIES

[1]Okwuenu, P.C.,*Ezugwu, A.L.,[1]Nwangu, I. N.and [1]Chilaka, F.C.
[1]Department of Biochemistry, Faculty of Biological Sciences, University of Nigeria, Nsukka, Enugu
*Corresponding author Email: linus.ezugwu@unn.edu.ng Phone: +2348065251877

Abstract
Increasing demands for refined sugar, coupled with its high cost of production haven ecessitated the search for acceptable sugar substitutes such as, syrups. Enzymatic technology have been found useful in the production of syrups, one of such useful industrial enzymes for syrup production is, glucose isomerase. This study investigates the optimization conditions for glucose isomerase from *Bacillus* speciesandthe effect of divalent metal ion (Ca^{2+}, Zn^{2+}, Co^{2+}, Mg^{2+}, Mn^{2+} and Cu^{2+}) concentration on glucose isomerase activity. *Bacillus* sp. Was obtained by serial dilution using dust grain as carbon source; inoculation was done on nutrient agar following sub culturing to obtain pure isolates. Glucose isomerase activity was assayed spectrophotometrically at 560 nm using the method of Dische and Boren freund, protein content of the enzyme was determined by the method of Lowry. Maximum enzyme production was obtained on the 2^{nd} day of fermentation. Isomerization tim ewas optimized and 30 min was found suitable for the isomerization reaction at 60^0C.The enzyme was purified using ammonium sulphate precipitation, dialysis and gel filtration. The optimum temperature and pH were obtained as 80 ^{0}C and 7.0 respectively. Michaelis constant (K_M)and maximum velocity (*Vmax*) obtained from the Line weaver Burk plot of initial velocity data were 1.195 M and 243.90 µmol/min respectively.
Divalent metal ions(Ca^{2+}, Zn^{2+}, Co^{2+}, $Mg^{2+}$and Mn^{2+}) enhanced glucose isomerase activity whereas, Cu^{2+}, did not. Results from this study indicate that the enzyme has high affinity for itssubstrate; divalent metal ions are essential cofactors for the enzyme activity.

ET 009
PREPARATION OF CROSS-LINKED FRUCTOSYLTRANSFERASE AGGREGATES FOR THE PRODUCTION OF PREBIOTIC FRUCTOOLIGOSACCHARIDES

[1,2*]Ademakinwa Adedeji Nelson, [1]Ayinla Zainab Adenike and [1]Agboola Femi Kayode
[1]Department of Biochemistry and Molecular Biology, Obafemi Awolowo University, Ile-Ife, Nigeria
[2]Department of Physical and Chemical Sciences, Elizade University, Ilara-Mokin, Nigeria
Corresponding Author: adedeji.ademakinwa@elizadeuniversity.edu.ng

Abstract
In this study the preparation, characterization and evaluation of cross-linked enzyme aggregates (CLEA) of fructosyltransferase isolated from mutant-type *Aureobasidium pullulans* NAC8 for production of fructooligosaccharides (FOS) that have prebiotic properties have been investigated. Reaction conditions for CLEA were optimized statistically using response surface methodology. Characterization of CLEA was carried out using both photo-microscopy and scanning electron microscopy energy dispersive x-ray spectroscopy (SEM-EDX). The protein secondary structures were predicted using Fourier transform infra-red spectroscopy (FTIR). Quantification of fructooligosaccharides produced from CLEA biotransformation of sucrose was carried out using chemometric analysis of FTIR spectra data. The effects of the produced fructooligosaccharides as prebiotics was investigated under anaerobic conditions using standard strain of *Lactobacillus* sp. Statistically determined, optimum conditions were 5% (v/v) glutaraldehyde, pH 5.5 and 32^{o}C. The R^2, F-value, adjusted precision and coefficient of variation values were 0.94, 11.50, 9.34 and 35.34 respectively. Validation of the model resulted in the reusability of the CLEA in 6reaction cycles as it retained 70% of the residual activity thereafter. From the SEM-EDX and photomicrography analysis, sizes of CLEA varied from 10-40 µm.The aggregation lead to formation of higher number of beta sheets in the CLEA than in the free enzyme. The total FOS produced by the cross-linked enzyme aggregates was 57% (w/v). *A. pullulans* FOS supplemented to the medium had a stimulatory effect on bifidobacterial growth compared with the control medium. The growth curves of *Lactobacillus sp*. reached plateau phase after 24 h cultivation with FOS. The CLEA of fructosyltransferase catalysed the biocatalysis of sucrose to fructooligosaccharides,a process with a biotechnological importance as prebiotics.

ET 010
PRODUCTION AND CHARACTERISATION OF ALPHA AMYLASE FROM *Aspergillus nidullans* ISOLATED FROM LAUNDRY WASTE WATER DISPOSAL SITE.

[1]*Abugu, S.C., [1]Ezugwu, A.L., [1]Ene, K.C., [1]Ezike, T.C. and Chilaka, F.C.
[1]Department of Biochemistry, University of Nigeria, Nsukka Enugu State, Nigeria
*Corresponding author Email: sylverchinwe0001@gmail.com Phone: +2347030749407

Abstract
α-amylase has found application in industrial processes such as food, textile, paper, detergent, as well as pharmaceutical industries. Its increasing demand in many biotechnological industries has raised the search for amylase with improved characteristics. After incubation period and pH optimization studies**,** α-amylase was produced by *Aspergillus nidulans* under liquid state fermentation system using cassava starch as carbon source. The crude amylase was purified using ammonium sulphate precipitation, dialysis and gel filtration chromatography (Sephadex G-100). The partially purifiedα-amylase was characterised based on effect of pH, temperature, substrate concentration, metal ions and stability. Amylase activity was determined spectrophotometrically at 540nm using cassava starch as the substrate. pH 5.0 was optimum for α-amylase production and a peak activity of 140.706 µmol/minwas recorded on the 6thday. The enzyme was purified 5.994-folds with specific activity of 2226.37 U/mg and percentage yield of 19.62. The optimal pH and temperature of the purified α-amylase were 5.0 and 60˚C respectively. The Michaelis constant, K_m and maximum velocity, V_{max} obtained from the Lineweaver-Burk plot at different substrate concentrations were18.28mg/ml and 144.927µmol/min respectively. The study shows that Co^{2+}, Cu^{2+}, Mg^{2+} and Fe^{2+}inhibited α-amylase activity whereas $Ca^{2+}$and Mn^{2+}enhanced its activity. The results of the study showed that *Aspergillus nidulans* can be exploited as a cheap and efficient source of α-amylase for many biotechnological industries that operate within these observed conditions.

Keywords: Alpha amylase, DNSA, *Aspergillus nidulans*, Liquid state fermentation system

ET 011

ENERGETICS OF HEAT INACTIVATION OF PEROXIDASE FROM INFECTED NSUKKA GARDEN EGG FRUIT

Kingsley Ozioma Omeje*[1], Sabinus Oscar O. Eze[1], and Ferdinand C. Chilaka[1]

[1]Department of Biochemistry, Faculty of Biological Sciences, University of Nigeria, Nsukka, Enugu state

*Corresponding author: kingsley.omeje@unn.edu.ng

Abstract

The heat inactivation studies of peroxidase extracted from the fruit of infected Nsukka garden egg fruit was monitored after incubation over a temperature range of 30 – 70 °C using thermodynamic parameters for enzyme inactivation. The Z-value calculated for the enzyme was 0.0033, suggesting that the enzyme was stable and more sensitive to increase in temperature than the duration of heat treatment. Also, the activation energy (*ΔEa*) for inactivation determined from the Arrhenius plot revealed -1864.16, -78.06, -134.27, -2159.47 and 114.06 KJ/mol for 303, 313, 323, 333 and 343 K respectively. The free energy change (ΔG) were 55.142, 58.731, 60.472, 60.227 and 64.296 KJ/mol. The results indicate that the oxidation of the substrate (o-dianisidine) were; non spontaneous ($\Delta G > 0$), exothermic ($\Delta H < 0$) at 303, 333 and 343 K but endothermic ($H > 0$) at 313 and 323 K and reversible ($\Delta S < 0$) for the enzyme at all temperature. Also, potassium cyanide and salicylic acid were used for the inhibitory studies. They showed varying inhibitory strength (*Ki)* with different substrates (o-dianisidine, guaiacol, ascorbate and pyrogallol). The inhibitory strength for both inhibitors were as follows: o-dianisidine>guaiacol>pyrogallol>ascorbate,

Keywords: Peroxidase, inhibitors, Bioenergetics, *Solanum spp*. Heat inactivation

ET 012

KINETIC EVALUATION OF LIPASE AFFINITY FOR SHEA FAT AND CASSAVA SEED OIL

***Ajodo, Endurance Uneojo; Egwim, Evans Chidi; Adefolalu, Funmilola Sherifat; Moses, Bali Emmanuel and Saba, Maryam Hassan**

Department of Biochemistry, Federal University of Technology, Minna, Niger State, Nigeria.

E-mail: ajodoendurance@yahoo.com; Tel: +2348068747862

Abstract

Lipases had been used for enzymatic interesterification of lipids to rearrange fatty acids attached at Sn1, Sn2 and Sn3 of glycerol backbone. Shea fat (SF) and Cassava seed oil (CSO) are lipids with potentially interesterifiable properties. This work focused on determination of physiochemical properties, fatty acid profile, screening lipases from different microbes for substrate affinity and determination of kinetic parameters using SF and CSO as substrates.T he CSO was extracted using cold press extraction with yield of0.14g of oil/g of seeds and SF purchased from Bosso Market in Minna. Physicochemical results showed refractive index of 1.461 and 1.456, density 0.987 and 0.921, iodine value 71.220g/100g and 129.630g/100g, acid value 1.810mgKOH/g and 0.730mgKOH/g, peroxide value 1.531mEqO_2mg/g and 2.5mEqO_2mg/g, saponification value 237.650mg KOH/g and 295.647mg KOH/g respectively. GCMS fatty acid profile showed CSO contain 13 fatty acids majorly unsaturated, 47.70 linoleic, 22.10 oleic, 9.43 palmitic, 6.19 linolenic etc., and SF contain 7 fatty acids majorly saturated, 45.80% stearic, 42.50% oleic, 4.10% palmitic etc. Titrimetric screening of six microbial lipases for lipolytic activity showed lipase from *Aspergillus niger* performed best followed by *Klebsiella pneumonia* and were selected for Kinetic studies (Km and Vmax). Activity was determined colorimetrically at optimum temperature of 40ºC, 30-40ºC and pH of 6 and 8 *A. niger* and *K. pneumonia* respectively. Lineweaver Burkplot showed lipase from *A. niger* performed better with K_m 0.323mMand 0.385mM,V_{max}2.050U/mins and 1.989U/mins against *K. pneumonia* with K_m 0.385mMand 0.476mM, V_{max} 1.983U/mins and 2.035U/mins for CSO and SF respectively.

Keywords: Cassava Seed Oil, Shea Fat, Lipids, Lipases, Kinetic Parameters

ET 013
PRODUCTION AND CHARACTERISATION OF LIPASE FROM *Aspergillus niger* strain PHCT-FS111 ISOLATED FROM LAUNDRY WASTE WATER DISPOSAL SITE

***Abugu, S.C., [1]Ezugwu, A.L.,[1]Chigbu, N.M.and Chilaka, F.C.**

[1]Department of Biochemistry, University of Nigeria, Nsukka Enugu State, Nigeria
*Corresponding author Email: sylverchinwe0001@gmail.com Phone: +2347030749407

Abstract
Lipases are enzymes that catalyse the reversible hydrolysis of triglycerides into fatty acids and glycerol with high region specificity and enantio selectivity. Increasing demand for lipases due to its application in food, pharmaceutical, detergent, pulp and paper industries has intensified search for inexpensive and reliable source of lipases possessing the kinetic and bioenergetics characteristics required in various industries. Fungi were isolated from soil, identified by molecular characterization and used to produce lipase under liquid state fermentation using olive oil as carbon source. The enzyme was purified by ammonium sulphate precipitation, dialysis and gel filtration (Sephadex G-100). The partially purified lipase was characterised based on effect of pH, temperature, substrate concentration, metal ions and stability. Lipase activity was determined spectrophotometrically at 410nm using p-nitrophenyl palmitate as substrate. DNA sequence analysis of ITS region identified the fungal isolate as *Aspergillus niger strain PHCT-FS111*. Highest enzyme production was observed on 9th day of fermentation. The enzyme was purified 9.736-folds with specific activity of 1185.05 U/mg. The partially purified enzyme had optimal pH and temperature of 5.5 and 50°C, respectively. The $K_m$and V_{max} obtained were70.79mg/ml and 227.27µmol/min respectively. Fe^{2+} strongly inhibited the enzyme, while Ca^{2+} enhanced the enzyme activity. The enzyme was most stable at pH 6.0 and temperature range of 40-50°C. Bioenergetics studies showed that the enzyme was sensitive to temperature increase and its thermal inactivation was irreversible. *Aspergillus niger strain PHCT-FS111* is a rich source of lipase. It could be applied in industries with same operational conditions as obtained in this research. In cheese production, the high Ca^{2+} content of milk will enhance the enzyme activity. Moreover, thermal inactivation of the enzyme in finished product is at low energy cost and its irreversibility ensures longer shelf life.

Keywords: Lipase, p-NPP, *Aspergillus niger strain PHCT-FS111*, Liquid state fermentation, ITS region.

ET 014
CHARACTERIZATION OF XYLANASE PRODUCED BY SOIL *Bacillus* SPUNDER SUBMERGED FERMENTATION SYSTEM

[1]*Ottah, V.E., Ezugwu, A.L. and [1]Chilaka, F.C.

[1]Department of Biochemistry, University of Nigeria, Nsukka Enugu State, Nigeria
*Corresponding author Email: victoria.ottah.pg78648@unn.edu.ng Phone: +2348064779848

Abstract
Xylanases basically belong to glycoside hydrolases (GH) and have been classified into two families; GH10 and GH11. Bacterial GH10 family is composed of majorly endo-1,4-β-xylanases with few endo-1,3-β-xylanases activity with greater catalytic versatility. This paper was aimed at producing industrially viable xylanases for a wide range of biotechnological applications. *Bacillus* sp was isolated from soil obtained from timber-processing site and was used for xylanase production using xylan extracted from saw dustas carbon source. Crude xylanase was subjected to ammonium sulphate precipitation, dialysis and gel-filtration. Partially purified xylanase was characterized based on pH, temperature, substrate concentration, metal ions and stability. Xylanase activity was determined spectrophotometrically

(550nm) using birch wood xylan as substrate. Xylan was extracted from African-rosewood, Beech wood and Agbawood sawdust with 45.5%, 39.7% and 36.7% yield, respectively. Highest xylanase activity was obtained with African-rosewood xylan on the 4th day of fermentation with specific activity of 475.23 U/mg.The specific activity after purification was found to be 759.404U/mg with a percentage yield of 28.12%. The enzyme was stable within a pH range of 5.0 to 6.0 with an optimum pH of 5.5, and temperature of40^{o}C. The K_m and V_{max} were found to be 15.05mg/ml and 555.56µmol/min, respectively. The enzyme was activated by Mn^{2+}, whereas Ca^{2+}, Mg^{2+}. Co^{2+} and Zn^{2+} exerted inhibitory effects on the enzyme activity. The enzyme could be used in sensitive industrial processes as it possesses high affinity for its substrate as indicated by the K_M value. The enzyme was observed to be relatively stable at its optimum conditions, making it suitable for use in industry.

Key words: *Bacillus*sp, Xylan, Xylanase, Suberged Fermentation

ET 015
KINETIC PARAMETERS OF LIPASE EXPRESSED BY *Klebsiella pneumoniae* AND *Aspergillus niger* ISOLATED FROM VEGETABLE OIL CONTAMINATED SOILS

***Moses, Bali Emmanuel[1], Egwim, Chidi Evans[1], Abubakar, Abdulkadir[1], Hamidu, Abdullahi[2];Ajodo, Endurance Uneojo[1] and Saba, Maryam Hassan[1]**

[1]Department of Biochemistry, Federal University of Technology Minna, Niger State, Nigeria
[2]Department of Microbiology, Federal University of Technology Minna, Niger State, Nigeria
*Corresponding Author: E-mail: balimentol@gmail.com Phone:08036688081

Abstract

Lipases are a versatile class of enzymes owing to their many potential applications in biotechnology including food, detergent, cosmetics, leather, pharmaceuticals and textile industries. In this study, lipases from *Klebsiella pneumoniae* and *Aspergillus niger* isolates were screened and characterized. Isolation and preliminary screening for lipase activity from the microbial strains were carried using standard methods. Lipase activity and protein concentration were determined spectrophotometrically. The optimum pH and temperature for lipase activity from *K. pneumoniae*were determined to be 8 and 30 ^{o}C repectively while those from *A. niger* were 6 and 40 ^{o}C respectively. The lipases studied from both sources had high affinity for palm oil compared to groundnut and olive oil. $MgCl_2$, $CaCl_2$ and KCl enhanced the activity of the lipases studied whereas $FeCl_3$, $HgCl_2$, $CuSO_4$ and $CoCl_2$ showed inhibitory effects on the activities of the enzymes. Lipase from *K. pneumoniae*had a Vmax of 0.0006 (U/Sec) and Km of 0.4960 (Mm) and that from *A. niger* had a Vmax of 0.0010 (U/Sec) and Km of 1.5433 (Mm). The energy of activation for lipase from *K. pneumoniae*was determined to be 26.689KJmol^{-1} in contrast to 21.180KJmol^{-1} from *A. niger*.T he findings of the present study reveal that lipases from these sources could be efficient biotechnological tools.

Keywords: Lipase, *Klebsiella pneumoniae*, *Aspergillus niger*, Physicochemical Parameters, Kinetic Parameters,

ET 016
CHARACTERIZATION OF PARTIALLY PURIFIED CYSTEINE PROTEASE INHIBITOR FROM THE FRUITS AND SEEDS OF SOURSOP (*Annona muricata*)

Habeeb Bankole*.,Segun Adeola, S., Rahmon Kanmodi.
Department of Biochemistry, Lagos State University, Ojo, Lagos, Nigeria
*Correspondent: habeeb.bankole@lasu.edu.ng, +2348023838453

Abstract
Cysteine protease inhibitors (CPIs) serve as molecular checkpoints to regulate the uncontrolled proteolytic activities of cysteine proteases which play a critical role in a wide spectrum of pathological processes including diabetes, cancer and neurodegenerative disorders. Soursop (*Annona muricata* Linn) is an edible lowland tropical fruit-bearing tree that is widely cultivated across regions of the world. There is a dearth of information on its cysteine protease inhibitory activity. This study was designed to isolate, purify and characterize CPI from Soursop fruits and seeds. CPI was isolated and purified by simple methods consisting of ammonium sulphate precipitation, ion exchange chromatography and gel filtration. Mode of inhibition, optimum temperature and pH, as well as the effect of metals on the enzyme activity were determined using spectrophotometric method. The purified CPI from seeds and fruits exhibited competitive and non-competitive inhibition against papain respectively. However, maximal inhibitory activities for both fruit and seed samples were observed at similar optimal pH and temperature of 8 and 40°C respectively. Although, metal cations such as cobalt (Co^{2+}), sodium (Na^{+}) and zinc($Zn2^{+}$) did not effect a considerable decrease in the inhibitory activity of the CPI; Lead (Pb^{2+}), Magnesium (Mg^{2+}), manganese(Mn^{2+}) and copper (Cu^{2+}) significantly inhibited CPI at a very low concentration (1mM). Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) analysis revealed a molecular weight estimated to be 20 and 22KDa for seed and fruit samples respectively. The antagonistic properties exhibited by the purified CPI certainly indicate its likely suitability for application in biotechnology as a pharmaceutical agent in pathological conditions.

ET 017
OPTIMIZATION OF MEDIUM COMPOSITION FOR GLUCOSE OXIDASE PRODUCTION BY *Aspergillus fumigatus* AFS4 STRAIN

[1]*Onosakponome, I. Ezugwu A.L. and [1]Chilaka, F.C.
Department of Biochemistry, University of Nigeria, Nsukka Enugu State, Nigeria
*Corresponding author Email: onosken@yahoo.co.uk Phone: +2348094863429

Abstract:
Glucose oxidase has a lot of potential application in both food and textile industries. GOx has been produced from *Aspergillus* species and *Penicillium* species. There is little research on the optimization of cultural conditions for the production of GOx from various fungi. The aim of the study was focused on the optimization of glucose oxidase production by *Aspergillus fumigatus* AFS4 strain. Isolates of fungi from garden soil were screened for GOx producing capability. Molecular characterization of the isolates was identified to be *Aspergillus fumigatus* AFS4 strain. Several media constituents like carbon sources, nitrogen sources, $CaCO_3$, pH, and fermentation time for GOx production were optimized by varying parameters. The optimum fermentation time for the GOx production gave the highest enzyme activity of 1.30U/ml on the 7th day. A number of carbon sources were analyzed to determine their effect on GOx production. The highest GOx production was obtained in glucose with enzyme activity of 1.612U/ml followed by sucrose with enzyme activity of 1.32U/ml. Proteose peptone concentration (3g/L) with enzyme activity of 1.83U/ml was found to be effective in GOx production compared to other nitrogen sources. Calcium carbonate increased GOx production by the supplementation of 30 - 40g/L. The optimal pH for the medium production of GOx production was found to be 6.5 with enzyme activity 2.08U/ml.

ET 018

PHYTOL VERSUS *Trypanosoma congolense*: *IN VIVO* ACTIVITY WITH MECHANISTIC INSIGHT INTO TRYPANOSOMALSIALIDASE INHIBITION USING *IN VITRO* AND *IN SILICO* MODELS

Saad Bello Saad[ab], Mohammed Auwal Ibrahim[a*], Isa Danladi Jatau[c] and Mohammed Nasir Shuaibu[a]

[a]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
[b]Department of Biochemistry, Yusuf MaitamaSule University, Kano, Nigeria
[c]Department of Veterinary Parasitology and Entomology, Ahmadu Bello University, Zaria, Nigeria
***Correspondence to:** E mail: mauwalibrahim@gmail.com or maibrahim@abu.edu.ng

Abstract

This study is aimed at evaluating the *in vivo* anti-trypanosomal activity of phytol and its ameliorative effect on the disease-induced anemia and organ damages as well as inhibitory effects against trypanosomalsialidase using *in vitro* and *in silico* techniques. At a dose of 50 and 100 mg/kg BW, phytol was used to treat *Trypanosoma congolense* infected rats for 14 days where it was found to reduce the parasite burden in the infected animals. Moreover, 100 mg/kg bw of phytol significantly ($P < 0.05$) reversed the anemia, hepatic and renal damages as well as hepatosplenomegaly caused by the parasite. This is in addition to the alleviation of the parasite-induced upsurge in free serum sialic acid levels in the infected animals. Consequently, bloodstream *T. congolense* sialidase was partially purified on DEAE cellulose column and inhibition kinetic studies revealed that the enzyme was inhibited by phytolvia an uncompetitive inhibition pattern. *In silico* analysis using molecular docking with Autodock Vina indicated that phytol binds to trypanosomalsialidase with a minimum free binding energy of -6.7 kcal/mol and involving a single hydrogen bond interaction between the hydroxyl group of the compound and Try324 on the trypanosomalsialidase. The data suggests that phytol has some antitrypanosomal activity and could protect infected animals against the *T. congolense*-induced anemia through the inhibition of sialidase and/or the protection of the parasite-induced hepatosplenomegaly.

ET 019

PARTIAL PURIFICATION OF ALPHA AMYLASE FROM LEAVE EXTRACT OF *Spinachia* AND *Brassica oleracea's*

[*1]Abubakar Tijjani[1]Umar Aminu Imam[2]Rabi'uSaidu Umar Wasagu and [2]Onu Andrew

[1]Department of Biochemistry, Sokoto State University, Sokoto, Nigeria.
[2]Department of Biochemistry, Usmanu Danfodiyo Univversity, Sokoto, Nigeria.
[*]Corresponding Author: tijjania228@gmail.com, +2348085864498

Abstract

Leaves of *Spinachia*, and of *Brassica oleracea's* are used in regions of northern Nigeria especially in traditional food processing, particularly in cooking. α-amylase was extracted and partially purified from these plants using conventional methods of protein purification including ammonium sulfate fractionation, Dialysis and gel filtration. Purification achieved 6 and 51 fold respectively for *Brassica* and *Spinachia*. The purified enzymes were then characterized in terms of optimum pH, optimum temperature, Km, Vmax. The optimum pH of enzymes varied from 5.1 for amylases from Brassica, to 5.5 for amylase from Spinachia; while the optimum temperature was 58°C for amylases from *Spinachia* and 60°c for amylase from *Brassica*. These amylases can be differentiated by their pH, temperature activity and kinetics constants.

Key words: *Spinachia*, and *Brassica oleracea's*, α-amylase, protein purification, ammonium sulfate fractionation, Dialysis and gel filtration.

ET 020

UTILIZATION OF ORANGE PEEL (*Citrus sinensis*) WASTE FOR PECTINASE PRODUCTION FROM *Aspergillus niger* AND ITS APPLICATION IN ORANGE JUICE CLARIFICATION

Agbo, Uchechukwu.,[1*] Okereke, Omoaruemike Ebele[2]., Akande, Sarah Abimbola[2]., Akolade, Jubril Olayinka[3]., Nasir-Naeem, Khadeejah Olubukola[2] and Agarry, Olaitan Olubunmi[1].

[1] Department of Microbiology, University of Abuja, Nigeria
[2] Biotechnology Advanced Research Centre (SHESTCO)) Abuja, Nigeria
[3] Material Science and Manufacturing Council for Scientific and Industrial Research Pretoria, South Africa
[*]Corresponding author, E-mail: agbouche001@gmail.com. Phone number: +2348131540721

Abstract

Pectinase, an industrially significant enzyme was produced from *Aspergillus niger* ATCC 16404 under submerged fermentation. The fermentation was carried out for 24-196 hours using dried orange (*Citrus sinensis*) peel as substrate. The effect of varying substrate concentration on the enzyme activity as well as the optimum temperature and pH were determined. The crude enzyme produced was subjected to partial purification, and the partially purified enzyme was used for the clarification of freshly prepared orange juice. The results show that the highest enzyme activity (70.61U) was observed on the 6th day of fermentation at 4% substrate concentration. The optimum pH and temperature of the partially purified enzyme was found to be 5.5 and 35^{0}C respectively. There was 50% reduction in viscosity (increase clarity) observed in the juice treated with pectinase. It can therefore be concluded from this study that cheap readily available citrus peel waste can be utilized as a substrate for the production of pectinase from *Aspergillus niger*, with potential applications in the food processing industries.

Keywords: *Aspergillus niger*, Juice clarification, Orange peel, Pectinase, Submerged fermentation.

ET 021

CAPTOPRIL DECREASES MALARIA INFECTION BY DOWN-REGULATING ANGIOTENSIN CONVERTING ENZYME (ACE) AND ANGIOTENSIN TYPE-1 RECEPTOR (AT1R) EXPRESSION IN *Plasmodium berghei*-INFECTED MICE

***Abdulazeez, A.M.[1], Mahmoud, R.U.[2], Atiku, M.K.[2] and Muntari, B.[2]**

[1]Center for Biotechnology Research, Bayero University, Kano
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
Corresponding Author mabdulazeez.cbr@buk.edu.ng +234-803-450-9063

Abstract

The peptides of the Renin Angiotensin System (RAS) have been suggested to play significant role in the pathogenesis of malaria infection. This study was carried out to investigate the effect of captopril on parasitemia and levels of some RAS peptides in *Plasmodium berghei*-infected mice. Forty (40) apparently healthy mice were divided into 5 groups of 8 mice each: Group 1(control, not infected and not treated), Group 2 (Malaria control, infected, untreated), Group 3 (standard control, infected and treated with 0.03 mg/kg lonart), Group 4 (infected and treated with 0.03 mg/kg captopril) and Group 5 (infected and treated with 0.09 mg/kg captopril). Mice were treated for 14 days and on the 15th day, they were sacrificed to obtain the blood and kidneys for biochemical analysis. Results showed a significant ($P<0.05$) decrease in parasitemia in all treated mice compared to the malaria control, and on the 14th day, the parasitemia level in mice given 0.09 mg/kg captopril and 0.03 mg/kg lonart was not different ($P>0.05$) from the control group. The ACE and Ang II levels increased significantly ($P<0.05$) in serum and kidneys of *P. berghei*-infected mice, but decreased ($P<0.05$) when given 0.03mg/kg lonart, 0.03 mg/kg and 0.09 mg/kg captopril. With respect to gene expression, the ACE and AT_1R mRNA were significantly ($P<0.05$) expressed in the kidneys of *P. berghei*-infected mice, but treatment with captopril reduced it significantly ($P>0.05$) in a dose-dependent manner. In conclusion, this study has demonstrated that captopril, especially at a higher dose may be beneficial against *Plasmodium* infection.

ET 022

IN VITRO ALPHA AMYLASE INHIBITORY ACTIVITIES OF CRUDE ETHANOL EXTRACTS OF SELECTED MEDICINAL PLANTS

Umar, M. B.[1], Ogbadoyi E. O. [1], Kabiru, A. Y. [1], Mann, A.[2], Adamu, Z. [1] and Usman, M. O. [1]

[1] Department of Biochemistry, School of Life Sciences, Federal University of Technology, Minna
[2] Department of Chemistry, School of Physical Sciences, Federal University of Technology, Minna.
Corresponding author's e-mail: maimuna.umar@futminna.edu.ng

Abstract

Diabetes mellitus is a public health problem. Its rate has spiraled globally in the last two decades, usually resulting in serious complications and culminating in death in some cases and no satisfactory effective therapy is still available to cure it. Ethnobotanical information reports about 800 plants that may possess anti-diabetic potential, however, it is necessary to provide scientific proof to justify the use of some of these plants or their active principles. Alpha amylase is an enzyme that breaks starch into sugars and its inhibition plays a significant role in the management/treatment of diabetes disease. This study was carried out to evaluate the alpha amylase inhibitory activity of the crude ethanol extracts of some medicinal plants used locally for diabetes therapy. The plants used were *Ageratum conyzoides*, *Anogeissus leocarpus*, *Balanites aegptiaca*, *Cassytha filiformis*, *Daniella olieveri* and *Khaya senegalensis*. It was observed that, the alpha amylase inhibitory activity of all the Plant extracts and standard drug (Acarbose) was dose dependent, but the alpha amylase inhibitory activity of the standard drug was significantly higher than all the plant extracts for all the concentrations (1.25, 2.5, 5.0, 10.0 and 20.0mg/mL) used, except for two plant extracts (*Daniella olieveri* and *Khaya senegalensis*) whose alpha amylase inhibitory activities were found to be significantly ($p<0.5$) higher than that of the standard drug at concentrations of 10 and 20mg/mL. The percentage inhibition of alpha amylase was calculated to be 75.76% and 85.45, 78.71% and 89.67%, 66.29% and 76.60%, for ethanol extracts of *Daniella olieveri*, *Khaya senegalensis* and the standard drug (acarbose) at concentrations of 10 and 20mg/mL respectively. From the result obtained from this study, it could be concluded that ethanol extracts of *Daniella olieveri* and *Khaya senegalensis* contains active compounds responsible for the inhibition of alpha amylase enzyme as the extracts were found to perform better than the standard drug at higher concentrations, which further justifies their use traditionally for the management of Diabetes mellitus. The active principles contained in these extracts, if properly harnessed, could be channeled into the drug development pipeline for the treatment of Diabetes mellitus.

Key words: Diabetes mellitus, alpha amylase, inhibitory, Acarbose, ethnobotanical

ET 023

CARBONIC ANHYDRASE: ANCIENT BUT RELIABLE BIOMARKER FOR DIFFERENT DISEASES

Awoniran Deborah* and Egwim Evans

Department of Biochemistry, Federal University of Technology, PMB 65, Minna, Niger State, Nigeria.
*Corresponding Author: Email: awoniran.deborah@yahoo.com: Mobile: 08181367163

Abstract

Carbonic anhydrases (CAs) are zinc metalloenzymes that primarily catalyze the reversible hydration of carbon dioxide to form bicarbonate and protons, with a kcat of about 19.74 min^{-1}. They comprise a family of evolutionarily ancient enzymes found ubiquitously in nature. They play important roles in facilitating transport of carbon dioxide and protons in the intracellular space, across biological membranes and in the unstirred layers of the extracellular space. They act as biomarkers for relatively different kinds of diseases such as cancer and diabetes. Recent studies showed that carbonic anhydrase inhibitors may provide a novel therapy for obesity, cancer, infection and Alzheimer's disease. This is due to their existence in different isomeric forms as CA I, CA II, CA III, CA IV CA VII, CA XIII, CA IX, CA XII, CA XIV, CA XV, CA VA, CA VB. Three acatalytic forms are also known, the CA related proteins (CARP), CARP VIII, CARP X and CARP XI. The presence of these enzymes in so many tissues and in so different isoforms, represents an attractive goal for the design of inhibitors with biomedical applications. The tumour-associated isoenzymes, CAIX and CAXII, are expressed in a wide variety of malignancies and appear to be tightly regulated by micro environmental hypoxia which may be a reliable biomarker in early, later stage and post recovery diagnosis of malignant cells. This present review discusses the mechanism of the various isoforms of CA, their inhibitor and activators, and proposes different mechanisms of using these enzyme forms as therapeutic and diagnostic tools.

ET 024

AQUEOUS EXTRACT OF *C. orbicularis* LEAF AND FRUITS INHIBITS THE ACTIVITY OF DIPEPTIDYL PEPTIDASE IV

Hammed Ayantola Onilude and Mutiu Idowu Kazeem*

Department of Biochemistry, Faculty of Science, Lagos State University, PMB 0001, Ojo, Lagos, Nigeria
Corresponding Author: idowu.kazeem@lasu.edu.ng, 08030622000

Abstract

Diabetes mellitus is a metabolic disease characterized by high blood glucose concentration. It is a disease that has continued to cause mortality worldwide. The Dipeptidyl peptidase–IV (DPP-IV) is an enzyme that inhibits the activities of incretin hormone, resulting in increased glucose influx into the blood. The need to discover safe and more potent DPP-IV inhibitors from natural sources to manage this glucose influx becomes a necessity for diabetic patients. This study is aimed at evaluating the *in vitro* inhibitory potentials of *Chrysobalanus orbicularis* leaf and fruits on the activity of DPP-IV. Leaves as well as ripe and unripe fruits of *C. orbicularis* fruits were obtained from Gberefu Island, Badagry. They were air-dried and subjected to cold maceration using ethanol, water and hydro-ethanol (50%:50%) for 48 h. The resulting infusions were concentrated using water bath at 40° C. Different concentrations (6.25 – 200 µg/mL) of the extracts were incubated with appropriate concentration of DPP-IV and its substrate, while known drug vildagliptin was used as the standard. Percentage inhibitions and IC_{50} of the DPP-IV inhibition were subsequently determined. The results revealed that aqueous extract of the *C. orbicularis* leaf displayed the best inhibitory potential (IC_{50}: 15 µg/mL)) compared to ethanol (IC_{50}: 20 µg/mL) and hydro-ethanol (IC_{50}: 35 µg/mL) of the leaf. The aqueous extract of both ripe (IC_{50}: 10 µg/mL) and unripe (IC_{50}: 25 µg/mL fruits also exhibited most potent inhibitory activities compared to other extracts of the fruits. It can be concluded that *C. orbicularis* is a veritable source of DPP-IV inhibitor and that water is the best solvent that can enhance this activity.

ET 025

FUNCTIONAL ROLE OF SOME AMINO ACIDS IN THE CATALYTIC ACTIVITY OF BETA CLASS GLUTATHIONE S-TRANSFERASE FROM *Acidovorax* sp. KKS102

Dayyabu Shehu [a] , Murtala Ya'u[a], Abba Babandi[a], Nasiru Abdullahi[a], Hafeez Muhammad Yakasai[a] and Zazali Alias[b]

[a]Department of Biochemistry, Bayero University, Kano, 3011, Kano, Nigeria
[b]Department of Biochemistry, Institute of Biological Sciences, University of Malaya, 50603 Kuala lumpur Malayasia E-Mail address: dshehu.bch@buk.edu.ng

Abstract

Glutathione S-transferases (GSTs) are family of enzymes that function in the detoxification of variety of electrophilic substrates. In this study, cloning and biochemical characterization of Beta class GST from a biphenyl/polychlorobiphenyl (PCB) degrading organism *Acidovorax* sp. KKS102 were carried out. Furthermore, Molecular docking, sequence alignment, and site-directed mutagenesis studies revealed some amino acids at the substrate and glutathione binding sites that played a crucial role in the catalytic activity of the enzyme. The enzyme was found to react with 1-chloro-2,4-dinitrobenzene (CDNB). Specific activity study using CDNB as substrate showed that both C10F and A180P mutants displayed a statistically significant increase in the catalytic activity of the enzyme while K107T mutant showed a statistically significant decrease. Kinetic studies using CDNB and reduced glutathione (GSH) as substrates revealed that C10F and A180P mutants displayed an increase in the K_m, K_{cat} and catalytic efficiency for both the substrates when compared with wild type. However, K107T mutant displayed a decrease in V_{max}, K_{cat} and catalytic efficiency of the enzyme when compared with wild type. The enzyme also displayed dechlorination function against 2, 3, and 4-chlorobenzoates (metabolites of PCB biodegradation). The mutants showed a variable result with regard to the dechlorination function with K107T mutant completely losing its activity toward 4-chlorobenzoate. While the enzyme will be valuable in the bioremediation of metabolites of PCB degradation, the mutants; A180P and C10F would be valuable in accelerating the bioremediation process. K107T mutant will as well be important in determining the substrate selectivity for accelerating the bioremediation process.

ET 026

PRODUCTION AND CHARACTERIZATION OF PROTEASE USING MANGO SEED KERNEL AND PINEAPPLE PEELS AS CARBON SOURCE BY *Bacillus megaterium.*

[*1]Gimba, A, Y., [2]Shittu, K. O. and [3]Abubakar, A.

[1]Department of Biological Sciences, Niger State Polytechnic Zungeru, Nigeria
[2]Department of Biochemistry, School of Life Sciences, Federal University of Technology,PMB65, Minna,
Email:gimbayaya@yahoo.com Tel: 2347067045652

Abstract

Agroindustrial wastes are valuable sources of lignocellulosic materials which can serve as substrate for microbial growth in enzyme production. Proteases are the hydrolase enzymes that catalyze the hydrolysis of the peptide bonds in the primary structure of proteins and peptids. Both mango seed kernel and pineapple peels were evaluated for the possibility of potential utilization as substrates for protease production by *Bacillus megaterium*. The studies showed that protease production by *B. megaterium* was higher using mango seed kernel as carbon source than in pineapple peels. The production was optimal using Mango seed kernel at concentration of 1.5g, pH 5 after 5 days of incubation. Using pineapple peels as carbon source, the production was optimal at the concentration of 2.5g, pH 7 and at incubation period of 4 days. The characterization of protease produced by *B. megaterium* grown on mango seed kernel shows optimal activity at pH 4, temperature of 60^{o}C and at 1 % casein concentration with high *Vmax* and low *Km*. When pineapple peels were used as carbon source it has optimal activity of pH 5, temperature 50^{o}C and 1% casein concentration with high *Vmax* and low *Km*. It can be concluded that both mango seed kernel and pineapple can be used to replace the costly glucose in microbial enzyme production particularly protease.

ET 027

THE PEPTIDES, SVPA, SEPA, STYV AND STY ARE MULTIFUNCTIONAL: INHIBITORY EFFECTS ON DIPEPTIDYL PEPTIDASE-IV AND LIPID ACCUMULATION IN 3T3-L1 DIFFERENTIATED ADIPOCYTES WITH SCAVENGING ACTIVITY AGAINST METHYLGLYOXAL

Mohammed Auwal Ibrahim[a,c*], June C. Serem[b], Megan J. Bester[b], Albert W. Neitz[a] and Anabella R.M. Gaspar[a]

[a]Dept. of Biochemistry, Genetics and Microbiology, University of Pretoria, Pretoria 0002, South Africa
[b]Department of Anatomy, University of Pretoria, Pretoria 002, South Africa
[c]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria
***Correspondence** Telephone: +234(0)7031104932; E mail: mauwalibrahim@gmail.com

Abstract

Bioactive peptides with multiple anti-diabetic targets are currently receiving the attention of biopharmaceutical industries. The present study was conducted to identify additional anti-diabetic targets of four α-glucosidase inhibitory peptides, SVPA, SEPA, STYV, STY. The α-glucosidase inhibitory activity of the peptides was in the order STYV > STY > SEPA > SVPA Initially, the peptides were subjected to molecular docking against human dipeptidyl peptidase IV (DPP-IV) where SVPA showed the best binding affinity towards the enzyme. In contrast, *in vitro* studies indicated that SEPA had a significantly higher ($P<0.05$) DPP-IV inhibitory activity (IC_{50} = 5.78 ± 0.19 mM) than other peptides. SVPA and SEPA showed mixed inhibition pattern while STYV and STY were uncompetitive inhibitors of the enzyme. Using 3T3-L1 differentiated adipocytes, SVPA and STYV induced a significant ($P<0.05$) decrease in intracytoplasmic lipid accumulation when the peptides were added to the cells during the differentiation process while STY, GSH and IPI (diprotin A) caused significant reduction ($P<0.05$) in the lipid accumulation when the peptides were added to completely differentiated 3T3-L1 adipocytes. Cytotoxicity studies revealed that SEPA (50 µM) was cytotoxic to differentiated adipocytes while all the peptides were non-cytotoxic to undifferentiated 3T3-L1 cells. The SVPA, SEPA and STYV were better scavengers of methylglyoxal than STY but STYV had the best scavenging activities toward reactive oxygen species and nitric oxide radicals. It was concluded that the four α-glucosidase inhibitory peptides have multiple targets against type 2 diabetes but, overall, STYV tends to have better potential for application as multifunctional anti-diabetic peptide.

ET 028
CHARACTERIZATION AND AN INSIGHT OF INSILICO ANALYSIS OF HYALURONIDASE FROM NAJA SPECIES (*Nigricollis, Haje AND Katiensis*) SNAKE VENOM

Kurfi B.G[1], Abdullahi. J[1]., Abdullahi. N[2]

Department of Biochemistry, Faculty of basic medical Sciences, Bayero University, Kano, Nigeria
*Corresponding authors address binkufi@gmail.com

Abstract
Elapid venom is highly valuable and possesses medically and pharmacologically important peptides, *Naja* species venom retains elapid neurotoxins in combination with cytotoxins and cardiotoxins, venom hyaluronidase contributes to the diffusion of these venom toxins from inoculation site. Snake venom hyaluronidase known as "spreading factor" are not extensively studied . In this report hyaluronidase (Hyase) was purified and characterized from the venom of three species of Naja (Nigricollis, haje and katiensis) involved in accident with humans in the sub-Saharan Africa particularly Nigeria, and an insight of Insilco analysis of the enzyme. Purification of the enzyme was done using three steps which include protamine sulphate precipitation, gel filtration on sephadex G-75column. Active fractions were applied to ion –exchange chromatography on DEAE (diethylaminoethyl) cellulose which was eluted using convex Nacl gradient. Active fractions were assessed for purity by SDS –PAGE. The physicochemical characterizations include optimum pH, temperature, effects of metal ions and enzyme kinetics. Hyase was purified and presented a specific activity of 39.129tru/mg, 20.732tru/mg and 17.110TRU/Mg and (crude venom 14.7635tru/mg, 7.5108tru/mg, and 8.4836tru/mg for N. nigircollis, N. Kateinsis and N.haje respectively. Hyase displayed molecular weight of 44kDa, 30kDa and 28kDa for *N.nigricollis*, *N.haje* and *N.kateinsis* respectively. The optimum pH were 8, 6 and 4 for *N.nigricollis*, *N.haje* and *N.kateinsis* respectively, the optimum temperature for hyase was found to be 37^{O}C, 40 ^{O}C and 42 ^{O}C.The insilico analysis predicted similar amino acid found at the catalytic site of human hyaluronidase (Hyal4) the conserve domain region also shows that the enzyme belongs to glyco hydrolase 56 super family the phylogenetic tree also shows that the have similar evolution. Recently, it is argued that beyond its role as a spreading factor, venom hyaluronidase deserves to be explored as a possible therapeutic target for inhibiting the systemic distribution of venom toxins and also for minimizing local tissue damage.The physicochemical properties of this Hyaluronidase are comparable to other hyaluronidase characterized specifically with spider hyaluronidase and other snakes from same and different genus insight on insilico analysis revealed that hyaluronidases from snakes are similar to hyase from humans.

Keywords: Hyaluronidase, Venom purification, *Elapidae, Naja* species, Characterization, Insilico analysis

ET 029
PARTIAL PURIFICATION, ISOLATION AND CHARACTERIZATION OF PHOSPHOLIPASE A_2 FROM *Naja katiensis* VENOM

[*]Nasir Sirajo Sadi.[1],Abdullahi Musa Hassan.[1],Muhammad Ali Gambo.[1],Muhammad Abdullahi Magashi[1],Okechukwu, C.F.[1],and Abdulazeez A. Mansurah[2]

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
[2]Center for Biotechnology Research, Bayero University, Kano
*Email: dr.nas2020@gmail.com Phone number: +2348093448866

Abstract
The most effective and acceptable therapy for snakebite victims is the immediate administration of antivenin, which is limited by problems of hypersensitivity reactions in some individuals and its inability to resolve the local effects of the venom. The aim of this study was to isolate, partially purify and characterize phospholipase A_2 from *NajaKatiensis* venom. Phospholipase A_2 was partially purified via a two-step process:gel filtration on Sephadex G-75 and ion exchange chromatography using CM Sephadex. From the results, the specific activity of the partially purified PLA_2 decreased from 0.67µmol/min/mg in crude venom to 0.29µmol/min/mg after ion exchange chromatography with a yield of 5% and purification fold of 0.43. The optimum temperature of the purified PLA_2 was found to be 35ºC and optimum p.H of 7. Initial velocity studies for the determination of kinetic constants using L-α-lecithin as substrate revealed a K_m of 1.47mg/ml and V_{max} of 3.32µmoles/min/mg. The sodium dodecyl sulphate polyacrylamide gel electrophoresis of the purified PLA_2 showed a distinct band with molecular weight estimated to be 14KDa. In conclusion, the present study shows that phospholipase may be a promising candidate for future development of a novel anti-venin drug.

ET 030
IN VITRO ACE, A-AMYLASE AND A-GLUCOSIDASE INHIBITION KINETIC AND ANTIOXIDANT PROFILES OF *L. cylindrica* SEED PROTEIN HYDROLYSATE

Rotimi Olusanya Arise [1], Idi Jalil James[1, 2]*, Mic-Braimoh Iseoluwa Maureen[1], Korode Emmanuel[1]

[1]Department of Biochemistry, Faculty of Life Sciences, University of Ilorin, Ilorin, Nigeria
[2]Department of Biochemistry, Faculty of Sciences, Gombe State University, Gombe, Nigeria.
*Corresponding author, E-mail: jahleel.james@gmail.com. Mobile no. +2348136000419

Abstract

Food derived peptides have attracted much attention for their potential to serve as natural alternatives or complements to synthetic drugs. The aim of this study was to investigate amino acid constituents, *in-vitro* antioxidant, angiotensin-I-Converting Enzyme (ACE), α-amylase and α-glucosidase inhibition kinetics of *Luffa cylindrica* seed protein hydrolysates. The peptide yield by pepsin (16.93 ± 0.28%) and trypsin (13.20 ± 1.02%) were significantly lower than that of Alcalase (34.04 ± 1.96%). Alcalase hydrolysate however displayed the highest Ferric Reducing Power, DPPH and H_2O_2 scavenging activities (0.630%, 85.88% and 41.69% respectively), while the highest Superoxide scavenging activity was shown by peptic hydrolysate (57.89%). The hydrolysates demonstrated a concentration-dependent ACE inhibition (IC50 0.317- 0.930mg/ml) with peptic hydrolysate at 1.2mg/ml having the highest ACE-inhibitory activity (74.99 ± 0.43%). The hydrolysates demonstrated a potent α-amylase inhibition, with Alcalase and Tryptic hydrolysates having 36.36±0.71% and 27.96±0.06% respectively (IC_{50} 1.020-3.307mg/ml). The hydrolysates showed concentration-dependent α-glucosidase inhibition (IC_{50} 0.480-0.803mg/ml) with Alcalase hydrolysates having the strongest inhibition (65.81±1.95%), followed by Tryptic hydrolysates (54.53±0.52%). Kinetic studies showed that ACE-inhibition by different concentrations of alcalase, pepsin and trypsin hydrolysates were uncompetitive, mixed-type and non-competitive respectively. α-amylase activities gave a non-competitive inhibition with the three hydrolysates, while α-glucosidase gave an un-competitive inhibition for all the hydrolysates. The total amino acid concentration was 53.51g/100g, 75.4g/100g and 85.42g/100g for alcalase, trypsin and pepsin respectively, with Glutamate being the most concentrated essential amino acid in all the three hydrolysates. These results show that *L. cylindrica* seed protein hydrolysates may serve as useful tools in the treatment of hypertension and diabetes.

Keywords: Peptide, Alcalase, hypertension, trypsin and enzyme inhibition

ET 031
SCREENING OF MEDIUM COMPONENTS FOR B-GLUCOSIDASE PRODUCTION BY *Trichoderma Viride* USING COW DUNG

Tyohemba S. Terhide[a*] and Aliyu Salihu[b]

[a]Department of Biological Sciences, Federal University Kashere, Gombe, Nigeria.
[b]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
Corresponding author, Tel.:+2347013309635 Email address: terhide27@gmail.com,

Abstract

Screening of media components for β-glucosidase production by *Trichoderma viride* using cow dung was carried out by Plackett-Burman experimental design. Out of the eleven medium components selected, six components (glucose, lactose, $NaNO_3$, NH_4Cl, $MnCl_2$, K_2HPO_4) were found to contribute positively to the overall β-glucosidase production with a maximum production of 34.40±0.72 U/g. Thus, the use of Plackett-Burman experimental design in this study enabled the rapid identification of important medium components affecting the production of β-glucosidase, and further statistical optimization of medium and process parameters can be explored using response surface methodology.

Keywords: β-glucosidase, *Trichoderma viride*, Plackett-Burman Design, Cow dung, medium components.

ET 032

ENZYMOLOGY OF FUNGAL ERGOSTEROL BIOSYNTHESIS INHIBITION : A REVIEW

[*]Ahmed Sani, [1] and Dalhatu Lawal[1]

[1]Department of Microbiology, Umaru Musa Yar'adua University Katsina. Nigeria. P.M.B 2218

[*]Corresponding author: dalhatlawal0770@gmail.com Tel: 07069029652

Abstract

Fungal survival depends on the intact Ergosterol, a cell membrane sterol serving many of the functions that cholesterol serves in animals cells. Ergosterol bio-synthesis is a viable and validated antifungal target; the synthetic stages provide a magnitude of enzymes for interception with inhibitors. This research primarily focused on the antifungal drugs that interfere with the synthesis of ergosterol by inhibiting enzymes at different stages of the bio-synthetic pathways. Two (2) groups of antifungal were selected to study the Ergosterol biosynthesis inhibition; 1. Azoles that inhibit the enzyme known as 14 alpha steroldemethylase. 2. Allylamine that inhibit Ergosterol synthesis by interacting with the enzyme known as squalene epoxidase.

Key words: ergosterol,Allylamine, Azoles, squalene epoxideand 14 alpha sterol methylase.

ET 033

KINETIC PARAMETERS OF CRUDE AND PURIFIED LIPASES EXPRESSED BY *Aspergillus niger* ISOLATED FROM A VEGETABLE OIL CONTAMINATED SOIL

***Moses, Bali Emmanuel[1]; Liman Mubarak Labaran[2]; Alex, Victoria Ali[1]; Manya, Zabe[1]; Egwim, Chidi Evans[3] and Abdulkadir Abubakar[3].**

[1]Department of General Studies, School of Agric Technology, Nuhu Bamalli Polytechnic, Zaria.

[2]Department of Science Laboratory Technology, School of Applied Sciences, Nuhu Bamalli Polytechnic, Zaria.

[3]Department of Biochemistry, Federal University of Technology Minna, Niger State, Nigeria

*Corresponding Author: E-mail: balimentol@gmail.com Phone:08036688081

Abstract

Lipases are a versatile class of enzymes owing to their many potential applications in biotechnology including food, detergent, cosmetics, leather, pharmaceuticals and textile industries. In this study, *Aspergillus niger* was screened for lipase production, crude and purified lipases from the isolate were characterized. Isolation and preliminary screening for lipase activity from the microbial strain were carried using standard methods. Lipase activity and protein concentration were determined spectrophotometrically. The optimum pH and temperature for crude and purified lipases from *A. niger* were 6 and 40 ^{o}C respectively. The lipases studied had high affinity for olive oil compared to groundnut and palm oil. $MgCl_2$, $CaCl_2$ and KCl enhanced the activity of both crude and purified lipases whereas, $FeCl_3$, $HgCl_2$, $CuSO_4$ and $CoCl_2$ showed inhibitory effects on the activities of the enzymes. Crude and purified lipases from *A. niger* had V_{max} of 0.0007 and 0.0010 mol/mL/Sec respectively with corresponding K_m of 2.1597 and 1.5433 Mm. Respective K_{cat} values of 0.0012 and 0.0030 S^{-1} were obtained for the crude and purified enzymes. The energy of activation and half-life of the crude lipase from *A. niger* were found to be 25.148 $KJmol^{-1}$ and 0.29 hr respectively, while those of the purified enzyme were obtained to be 21.180 $KJmol^{-1}$ and 0.40 hr respectively. The findings of the present study reveal that lipases from *A. niger* could be efficient biotechnological tools.

Keywords: *Aspergillus niger*, Lipases, Crude, Purified, Kinetic Parameters,

ET 034

OPTIMIZATION OF ENDOGLUCANASE PRODUCTION BY SOLID STATE CO-FERMENTATION OF CORNCOB USING *Trichoderma reesei* AND *Lenzites betulina*

Olagunju A., Onyike, E., Atawodi E. S , Ameh D A, Abarshi, M. M. Mu'azu Y.
Department of Biochemistry Ahmadu Bello University, Zaria.

Endoglucanases are known industrial enzymes with several industrial applications in food, animal feed and textiles industries. The cost of cellulase production overrides the rapid growth of these industries. Hence, this current study focuses on improving endoglucanase enzyme production from solid state co-fermentation of corncob (maize cob) using two promising cellulase producing fungi; *Lenzites betulina* and *Trichoderma reesei*. One factor at a time experimental design was used to optimize the pH, moisture content, inoculum concentration and the use of various carbon and nitrogen supplements. *Trichoderma reesei* was found to produce endoglucanase enzyme optimally at pH5-7, 75% moisture content, 10^4spores/ml inoculum size, sucrose and yeast extract emerged as the best carbon source and nitrogen source respectively after 15 days of incubation. Maximum yields of endoglucanase by *Lenzites betulina* were recorded at pH7, 85% moisture content, 10^6spores/ml inoculum size, glucose and sodium nitrite emerged as the best carbon source and nitrogen source respectively after 12 days of incubation. The pH5, 85% moisture content, 10^6spores/ml of the co-culture, sucrose and yeast extract as the best carbon source and nitrogen source respectively and 12 days incubation period were recorded as the optimum conditions for optimal production of endoglucanase enzyme in a solid state co-fermentation of corncob using co-culture of *T.reesei* and *L.betulina*. Single fermentation with *Trichoderma reesei* was found to be the most promising with highest enzyme activity. Thus the use of *T.reesei* in the relevant industries can be beneficial in improving the cost of endoglucanase production.
Key words: Endoglucanase, *Lenzites betulina* and *Trichoderma reesei*, Co-fermentation

ET 035

EFFECT OF SIMULATED HEAT STRESS ON SOME SELECTED FUNGI

[1]Sakina Hassan Baba[*] , Yagana Karumi [2] and Hammadu Muhammad[2]
[1]Yobe State University, Department of Medical Biochemistry.
[2]University of Maiduguri, Department of Biochemistry.
*Correspondence: sakinababa01@gmail.com 08031190816

Abstract
This study examined the available scientific information on the tolerance and functioning of fungal extremophiles in different ecosystem. Different types of fungus (Apergillus niger, Rhizophus spp, Pemicillium spp and Saccharomy spp) has been isolated from groundnut sample by using Potato Dextrose Agar (PDA) as a substrate. They were inoculated into mineral salt solution for 3 days (72 hours) and their absorbance was measured to know their turbidity. These fungus (Apergillus niger, Rhizophus spp, Pemicillium spp and Saccharomy spp) were subjected to simulated heat stress for one Hour (1 hour) at various temperature of 47^{o}c, 54^{o}c and 64^{o}c to know the effect of simulated heat stress on the fungus. Their absorbance was measured after three days (72hrs) of the heat stressed treatment which shows an increased in turbidity. Test for cellulase activity was carried out, which shows production of cellulase enzymes by the various fungus that were used for this research. These cellulose enzymes can withstand high temperature which can be used in industries for various purposes.
Keywords: Apergillus niger, Rhizophus spp, Penicilliumspp, saccharomyces spp and Potato Dextrose Agar (PDA)

ET 036
ENZYMES TARGETS IN THE DEVELOPMENT OF ANTIMALARIAL DRUGS

Amina Jiyah* and Y. Saidu
Department of Biochemistry, Usmanu Danfodiyo University, Sokoto Nigeria
*Corresponding Author: Email: amina4islam.aj@gmail.com, Phone number: 07039813087

Abstract:
Malaria, cause by *Plasmodium* is a significant public health problem responsible for high morbidity and mortality especially in children and women of reproductive age. WHO estimated that there were 219 million cases of malaria in 87 countries, in 2017, with estimated number of malaria deaths standing at 435,000. African Region carries a disproportionately high share of the global malaria burden, of 92% of malaria cases and 93% of malaria deaths. One of the greatest obstacles in fighting malaria of recent is the development of drug resistance by many of the species of *Plasmodium*. There is therefore the need to develop new drugs targeting enzymes of metabolic pathways that are either peculiar to the parasite or those that are structurally different from those of the host. Enzymes such as dihydroorotate dehydrogenase, phosphoribosyltransferase, thymidylate kinase, lactate dehydrogenase, hexokinase, dihydrofolatereductase, falcipain, heme polymerase, cytochrome bc_1, thymidylate synthase and many more found in Plasmodium species can serve as target for antimalarials as they are essential for the survival of the parasite and differ from their counterparts in the human host. This paper reviews the potentials of dihydroorotate dehydrogenase, dihydrofolatereductase, heme polymerase, cytochrome bc_1 and lactate dehydrogenase as targets for antimalarials.

ET 037
EXPRESSION OF D-SPECIFIC DEHALOGENASE GENE IN *Escherichia coli* K-12

Ismaila Yada Sudi[1*], Azzmer Azzar Abdul Hamid[2], Fahrul Huyop[3]
[1]Department of Biochemistry, Faculty of Science, Adamawa State University, Mubi, Nigeria.
[2]Faculty of Science, International Islamic University Malaysia, Kuantan, Pahang, Malaysia.
[3]Faculty of Biosciences and Medical Engineering (FBME), Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia
*Corresponding author: Email, yada280@gmail.com H/P, +2348160787132

Abstract
Haloalkanoic acids are toxic compounds with limited organisms capable of degrading D-isomers and development of dehalogenating enzymes for use as industrial biocatalyst and bioremediation have been limited. Dehalogenase D (DehD) is produced by *Rhizobium* sp. RC1 which breakdown carbon-halogen bond of D-halogenated compounds. DehD is stereospecific to only D-enantiomers causing an inversion in the carbon-2 (C_2) configuration of the hydroxyalkanoic acid. The present work was to optimize the growth conditions necessary for the expression of the DehD protein. DehD was previously cloned into *Escherichia coli* K-12 strain NM522, used as host for a vector pUC19 plasmid for protein expression. This was aimed for possible bioremediation of environmental haloalkanoic acid toxicants. Transformed bacterial cells harboring pSC3 encoding dehD gene cloned in pUC19 were cultured in Luria bartini (LB) broth at temperatures between 20°C – 37°C. Cell extracts were prepared from *E. coli* K-12 cells in the mid-exponential to late-exponential phase of growth using MSE Soniprep 150 ultrasonicator, by centrifugation at 20000 g for 15 min at 4ºC. The cell free extracts from recombinant cells were then subjected to SDS-PAGE analysis. The dehD expression with 0.1 mM IPTG at temperatures of 20 ºC to 37 ºC presented to some extent protein expression for both IPTG induced and non-induced expressions in both CFE and insoluble fractions. The optimum expression was observed at 20 ºC, 25 ºC and 37 ºC.

Keywords: Dehalogenase, Stereospecific, Bioremediation, Recombinant cells, DehD expression

ET 038

PHOSPHORYLATION BY PROTEIN-TYROSINE PHOSPHATASE TRIGGERS THE DEVELOPMENT OF STUMPY FORM OF TRYPANOSOME IN THE HUMAN STAGE

Nwobodo Ndubuisi Nwobodo[1,2], Emeka John Dingwoke[3], Fatima Amin Adamude*[4], Ambi Ahmed Adamu[3], Ikechukwu Robert Uroko[5], Paul C Nweje-Anyalowu[6]

[1]Department of Pharmacology & Therapeutics, College of Medicine, Enugu State University of Science & Technology, Enugu, Enugu State, Nigeria

[2]Department of Pharmacology & Therapeutics, College of Health Sciences, Nile University of Nigeria,

[3]Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria

[4]Department of Biochemistry, Federal University, Lafia, Nigeria

[5]Department of Biochemistry, Michael Okpara University of Agricuture, Umudike, Abia State, Nigeria

[6]Department of Biochemistry, Clifford University, Owerrinta, Abia State

*Corresponding Author (fatteeyjibamin@gmail.com 08036108103)

Abstract

Inhibition of Protein-tyrosine phosphatase is an important target towards ameliorating trypanosomiasis. This is because its phosphorylation activity accompanies the parasites development in the host. The stage of the parasite's life cycle, particularly the short stumpy forms that occurs in the host is sustained for survival by the action of Protein-tyrosine phosphatase; making it possible for the parasite to evade the host's body immune system. To study the inhibition of Protein-tyrosine phosphatase, with the view of identifying a new and effective molecule with anti-trypanosoma properties that targets the activity of Protein-tyrosine phosphatase. Protein-tyrosine phosphatase (PTP-1B) was assayed with 10 mmol/L *para*-nitrophenylphosphate (*p*NPP) as substrate in the assay buffer containing 25mM Tris–HCl of pH 7.5, 2mM b-mercaptoethanol, 1mM ethylenediaminetetraacetic acid, and 1mM dithiothreitol. The enzyme was screened spectrophotometrically following the standard analytical procedure for hydrolysis of *p*NPP by PTP-1B. The inhibition parameter (K_M and V_{max}) and the inhibitory kinetics of Protein-tyrosine phosphatase by the bioactive bands of the extract was analyzed using the Lineweaver–Burk plots. Sodium orthovanadate ($NaVO_4$) was used as positive control for the inhibition. The bioactive fraction of the extract with inhibitory effects against Protein-tyrosine phosphatase was obtained through bioassay guided fractionation of stem back extract of a Nigerian flora *Khaya senegenlensis*. The concentration of the compound in the bioactive band of the extract that inhibited 50% of the enzyme activity (IC_{50}) was determined by the percent inhibition ratio. The bioactive band of the extract showed a potent inhibitor of Protein-tyrosine phosphatase in a dose-dependent fashion with IC_{50} of 1.32 µM. Lineweaver-Burk plot of the initial velocity data revealed that Protein-tyrosine phosphatase was inhibited non-competitively with a K_i value of 0.46 ± 0.03. Sodium orthovanadate inhibited the enzyme competitively. Cleavage of the substrate by the enzyme had a kinetic parameter K_M and V_{max} of 4.68 mM and 0.24 µmol/min. n-butanol stem bark extract of *Khaya senegenlensis* contains agent(s) that is inhibitory to Protein-tyrosine phosphatase.

Keywords: Trypanosome, life cycle, Protein-tyrosine phosphatase, Phosphorylation, inhibition

ET 039

PRODUCTION OF CHITINASE FROM SOIL *Streptomyces* OBTAINED FROM ZAURO FADAMA FARMLAND WITH POTENTIAL BIOCONTROL ACTIVITY

***Umar A. A., Aminu H. Bandam**

Department of Biochemistry, Kebbi State University of Science and Techn. Aliero, Birnin Kebbi
Corresponding Author: Phone - +2348160822207, E-mail – auargungu96@gmail.com

Abstract

An increased sensibility and pressure of public and environmental agencies against the application of chemical based pesticides and their long lasting adverse effects on ecosystems and human health, has motivated the search for nonhazardous alternatives. In an effort to identify a microbial enzyme that can be useful as a fungicide and biodegradation agent of chitinous wastes, *Streptomyces* were isolated from the soil sample collected from Zauro Fadama farmland in Birnin Kebbi Local government, Kebbi State, Nigeria. The *Streptomyces* were screened for extracellular chitinase production. The extracellular chitinase was produced from the culture supernatant of *Streptomyces* utilizing powder of shrimp shell wastes as a sole carbon source and purified employing ammonium sulfate precipitation. The purified enzyme displayed optimal activity at pH 6.0 and 50 ^{o}C respectively. It showed substantial thermal stability for 2 h at 30–60 ^{o}C, and exhibited broad pH stability in the range 5.0–13.0 for 48 h at 4 ^{o}C. The extracellular chitinase could proficiently convert colloidal chitin to N-acetyl glucosamine (GlcNAc) and N-acetyl chitobiose (GlcNAc)2 signifying that this enzyme is suitable for bioconversion of chitin. In addition, it exerted an effective antifungal activity towards fungal pathogen *Aspergillus niger* and *Aspergillus oryzae*, signifying its potential role as a biocontrol agent against different plant diseases caused by these fungal strains.

ET 040

PURIFICATION AND BIOCHEMICAL CHARACTERIZATION OF SALIVARY AND URINARY ALPHA-AMYLASE FROM DIABETIC AND NON-DIABETIC PATIENTS ATTENDING MEDICAL CLINIC AT GENERAL HOSPITAL MINNA, NIGER STATE.

[1*]Ezikanyi Godwin Kelechukwu, [2]Egwim Evans Chidi, [3]O.K Shittu [4]Joseph Peter Shaba and [5]Collins Egwu Oguh.

[1*]Biochemistry Department, Federal University of Technology, PMB 65 Minna, Niger State.
[2]Center for Genetic Engineering and Biotechnology, Federal University of Technology, Minna
[3]Biochemistry Department, Federal University of Technology, PMB 65 Minna, Niger State.
[4]Biochemistry Department, Ibrahim Badamasi Babangida University Lapai, Niger State.
[5]Biochemistry Department, University of Nigeria Nsukka, Enugu State
Corresponding Author's Emai: ezikanyigodwin@gmail.com *Mobile No: +2347062043860*

Abstract

Diabetes mellitus is a metabolic disease characterized by high blood sugar (glucose) level that results either from defects in insulin secretion (type-1), or in its action (type-2), and/ or both. The present study is aimed at purifying and characterizing salivary and urinary alpha-amylase enzyme from diabetic and non-diabetic attending medical clinic at general hospital Minna, Niger State. Fifty (50) diabetic patients and Twenty (20) non-diabetic (control) were included in the study. One hundred samples both urine and

saliva was collected at fasting from diabetic patients. Four groups(A,B,C and D) of diabetic patients were considered base on the progression of the disease prior to diagnosis ranging from 0-1,1-5,5-10 and 10-above years respectively. Alpha-amylase activity, total protein, partial protein purification using ammonium sulphate precipitation, gel filtration on sephadex G-75 Column and biochemical characterization analysis were carried out on the samples. The data obtained in this study were statistically analyzed by using Student's t–test. In diabetic patients, the Mean±SD of urinary alpha-amylase activity (0.0096±0.012 µmol/min) was significantly higher than that of the saliva (0.0038±0.003µmol/min) but lower in urinary alpha-amylase activity (0.0054±0.002 µmol/min) than salivary alpha-amylase (0.0100±0.0002 µmol/min) in non-diabetic patients. Purification using ammonium sulphate 75% saturation for the four groups shows the enzyme activity 0.0067, 0.0060, 0.0059 and 0.0023 µmol/min for saliva and 0.0254, 0.0113, 0.0123 and 0.0127 µmol/min for urine and non-diabetic 0.0091 µmol/min for saliva and 0.0023 µmol/min for urine. The optimum temperature for urinary and salivary alpha-amylase ranges from 60^0C and 70^0C and pH optimum of 6.0-7.0 respectively. Both urinary and salivary enzyme activity were enhanced by Ca^{2+} while Cu^{2+} and k^+ were found to be strong inhibitors. This work concluded that salivary and urinary alpha-amylase from diabetic and non-diabetic patients differs significantly.

Keywords: Alpha-amylase, Diabetes Mellitus, Non-diabetes, Enzyme Activity, Urine and Saliva.

ET 041

AQUEOUS EXTRACT OF *C. orbicularis* LEAF AND FRUITS INHIBITS THE ACTIVITY OF DIPEPTIDYL PEPTIDASE IV

Hammed AyantolaOnilude and Mutiu Idowu Kazeem*

Department of Biochemistry, Faculty of Science, Lagos State University, Lagos, Nigeria
Corresponding Author: idowu.kazeem@lasu.edu.ng, 08030622000

Abstract
Diabetes mellitus is a metabolic disease characterized by high blood glucose concentration. It is a disease that has continued to cause mortality worldwide. The Dipeptidyl peptidase–IV (DPP-IV) is an enzyme that inhibits the activities of incretin hormone, resulting in increased glucose influx into the blood. The need to discover safe and more potent DPP-IV inhibitors from natural sources to manage this glucose influx becomes a necessity for diabetic patients. This study is aimed at evaluating the *in vitro* inhibitory potentials of *Chrysobalanus orbicularis* leaf and fruits on the activity of DPP-IV. Leaves as well as ripe and unripe fruits of *C. orbicularis* fruits were obtained from Gberefu Island, Badagry. They were air-dried and subjected to cold maceration using ethanol, water and hydro-ethanol (50%:50%) for 48 h. The resulting infusions were concentrated using water bath at 40° C. Different concentrations (6.25 – 200 µg/mL) of the extracts were incubated with appropriate concentration of DPP-IV and its substrate, while known drug vildagliptin was used as the standard. Percentage inhibitions and IC_{50} of the DPP-IV inhibition were subsequently determined. The results revealed that aqueous extract of the *C. orbicularis* leaf displayed the best inhibitory potential (IC_{50}:15 µg/mL)) compared to ethanol (IC_{50}:20 µg/mL) and hydro-ethanol (IC_{50}:35 µg/mL) of the leaf. The aqueous extract of both ripe (IC_{50}:10 µg/mL) and unripe (IC_{50}:25 µg/mL fruits also exhibited most potent inhibitory activities compared to other extracts of the fruits. It can be concluded that *C. orbicularis* is a veritable source of DPP-IV inhibitor and that water is the best solvent that can enhance this activity.

SUB-THEME

FOOD BIOCHEMISTRY AND NUTRITION (FBN)

FBN 001

TOPICAL APPLICATION OF AQUEOUS FRACTION OF *Moringa oleifera* MODULATES EXPRESSION OF INFLAMMATORY MARKERS AND VEGF DURING WOUND HEALING IN DIABETIC RATS

***Abubakar Amali Muhammad[1],Sharida Fakurazi[2,3], Cheah Pike See[2], Farida Abas[4].**
[1]Department of Pharmacology and Toxicology, Usmanu Danfodiyo University, Sokoto, Nigeria
[2]Laboratory of Vaccine and Immuno therapeutics, Institute of Bioscience, Universiti Putra Malaysia
[3]Unit Anatomy, Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM, Serdang Selangor, Malaysia
[4]Faculty of Food Sciences and Technology, Universiti Putra Malaysia, Serdang Selangor, Malaysia.

Abstract
Diabetic wound is a complication which affects significant number of people with diabetes. Its treatment is often very difficult and the available treatments are not sufficient enough with limited success in addition to non-affordability. *Moringa oleifera* Lam (*M. oleifera*) from the family *Moringaceae* (genus *Moringa*) commonly called drumstick is a plant traditionally employed in the treatment of many ailments and has been scientifically proven to possess hepatoprotective, anti-inflammatory, antioxidant and hypoglycemic action in addition to other numerous actions. The present study was conducted to evaluate the effect of aqueous fraction of *M. oleifera* on expression level of some selected inflammatory markers during wound healing in an animal model of diabetes. The study involved topical application of formulated bioactive fraction of *M. oleifera* using full thickness excision wound model in Streptozotocin (STZ) and Nicotinamide (NAD) induced diabetic rats. Thirty-six healthy adult male Wistar were divided into six groups: Two groups of normal and diabetic controls, three groups of 0.5%, 1% and 2% w/w aqueous fraction treated and one group of positive control that received 1% w/w silver sulfadiazine standard drug. Treatments were applied topically in form of cream to the skin wounded area for 21 days. Cytokines analyses were performed using ELISA, Western blotting and immune histochemistry techniques. The three doses (0.5%, 1% and 2%) of bioactive aqueous fractions were found to be significantly effective in enhancing diabetic wound healing through up regulation of VEGF protein and down regulation of inflammatory mediators (TNF-α, IL1-β, IL-6, iNOS and COX-2) in diabetic treated animals compared to untreated diabetic control ($p<0.05$). The Down regulation of inflammatory mediators and up regulation of VEGF by aqueous fraction facilitated overall wound healing and closure in diabetic condition. These findings suggest that, topical administration of bioactive aqueous fraction of *M. oleifera* may accelerate wound healing in hyperglycemic condition.

Keywords: *M. oleifera, inflammatory markers, upregulation, downregulation, diabetic wound*

FBN 002

SYNERGIST BIOASSAY; THE ROLE OF ABC TRANSPORTERS IN PYRETHROIDS RESISTANCE IN *Anopheles gambiaes .l.* FROM NORTHERN NIGERIA

Zilkifil Abulhassan*, Sulaiman Sadi Ibrahim, Muhammad Mahe Mukthar and Muhammad Abdullahi Magashi.
Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
Xikprof@gmail.com +2348069430606 Nigeria

Abstract
ATP binding cassette transporters (ABC transporters) has been implicated in insecticides resistance in the major malaria vector *Anopheles funestus* and *An. gambiae*. Over-expression of ABC transporters can protect insects against insecticides. Verapamil a p-glycoprotein inhibitor has been utilised in as inhibitor of the ABC transporters to implicate them in insecticides resistance in malaria vectors. Genomic DNA was extracted from the parental F_0 females using the LIVAK extraction protocol. Extracted DNA of seven female *An. gambiae* mosquitoes brought from Auyo were analysed using SINE PCR Method for species identification. Approximately 100% ofthe mosquitoes were *An. coluzzii* (formerly M form) because the PCR product of 479 bp was amplified. Insecticide susceptibility to pyrethroids, was assessed using WHO susceptibility assays with Permethrin (0.05%), with and without pre-exposure to synergists. The synergists used is an inhibitor of P-glycoprotein efflux pumps (verapamil). Pre-exposure to verapamil followed by Permethrin result in 0.12% knockdown after one hour exposure and 10.7% mortality after 24 hours, which was higher than that for permethrin alone. This bioassay result reveals that ABC transporters possibly do not contribute to the resistance.

FBN 003

ANTIOXIDANT AND ANTI-INFLAMMATORY EFFECT OF HYDRO-ETHANOLIC LEAF EXTRACT OF *Bryophyllum pinnatum*

Oladejo, A.A[1]; *Ogbunugafor, H.A[1]; Okafor, C.S[1]; Ugochukwu, G.C[1]
Applied Biochemistry Department, Nnamdi Azikiwe University. Awka, Anambra State.
*ha.ogbunugafor@unizik.edu.ng

Abstract
Bryophyllum pinnatum Lam. (Crassulaceae)-called '*Oda-opue*' in Igbo and '*Abamoda*' in Yoruba-leaves are widely used as food and as medicine in traditional medical practice. They are widely found in tropical Africa, America, India and China. This study examined the *in vitro* antioxidant activity (reducing power, Fe^{2+}-chelating,nitric oxide scavenging activity, total phenol and hydroxyl radical) and *in vivo* anti-inflammatory activity of hydro ethanolic leaf extract of *B. pinnatum* using Wistar rats. Results showed that the leaf extract of *B. pinnatum* exhibited ferric reducing ability, iron chelating activity, and scavenges nitric and hydroxyl radicals. For the anti-inflammatory investigation, the extract showed considerable anti-inflammatory effect byameliorating carragene an-induced edema in rats within 7 days. Our findings indicate that the extract reduced inflammation in a dose-dependent manner in the rats. The results suggests *B. pinnatum* leaves may be rich in biologically active compounds; which might be employed to formulate new plant-based nutraceuticals to improve human health.

FBN 004

EFFECT OF BOILING AND STEAMING ON SOME ANTINUTRITIONAL FACTORS IN CABBAGE, SPINACH AND MORINGA

M. G.Abubakar[1]andA. M. Na'iya[2]*
[1] Department of Biochemistry, Usmanu Danfodiyo University, Sokoto
[2] Department of Biochemistry, Umaru Musa Yar'adua University, Katsina
* Corresponding author; Email: aishaihuda@gmail.com Tel: 08134531323

Abstract:
Anti-nutritional factors are plants secondary metabolites that are synthesized as part of the plants defense mechanism against predators and adverse growing conditions. These anti-nutrients when consumed regularly in significant amount pose threat to human and animal health. The effect of boiling and steaming on some anti-nutritional contents of some commonly consumed green leafy vegetables in Northern Nigeria was investigated. The vegetables were collected from a farm in Hunkuyi ward, Kudan local government area of Kaduna State and included cabbage (*Brassica olearacea*), spinach (*Spinacea oleracea*) and moringa (*Moringa oleifera*). Alkaloid was determined byHarborne (1973) method, Oxalate using the method of Dye (1956) as modified by Oke (1966), the Young and Greaves method (1940) as adopted by Lucas Markakes (1975) was used to determine phytate content, Saponin was determined using Harborne (1973) method, while the Follins Dennis titrating method as described by Pearson (1974) was used to quantify tannin. With the exception of the alkaloid content of moringa, the results obtained showed that boiling cause a significant reduction ($P<0.05$) in the alkaloid, oxalate, phytic acid, saponin and tannin content of cabbage, spinach and moringa. Steaming however, shows a non-significant decrease ($P>0.05$) in the alkaloid and saponin content of cabbage, the saponin content of spinach, and also the alkaloid, phytic acid and saponin content of moringa. The result obtained shows that processing of cabbage, spinach and moringa leaves reduced the amount of these anti-nutrient with boiling being the most effective method.

Keywords: Anti-nutrients, processing, cabbage, spinach, moringa.

FBN 005

PLANT GROWTH PROMOTING POTENTIALS OF PHOSPHATE-SOLUBILIZING BACTERIA ISOLATED FROM RUMEN CONTENT OF WHITE FULANI CATTLE, INDIGENOUS TO NIGERIA

Adebayo, A. A.[1,2], Faleye, T. O. C.[2,3], David, O. M.[2], Odeyemi, A. T.[2], Adeosun, O. M.[2], Alhaji, A. A.[1] and *Egbe, N. E. L.[1]

[1]Department of Biological Science, Faculty of Science, Nigerian Defence Academy, Kaduna, Nigeria
[2]Department of Microbiology, Faculty of Science, Ekiti State University, Ado-Ekiti, Nigeria
[3]Department of Virology, College of Medicine, University of Ibadan, Oyo-State, Nigeria
*Corresponding author: loegbe@yahoo.com

Abstract

Phosphate-solubilizing bacteria (PSB) with other plant growth promoting (PGP) traits are among options to reduce fertilizer application and enhance sustainable agriculture. Tith the aim to search for bacteria capable of promoting the growth of plants, the rumen contents of indigenous White Fulani cattle were sampled. The phosphate solubilizing potentials of the isolates on media containing tricalcium phosphate (TCP) was assayed for 7 days and their multiple PGP activities were enumerated using standard techniques. A Total of 23 bacteria were selected from the total bacterial counts which ranged from 5.20±0.36 x 10^5 to 4.00±0.01 x 10^6 CFU/g) for the sample of rumen content. Out of the 23 isolates, 14(61%) exhibited varying phosphate solubilization efficiency (144 - 687.75µg mL^{-1}) and thus were assessed *in vitro* for multiple PGP activities. The 16SrRNA gene sequencing analysis suggested that 8(57%) of the isolates with prominent PGP ability are strains of *Pseudomonas aeruginosa* and *Escherichia coli*. *Escherichia coli* AKRC16 took the lead as potential PGP bacteria among member of the genus Escherichia with 345 µg mL^{-1} soluble phosphates liberated. Overall, *P. aeruginosa* AKRC7 showed highest PGP activity by liberating highest (687.75µg mL^{-1}) soluble phosphate at pH 4.2 after 120hrs, IAA (39.27µg mL^{-1}), ammonia (3.89µmol mL^{-1}) and also displayed ability to fix nitrogen. The findings of this study demonstrate the rumen content of cattle as reservoir of PSB and also report *P. aeruginosa* AKRC7 as a potential plant growth promoting bacteria.

Keywords: *Escherichia coli* AKRC16, *Pseudomonas aeruginosa* AKRC7, Rumen content, Phosphate-solubilizing bacteria (PSB), Tricalcium phosphate (TCP).

FBN 006

HIGH RESOLUTION MELT (HRM) ANALYSIS FOR THE CHARACTERISATION OF YAM MEALYBUG FAUNA IN NORTHERN NIGERIA

Turaki A. A[1,2] *, Magaji U[4], Mohammad I.U[2], Abdulrazak U[1], Adamu M[2], Mohammad A[2], Bomer M[3] and Seal S.E[3]

[1] Federal University Birnin Kebbi PMB 1157 Kalgo Birnin Kebbi
[2]Kebbi State University of Science and Technology Birnin Kebbi PMB1014 Kebbi State Nigeria
[3]Natural Resources Institute, University of Greenwich, Chatham Maritime, Kent ME4 4TB, UK
[4] Bayero University Kano, PMB 3011, Kano, Nigeria
*Contact: aliyu.turaki2@fubk.edu.ng

Abstract

Yam (*Dioscorea* spp.) is a major staple cash crop, which constitutes 53% of the total root and tuber consumption in West Africa. Yam production in Northern Nigeria is seriously affected by increasing pressure from sap-feeding pests as well as vectors of badna viruses mealy bug (Hemiptera: *Pseudococcidae*) in the field and stored yam tubers. Their infestation remains a big challenging problem for all yam producers of Northern Nigeria. There has been no definitive work on the characterization of the yam mealy bug fauna, nor on determining if the mealy bugs commonly present are ones that are able to transmit the relevant badna viruses present. The goal of this study therefore, was to determine the mealy bug species affecting yam crops in northern Nigeria. High resolution melt curve analysis (HRM) revealed two major group of mealy bugs namely *Planococus ficus* and *Planococus minor*. This study has revealed the presences of badna virus sequences in 61% of the tested mealy bugs that clustered in group K5, K8 and T13 that are known to be from episomal sequence. This is an indication that mealy bugs might contributing significantly on the transmission of yam badna virus.

FBN 007

MICROBIOLOGICAL QUALITY OF LOCALLY SOLD SOYBEAN MILK IN UDUS CAMPUS, SOKOTO NIGERIA

[*]Fardami, A.Y.[1], Kawo, A.H. [2], Yahaya, S. [2], Riskuwa, M.L. [1]Gambo, A.[1], Rabah, A.B.[1], Farouq, A.A. [1], Yarima, A.A.[1,] Lawal, I.[2] and Fardami, N.Y. [2] and Garga, M.A.[1]

[1]Department of Microbiology, Usmanu Danfodiyo University Sokoto Nigeria
[2]Department of Microbiology, Bayero University Kano, Kano State, Nigeria
[3]Department of Biology, Federal College of Education (Technical) Gombe, Gombe State, Nigeria
Correspondence: aminufy@gmail.com

Abstract

This study was carried out to determine the microbiological quality of locally sold soybean milk in UDUS campus, Sokoto state, Nigeria. A total of five sample of soybean milk sample were collected for microbiological analysis and Standard procedures were employed. The samples were named S1, S2, S3, S4 and S5 respectively. Highest bacterial counts of $36x10^3$cfu/ml were recorded in S4 and lowest bacterial counts of $19x10^3$cfu/ml were recorded in S3. The bacterial isolates identified were *Lactobacillus delbrueckii, Staphylococcus aureus, Streptococcus salvarius, Pseudomonas aeruginosa, Enterobacter aerogenes and Lactococcus lactis. Lactobacillus delbrueckii* has the highest frequency of 40% while *Enterobacter, Lactococcus, Streptococcus* and *Pseudomonas* have the lowest frequency of 10%. The highest fungal counts of $10x10^3$cfu/ml were recorded in S5 and lowest counts of $03x10^3$cfu/ml were recorded in S3. The fungal isolates identified were *Aspergillus niger, Aspergillus flavus* and *Saccharomyces cerevisiae.Saccharomyces cerevisiae* has the highest frequency of 50%. The soybean milk was found to contain group of probiotic bacteria and fungi such as *Lactobacillusdelbrueckii* and *Saccaromyces ceravisiae* with highest percentage frequency of occurrence and both isolates play a vital role in oral cavity and human gut respectively. The hygienic nature of the production of soybean milk should be employed during pre-production, production and post production period.

Key words: Soybeans-milk, Bacteria, fungi, *Lactobacillus delbrueckii, Saccharomyces ceravisiae,* Probiotics.

FBN 008

COMPARATIVE PHYTOCHEMICAL SCREENING AND IN VITRO STUDY OF SOME ANTIOXIDANT ACTIVITIES OF AQUEOUS, ETHANOL AND METHANOL EXTRACTS OF *Carica papaya* (PAW PAW) LEAF AND SEED.

***Ijeomah, Ann Ukamaka and Olose Muhammed**

*Department of Biochemistry and Molecular Biology, Faculty of Natural and Applied Sciences, Nasarawa State University Keffi PMB 1022
annukamaka@nsuk.edu.ng, 08065476883

Abstract

Comparative phytochemical screening and antioxidant activities of *Carica papaya* leaf and seed extracts were carried out using water (aqueous), ethanol and methanol as solvents of extraction. Phytochemical screening was carried out using the methods of Sofowara, Edeoga, Trease and Evans. Total phenolic contents were determined spectrometrically by using Folin-Ciocalteu method, reducing power were also determined spectrophotometrically using standards methods. The antioxidant capacity was studied using DPPH radical scavenging assay. The result shows the presence of Alkaloids, saponin, tannins, cardiac glycoside and flavonoid in all the three extract of the leaf and seed but steroid was absent in all the extracts of the leaf and methanol extract of the seed. The result shows that the methanol and aqueous leaf extracts have the highest DPPH radical scavenging activity of 100% while ethanol extract of the leaf shows the lowest activity (65%). The highest DPPH radical scavenging activity of the seed was seen in aqueous extract (96%) and the lowest was observed in ethanol extract (87.7%). The highest reducing power in leaf was seen in aqueous and methanol extracts and the lowest was observed in ethanol extract while the highest in seed was observed in ethanol and the lowest in aqueous extract. The total phenolic content in leaf extract was observed to be the highest in ethanol while the lowest was observed in aqueous extract. However in the seed the aqueous is observed to have the highest while the lowest was observed to be in the ethanol extract. This study shows that both leaf and seed of *Carica papaya* possess antioxidants potentials but that of the leaf is higher than the seed.

Key words: *Carica papaya* leaf and seed, Phytochemical screening, DPPH radical scavenging, Total phenolic, reducing power.

FBN 009

CANCER RISK, FUNGAL AND MYCOTOXIN CONTAMINATIONS OF POULTRY FEED PRODUCTS FROM SOME MAJOR PROCESSING COMPANIES IN NIGERIA

Baha'uddeen Salisu[1*], Ibrahim Raubilu A[1]., SitiMarwanis Anua[2], Bashir Abdulkadir[1], Abdulmalik Yakubu[1], Usman Adamu[3], Abdullahi Samaila[1], Musa Sani Kaware[1] and Abdulrazak M. Hussain[4].

[1] Department of Microbiology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, Katsina, Katsina State, Nigeria.

[2]School of Health Sciences, Health Campus, Universiti Sains Malaysia

[3] Laboratory Department, General Hospital Hadejia, Jigawa State, Nigeria

[4] Jigawa State Science and Technical Education Board, Dutse.

Corresponding Author: bahauddeen.salisu@umyu.edu.ng, Phone number: 0803 696 1624

Abstract

Majorities of grain farmers in Nigeriareside in the northern part of the country where storage facilities used are traditional types or locked up stores without proper ventilation which consequently lead to contamination of various farm products by Fungi and subsequently mycotoxins which are potent carcinogens. This study was conducted to determine cancer risk associated with mycotoxigenic fungi and mycotoxin contamination of poultry feeds from some major processing companies in Nigeria. A total of 15 samples of different feed categories were collected comprising Broiler Starter (4), Broiler Super Starter (1),Broiler Finisher (4), Grower's Chick Mash (4), and Layer Finisher (2)feeds. The samples were cultured for fungal isolates on potato dextrose agar, supplemented with Cyclohexamide. Fungal colonies were identified using standard mycological techniques. A total of 30 fungal isolates comprising of *Aspergillus spp* (30%), *Mucorspp* (30%), *Rhodotorula spp* (13.3%), *Rhizopus spp* (10%) *Saccharomyces spp* (10%), *Geotrichum spp* (3.3%) and *Endomyces sp p*(3.3). The presence of mycotoxins and mycotoxigenic fungi was determined by Fourier Transform Infrared Spectroscopic Analysis (FTIR). Each of the samples was extracted using methanol-water solvent (v/v) 1:2 and the extracts were analyzed by FT-IR. The FTIR result confirmed the presence of Aflatoxins and *Aspergillus flavus* based following wavelength characteristics [CO_2 evolution (2366 cm^{-1}), ester pick shift (1256 to 1240 cm^{-1}), COOH band elevation (3200 to 2200 cm^{-1}), CH_2 peak ratio (2853 cm^{-1}/2923 cm^{-1}), OH,NH2 peak shift (3400 to 3360 cm^{-1}), protein (amide II) increase (1550 cm^{-1}), NH_2, COOH peak shift (3400 to 3300 cm^{-1}), Carbonyl shoulder height (1725 cm^{-1})]. Conclusively, poultry feeds analyzed are contaminated by various pathogenic fungi and Aflatoxins. Therefore, more stringent prevention and control methods are required to reduce the contamination levels to avoid loss of poultry lives and possible transfer of carcinogenic mycotoxins to humans along the food chain.

Keywords: Aflatoxins; Aspergillus, Carcinogenic; Feed; FTIR, Mycotoxins; Poultry.

FBN 010

MASKED MYCOTOXINS; EMERGING SILENT KILLERS IN FOODS. A REVIEW

[1]Baha'uddeen Salisu* and [2]Siti Marwanis Anua

[1] Department of Microbiology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, Katsina, Katsina State, Nigeria.

[2]School of Health Sciences, Health Campus, University Sains Malaysia.

Corresponding Author: bahauddeen.salisu@umyu.edu.ng, Phone number: +234 803 696 1624

Abstract

Several fungi can contaminate foods/crops such as cereals (grains), nuts, beans, and fruits during both pre-harvesting and post harvesting periods leading to food borne infection, deterioration and toxicities resulting in economic loses and serious health hazards to humans, animals and plants. As part of their detoxification process, plants do modify fungal toxins (mycotoxins) by conjugating them with polar compounds such as organic acids, sugars or sulphates via enzyme catalysed transformations to produce modified mycotoxins which are subsequently stored in fruits, seeds and cell vacuoles where they often conjugate to biopolymers such as cell wall components. Both free and conjugated modified mycotoxins are called "masked" or "hidden" mycotoxins (MKMT) because of their different chemical properties

which make them undetectable by conventional mycotoxin detection methods. Although mycotoxigenic fungi may not survive food processing processes, most mycotoxins and MKMT are heat stable and are hence passed to consumers intact; and while fungal and mycotoxin contamination can often be noticed physically, MKMT contaminated and non-contaminated foods cannot be distinguished physically. Since MKMT formation occur in living plants in farms, most MKMT are formed from *Fusarium* mycotoxins DON, ZEN, FB1, T2, HT2 and nivalenol (NIV) not from *Aspergillus* or *Penicillium* mycotoxins. Scientific interest on MKMT started in the mid-1980s in which several mysterious mycotoxicoses in animals did not correlate the low mycotoxin content detected in their feeds. Major MKMT identified today include deoxynivalenol-3-β-D-glucoside (DON-3-Glc);DON–glutathione; DON-S-cysteine; DON-S-cysteinyl–glycine; DON-malonyl-glucoside; Zearalenone-14-β-D-glucopyranoside (ZEN-14-Glc), α-zearalenol (αZEL) and β-zearalenol (βZEL); ZEN-16-β-D- glucopyranoside (ZEN-16-Glc); nivalenol-3-glucoside (NIV-3-Glc); fusarenon-X-glucoside (FUSX-3-Glc) from wheat grain; T2 (T2-Glc); HT2 glucosides (HT2-Glc); neosolaniol-l-glucoside (NEO-Glc); and diacetoxyscirpenol-glucoside (DAS-Glc). The most common is DON-3-Glc commonly isolated from maize (exceeding 1000mg/kg), wheat, beer, barley and breakfast cereals and snacks; followed by ZEN-14-Glc from maize and wheat. The alarming aspect is that some recent findings on most common MKMT (DON-3- Glc ZEN-14-Glc and T2Glc) showed that they are effectively hydrolysed to release their parent toxins along the GIT of humans and animals. Conclusively, MKMT represent an emerging serious public health threat as their consumption in foods can lead to both acute and chronic carcinogenicities and other toxicities. More analytical methods for determining MKMT levels in various foods as well as full toxicological studies that will unveil the toxicity issues of MKMT are highly needed because while many regulations existed for mycotoxin levels in foods, only very few MKMT are currently regulated.

Keywords: Carcinogenicity, Contamination, Deoxynivalenol-3-β-D-glucoside, Detoxification, Fusarium, Masked Mycotoxin and Mycotoxicosis.

FBN 011
INFLUENCE OF PROCESSING AND ADDITION OF PRESERVATIVES ON THE NUTRITIONAL, MICROBIAL QUALITY AND THE ORGANOLEPTIC PROPERTIES OF TIGER NUT (*Cyperus esculentus*) MILK

[1]Sani Ahmad, Ibrahim, [1]Shafa'atu Giwa, [2]Ibrahim Hamza Kankia and [1]Salihu, Tijjani Shinkafi*
Department of Biochemistry, Usmanu Dan Fodiyo University, Sokoto, Nigeria
Department of Biochemistry, Umaru Musa Yar'adua University, Katsina, Nigeria
*Corresponding author; tijjani.salihu@udusok.edu.ng

Abstract
Tiger nut milk (*Kunun aya*)is a traditional fermented non-alcoholic tiger nut beverage widely consumed in northern parts of Nigeria especially during the dry season. Deteriorating effect of micro-organisms and its short lifespan affects its large scale production and profitability. Big yellow tiger nuts were grindedinto powder and divided into four portions and subjected to the following treatments; 0.05% sodium benzoate, 0.05% gelatin, a combination of 0.05% of gelatin and sodium benzoate and a fresh tiger nut powder as a control. The samples were stored at room temperature(28 ± 2^0C) and the influence of processing and added preservatives on pH, temperature, organoleptic, nutrients and microbiological quality of the samples were evaluated for six (6) weeks. The results of the pH showed that all the samples were acidic throughout the storage period. There are no significant ($P<0.05$) changes observed in temperature range prior to storage and after storage. The protein content increases slightly after storage due to a reduction in moisture content, vitamin C & E contents of the treated milk samples were found to be significantly different at ($P<0.05$) compared with the control sample after storage. The mineral contents of the treated milk samples were not found to significantly ($P<0.05$) differ with the control sample throughout the storage period. Microbiological quality of *kunun aya* was found to be good and acceptable throughout the storage period. Processing method and the addition of preservatives could extend the shelf life of *kunun aya* for six (6) weeks at room temperature in powdered form.

Keywords: Tiger nut milk, Preservation, Microbial quality, Sensory qualities

FBN 012
HEAVY METAL CONTENT OF FRESH AND ROASTED CROAKER FISHIN CROSS-RIVER, SOUTH-SOUTH, NIGERIA

[1*]WinifredEvbakhavbokun,[2]Godwin Igile, [1]Chinonye Onuzulu, [1]Tope Ishola and [1]Joy Zaccheaus
[1]Department of Biochemistry, Covenant University, Ota, Ogun State, Nigeria
[2]Department of Biochemistry, University of Calabar, Cross River State, Nigeria
*Corresponding author: Email address:.evbakhavbokun@stu.cu.edu.ng Phone numbers: 07088147912,

Abstract
Croaker fish *(pseudotolithus elongatus)* is consumed in Nigeria as a major source of protein. Fish contamination by toxic metals is a major concern worldwide, as these metals are easily absorbed and stored by aquatic organisms. The heavy metals Mercury (Hg), Lead (Pb), Cadmium (Cd), Chromium (Cr) and Arsenic (As) have no bio-importance but are highly toxic at low concentrations. This study analyzed the concentration of these metals in fresh and roasted croaker fish obtained from Cross River State, Nigeria to ascertain their safety for human consumption. Heavy metal levels were analyzed using a Varian AA240 Fast Sequential Flame Atomic Absorption Spectrophotometer (AAS). Results revealed elevated metal levels, with Hg having the highest concentration (27.67±2.03ppm fresh, 31.00±2.52ppm roasted), followed by As (20.05±0.48ppm fresh, 17.45±0.39ppm roasted). Roasting did not deplete heavy metal levels as expected. When differences in heavy metal content between fresh and roasted samples were compared, roasted croaker fish had higher Hg, Pb and Cd levels than fresh samples, as opposed to As which was higher in fresh than roasted croaker. However, no significant difference ($p>0.05$) was observed between Cr levels in fresh and roasted croaker fish samples. This study showed that the selected heavy metal contents were above the levels recommended by the World Health Organization. It seeks to inform the development of stricter laws regulating the contents of these heavy metals in croaker fish and by extension, other forms of aquatic life consumed in Nigeria.

FBN 013
PROXIMATE COMPOSITION, ANTIOXIDANT VITAMINS AND SOME MINERAL CONTENTS OF *Datura stramonium* L. LEAVES

[*]Shehu, S.[1], Aliyu, H.[2] and Muazu, M.I.[1]

[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria
[2]Department of Biological Sciences, Al-Hikmah University, Ilorin, Nigeria
*(*Corresponding Author, E-mail: elmafary@gmail.com; Tel: +2348064881350)*

Abstract

Datura stramonium L (Devil's snare) is a well-known folklore medicinal plant from the *Solanaceae* family with both therapeutic and poisonous potentials. It is a hallucinogen; whose consumption occasionally result in anticholinergic reactions leading to toxicity and central nervous system depression. The plant also has promising pharmacological properties. The present study investigated the proximate compositions, antioxidant tvitamins and some mineral contents of *Datura stramonium* leaves using standard analytical methods. The results revealed appreciable amounts of ash (6.67±0.57%), carbohydrate (26.14±1.87%), crude lipid (1.68±0.58%), crude proteins (2.19±0.22%), fibre (43.58±0.58%) and moisture (19.00±1.00%). The values for antioxidant vitamins estimated were 14.32±6.90, 12.2±0.12 and 6.33±0.21mg/l for vitamins A, C and E respectively. The minerals determined were sodium, potassium, phosphorous, magnesium and calcium and were found as 73.33±2.89, 983.33±28.87,2.79±0.15,0.55±0.05 and 0.53±0.03 mg/kg respectively. These results showed that *D. stramonium* leaves are reliable source of important nutrients, vitamins and minerals as well. Hence, the nevertheless troublesome plant has nutritional significance.

Key words: Proximate composition, vitamins, minerals, *Datura stramonium.*

FBN 014

MICRONUTRIENT STATUS OF THE LEAVES AND STALKS OF *Justicia carnea* HOOKER.

Udedi, S.C. and Asogwa, K.K.

Departmet of Applied Biochemistry, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Abstract

Micronutrients are nutrients required by organisms throughout life in small quantities to maintain a range of physiological functions. Micronutrient deficiencies diseases like anaemia, xerohthalmia, goiter and cretinism, diarrhea among others affects the rural population in developing countries. Globally, approximately two billion people, the majority women and young children, are affected, by micronutrient deficiencies, with even higher rates during pregnancy. The micronutrient status of the leaf and stalk of *Justicia carnea* was evaluated using Atomic Absorption spectrophotometer. The result obtained show that the leaves contains (mg/kg) 597±49.49 iron, 144±5.65 copper, 1101.5±0.71 Zinc, 1.58±0.01 selenium, 0.09±0.015 cobalt, 171.5±0.71 manganese and 169.95±0.21 folic acid, while the stalk contain 6019.5±12.02 iron, 140±2.82 copper, 1089.5±3.54 zinc, 1.75±0.05 selenium, 0.12±0.01 cobalt, 108±1.41 manganese and 160.4±1.69 folic acid. . The iron composition of the stalk was higher than that of the leaf, while Cu, Zn, Co, Se, Mn and folic acid were moderately available in both the leaf and stalk. Cu, Zn, Se and Mn is required as cofactor in different oxidative and reductive enzymes. The result of this work clearly shows that the leaf and stalk are rich in micronutrients which are essential for the normal functioning of the body and thus, could serve as remedy to micronutrient deficiency diseases.

FBN 015

CHARACTERIZATION AND STORAGE STABILITY OF *Hura crepitans* SEED OIL EXTRACTED BY THE SOXHLET METHOD USING DIFFERENT SOLVENTS

***Iroha Okechukwu K. and Njoku Obioma U.**

Department of Biochemistry, Faculty of Biological Sciences, University of Nigeria, Nsukka
*Correspondence: kalu.iroha.pg77015@unn.edu.ng okeyiroha@yahoo.com 08132788365

Abstract

The yield, physicochemical properties and storage stability of *Hura crepitans* seed oil extracted by the soxhlet method using different solvents namely, n-hexane, chloroform: methanol (2:1) and ethanol were determined in this study. Oil yield were obtained as follows: n-hexane (58.3 % ± 2.20), chloroform: methanol (74.73 % ± 2.93) and ethanol (28.27 % ± 1.87). A significantly higher ($p < 0.05$) moisture and volatile matter content of 29.53 % ± 3.09 was observed in the chloroform: methanol oil sample when compare with the hexane (2.05 % ± 0.405) and ethanol (7.09 % ± 0.28) oil samples. Similarly, the appearance of the oil from the chloroform: methanol system was cloudy with waxy particles. The acid values (mgKOH/g) of the oils were 7.10 ± 0.21, 5.59 ± 0.38 and 6.41 ± 0.20 for the hexane, chloroform: methanol and ethanol solvent systems respectively. The peroxide values (mEq/kg) were 2.52 ± 0.109, 3.93 ± 0.091 and 3.13 ± 0.104 for the oils extracted with hexane, chloroform: methanol and ethanol respectively. The saponification values (mgKOH/g) of the oils were: hexane (235.57 ± 1.193, chloroform: methanol (243.60 ± 2.57) and ethanol (247.50 ± 3.06). During storage, the peroxide values of the oils peaked at the eighth week as follows 11.52, 14.41 and 11.86 mEq/kg for the hexane, chloroform: methanol and ethanol samples respectively. The oils from the hexane and chloroform: methanol solvent systems showed elevated acid values of 8.63 and 8.26 mgKOH/g at the twelfth week of storage while the ethanol sample was 10.04 mgKOH/g on the fourth week. These results showed that the conventional soxhlet method of oil extraction using different solvents influenced oil yield and quality. *Hura crepitans* seed oil has significant potential for industrial purposes; extracting it with n-hexane is preferred over other solvents due to the higher yield and better physicochemical properties.

Key words: *Hura crepitans,* Characterization, Soxhlet method, Solvent Systems, seed oil

FBN 016

ESTABLISHING A BIOSAFETY BASELINE FOR AFRICAN BIOFORTIFIED SORGHUM (ABS) THROUGH PROXIMATE AND FEEDING EXPERIMENT IN MICE

Maishanu, S.H[1], Umar, Y.A[1], Abdulsalami, M.S[1] and Ibrahim A.B[2]

[1]Department of Biological Sciences, Nigerian Defence Academy, Kaduna.
[2]Department of Biochemistry, Ahmadu Bello University Zaria.
Corresponding Author: e-mail:msabdulsalami@nda.edu.ng abdulsalamimosan@yahoo.com

Abstract

Micronutrient deficiency as a result of insufficient and non-availability of micronutrient-rich non-staple food is respeonsible for hidden hunger with millions of children and adults exposed. With the advent of modern biotechnology, readily available food such as sorghum, are biofortified to meet the nutritional requirement. A number of biofortified crops have been generated through transgenic techonolgies including sorghum. A key step towards the release genetically modified (GM) biofortified sorghum is its nutritional evaluation and risk assessment study. In this work, two genetically modified sorghum (ABS 188 and ABS 203) were subjected to proximate analysis and administered on mice to evaluate the effect of their consumption on liver and spleen. Following the molecular analysis of the two GM sorghum, the transgenes (ZmPsy and CrT1genes) were confirmed in ABS 188 and ABS 203. Results revealed that the proximate composition of ABS188, ABS203 and local sorghum are not significantly different. However, ABS 188 had higher amount of crude protein of (9.0%) compared to ABS 203 and local sorghum which had 4.94% and 4.56% respectively. Zinc was present in trace amount in all the samples (0.3×10^{-3} – 3.3×10^{-3} mg/kg). . The crude fibre content ranged from 1.68-2.08% The LIG and dry matter of the samples were almost the same, and ranged from 8.28- 8.83% and 91.17 – 91.72% . The β – Carotene content of all the three sorghum samples has no significant differences. The GM sorghum had no significant toxic effect in the liver and spleen of the experimental mice, indicating that the GM sorghum is as safe as the local sorghum. In conclusion, ABS 188 and ABS 203 are considered to be as safe and nutritious as local sorghum, with the advantage that the GM sorghum are biofortified with. Vitamin A, Zinc and Iron.

FB 017

NUTRITIONAL PROFILING AND FUNCTIONAL PROPERTIES OF HERBAL TEA INFUSIONS OF GUAVA LEAVES SUPPLEMENTED WITH MORINGA AND GINGER POWDER

Yusuf, A. B[1]. and Sahabi M. A[1].

[1]Department of Biochemistry and Molecular Biology, Federal University, Birnin Kebbi, Kebbi State,
Corresponding author: yusuf.abdulrahman@fubk.edu.ng +2348160240925 or +2348074098591

Abstract

Herbal teas are receiving increasing attention from consumers because of their perceived nutritional and health benefits. Therefore, the current study formulated and evaluated guava leaf teas supplemented with moringa and dry ginger powder as supporting and activating herb respectively. The formulated herbal combinations were packed as dip tea bags designated M1 and M2. Nutritional composition, functional properties, and antinutritional factors were investigated using standard analytical methods of Association of Official Analytical Chemist. Data were analysed by ANOVA and results expressed as means and standard deviation. Result of proximate composition indicates that ash and moisture content were within ASEAN recommended standard. Amino acid profile revealed that the formulations contain appreciable amount of all essential amino acids. Functional properties indicate that bulk density ranged from 0.37-0.38, swelling index 2.8-3.7, reconstitution index 6.6-6.8, water absorption capacity 83.52-89.65, and pH

6.11-6.22. Selected micronutrient estimated suggest that the composite blends are good sources of minerals like Zn, Ca, and Fe which are of public health importance. Based on the results of this study, it can be concluded that guava leaves tea supplemented with moringa and ginger are reservoir of macro and micronutrients and may be an alternative to commercial tea (*Camellia sinensis*) with various health benefits.

Key words: Guava leaves, Herbal tea, Nutritional profile and Functional properties

FB 018

BIOTECHNOLOGY: PANACEA FOR FOOD INSECURITY IN NIGERIA

Abdulsalami M.S

Department of Biological Sciences, Nigerian Defence Academy, Kaduna.
e-mail:msabdulsalami@nda.edu.ng abdulsalamimosan@yahoo.com

Abstract

Biotechnology is an emerging, high rewarding technology with a large potential for enhancing food security. It can increase productivity, reduce costs and fight diseases afflicting plants, animals and humans. The paper discusses the role of this technology in enhancing food security in Nigeria and its implication on the populace. Various advances in crop improvement using this technology have also been discussed. The paper concludes by proffering solutions to the problem of food insecurity in Nigeria.

FB 019

EVALUATION OF THE NUTRITIONAL AND ANTINUTRITIONAL CONTENT OF *Borasssus ethiopum*

***Sangodare Rose,[1] Edem Umiom Okon[1] Adudu Judy Atabat,[1] Attah Ojebbah Catherine,[2] Batari Musa Latayo,[1] Odeke Evelyn Hope,[1] Oddy-Obi Ifeoma,[1] Ukwuije Nnenna Olachi,[1]Okezie Chisolu Victoria,[11]Idio Uduakobong Ime, Anyanwu Stella Ezinne.[1]**

[1]National Research Institute for Chemical Technology, P.M.B 1058, Basawa, Zaria.
[2]Chemistry Department, Federal College of Education, Kano.
Corresponding author: sangodares@yahoo.com

Abstract

Borassus ethiopum also known as famine food is a commonly consumed dessert in the Northern part of Nigeria, especially in Zaria town, it has hunger quenching ability. The mineral composition and qualitative phytochemistry of Raw (G1) and Boiled (G2) *Borassus ethiopum* were carried out, using standard analytical methods (AOAC 2010). Results indicated that the mineral composition of *B. ethiopum* namely Ni, Cu, Pb, Ca, Fe, Mg, Mn, Na and Co for Raw (G1) sample were 0.00018, 0.00043, 0.00148, 0.00606, 0.00308, 0.0286, 0.000249, 0.0472 and 0.00126 mg/l respectively. While the mineral composition of boiled *B. Ethiopum* (G2) for Ni, Cu, Pb, Ca, Fe, Mg, Mn, Na and Co were 0.00117, 0.000535, 0.00445, 0.00475, 0.00397, 0.00306, 0.000235, 0.0524 and 0.00245 mg/l respectively. The phytochemical screening indicated a moderate presence of tanning and saponin in both samples (G1 and G2), but a slight presence of phlobatannins, terpenoids, steroids and flavonoids were observed in both samples. These findings Showed that the mineral content of *B. ethiopum* were not adversely affected by boiling and can only be depended on as source of minerals on a short term nutritional need, in times of famine but cannot cater for human mineral requirement on a long term basis, while the slight presence of phytochemicals are not capable of causing deleterious effect especially when processed before consumption.

Keywords: Borassus Ethiopum, Minerals, Phytochemistry.

FB 020

ELEMENTAL ANALYSIS OF PAWPAW (*Carica papaya*) SEEDS USING ENERGY DISPERSION X-RAY FLOURESCENCE SPECTROSCOPIC TECHNIQUE

[1]Abubakar Halilu, [1]Olowo-Okere Ahmed, [1]Hussain Yahaya UK, [1]Sa'adatu Muazu Jodi, [1]Nuhu Tanko*

[1]Department of Pharmaceutics and Pharmaceutical Microbiology, Usmanu Danfodiyo University, Sokoto

*Corresponding author: nuhu.tanko@yahoo.com 08034985445, 09029977331

Abstract:

Pawpaw fruit is one of the most popular tropical fruits in the world. Pawpaw is also popular as a wound healer for emergent incidents and for healing skin problems. Fortunately, there are no big concerns locally in Nigeria about pawpaw. The aim of our study is to carry out elemental analysis of pawpaw seeds using Energy Dispersion X-Ray Flourescence (EDXRF). Sample of fresh and dried pawpaw seeds from ripe and unripe fruit were collected and identified by a Botanist at Ahmadu Bello University, Zaria, Kaduna state. The pawpaw was washed with distilled water. The seeds were scrapped and washed 3 times with distilled water and were spread on a plastic trays for drying in a chemical hood until a constant weight was obtained. They were further dried in an oven at 50°C for 3 days, and then crushed into a fine powder using mortar and pestle. Macro elements in pawpaw seed as determined by EDXRF in both ripe and unripe seed include: Potassium, Calcium, and Bromine, while essential elements like Manganese, Iron, Copper, Magnesium, Selenium, Nickel, and Zinc were found. Trace elements found include: Arsenic, Lead, Titanium, Vanadium, and Zirchonium. The elemental analysis has shown that elemental content of ripe seed has a higher content than the unripe seed.

Keywords: Pawpaw, Energy Dispersion X-Ray Flourescence, Elemental analysis

FB 021

THE EFFECT OF CONTINUOUS USE OF DIFFERENT EDIBLE VEGETABLE OIL DURING FRYING- A COMPARATIVE STUDY.

Ozougwu V. O. Eric*, Wisdom O. Oniwon

Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.

*Corresponding author: wisdomoniwon9@gmail.com; vincent.ozougwu@unn.edu.ng;+2347036610711

Abstract

Cooking was a breakthrough for mankind that improved the flavor, digestibility and quality of food. This breakthrough is seen in a lot of cooking methods such as boiling, poaching, stewing, baking, roasting, microwaving and deep frying. Heat treatment is an operation widely used in food processing. People especially in developing countries believe in the need to manage resources, while giving less attention to the risk associated with what is consumed. As heat-processed foods are much appreciated, deep-fat frying produces desirable or undesirable flavor compounds and changes the flavor, stability and quality of the oil by hydrolysis, polymerization and oxidation. Oxidation involves the formation and propagation of lipid radicals and the eventual destruction of membrane lipids, producing variety of breakdown products, such as alcohols, ketones, alkanes and aldehydes. Reuse of oil by heating accelerates oxidative degradation of lipids, forming hazardous reactive oxygen species and depleting the natural antioxidant contents of the cooking oil. Samples of the oils were separately heated for thirty minutes. Sample of each oil was collected and analyzed before and after heating. Comparative study of the four edible oil before and after frying showed that the heating had a very distinct impact on the iodine value (IV), peroxide value (PV), acid value (AV), free fatty acid (FFA), *p*-anisidine value (PAV), thiobarbituric acid (TBA) and fat soluble antioxidant vitamins (A. D. E.).Fatty acid profiles from the oil samples were not exactly the same. The difference may be either due to the method of processing or the manufacturer's inconsistency.

Keywords: edible vegetable oil, oxidation, free fatty acid, antioxidants, fatty acid profiles, thiobarbituric acid

FB 022

EVALUATION OF GROWTH PERFORMANCE, FEED EFFICIENCY AND IMPUNITY OF BROILER CHICKENS FED WITH FERMENTED AND UNFERMENTED COMMERCIAL FEEDS

Alfa, Ismaila* and Aliyu-paiko .M

Department of Biochemistry, Faculty of Natural science, Ibrahim Badamasi Babangida University, Lapai, Niger State, Nigeria. P. M. B, 11.

*CorrespondingAuthor:ismailsaganuwan@gmail.com,Mobile:08065144020.

Abstract

Poultry farming refers to rearing of birds (chickens, ducks, turkey etc.) for their meat and eggs that contribute significantly to poverty alleviation and food security. Unfortunately, poultry are susceptible to diseases that affect production and profitability. The present research was undertaken to evaluate the use of probiotic bacteria to ferment poultry feed as alternative to the use of antibiotics to improve broiler chicken feed efficiency and performance. Ninety six day old chicks were randomly distributed into three treatment groups (control, partially and fully fermented feed) in three replicates. They were fed for six weeks. The partial fermented group received unfermented and fermented feed for three weeks each, successively. Feed and water were offered adlibitum and Growth performance, feed consumption and efficiency were monitored weekly, at which time the cages and feeders were also thoroughly cleaned. At the end of the experiment growth performance did not significantly ($p > 0.5$) differ among the control and fermented treatment groups. Protein intake and feed consumption were however, significantly ($P < 0.5$) higher in the fermented treatments relative to the control. Blood immune and metabolic parameters were also significantly enhanced in the fermented treatment groups. Taken together, the results of this experiment revealed that feeding broiler chickens with fermented feed leads to improved feed consumption and efficiency without compromising growth, but with improvement in immune parameters.

Keywords: Broiler, growth, feed efficiency, immunity.

FB 023

CAROTENOID CONTENTS OF SOME SELECTED VEGETABLES CONSUMED IN KANO METROPOLIS

***Bala M.[1] and Omar, H.L.[1]**

[1]Department of Biochemistry, Bayero University Kano, Nigeria.
*Corresponding author; mbala.bch@buk.edu.ng

Abstract

The disease preventing potential of naturally occurring substance in the diet is a major area of scientific interest. Vegetables containing vitamins and carotenoids have been suggested as natural sources of antioxidants that exhibit a wide range of biological effects. In this research work, ten vegetables(broccoli, cauliflower, peas, lettuce, cabbage, sorrel, carrots, spinach, white radish and parsley) consumed in Kano metropolis were investigated for their carotenoids contents using standard methods. The results showed that all the vegetable samples analysed had total carotenoids contents ranging from (19.17 ±0.23- 297.18 ± 0.97µg/g), β – carotene content ranging from (8.37 ± 0.3 – 152 ± 3.5µg/g) and lycopene contents ranging from (2.78 ± 0.23 – 51.98 ± 1.52 µg/g. Spinach having the highest mean total carotenoid content showed a significant difference($p<0.05$) when compared with all other studied samples. White radish recorded the lowest beta-carotene content while spinach had the highest mean beta-carotene content. Cauliflower recorded the lowest value, whereas spinach and lettuce had the highest lycopene content. The studied vegetables can be used as good sources of carotenoids.

FB 024

COMPARATIVE EFFECT OF LOCALLY-FORMULATED FEED AND COMMERCIAL FEED ON THE GROWTH AND BIOCHEMICAL PARAMETERS OF *Heterobranchus bidorsalis* (CATFISH) FINGERLINGS.

[1*]ADEMU Haruna, [1]KABIRU, A.Y., [1]ABUBAKAR, A., &[1]SADIKU, S. O. E.

Department of Biochemisty, Federal University of Technology, PMB 65, Minna, Niger State.
*Corresponding author's Email: ademuharuna41@gmail.com phone no. +234-7064517316

Abstract

Aquaculture production is one of the solutions to the problem of protein inadequacy in Nigeria but high cost of feed remains a major obstacle. This study evaluated the comparative effectiveness of locally-formulated feed and commercial feed on the growth and biochemical parameters of Hetero branchusbidorsalis (catfish) fingerlings. Based on the proximate composition of groundnut cake, guinea corn, bone meal, fish wastes; three diets: F1 (guinea corn, bone meal, fish wastes, vitamin premix), F2 (guinea corn, bone meal, fish wastes, groundnut cake, vitamin premix) and F3 (guinea corn, bone meal, groundnut cake, vitamin premix) were formulated using Pearson square method. Sixty fingerlings of 2g bodyweight were divided into 12 groups consisting of five fingerlings each. The first three groups were fed commercial feed (coppens), while the remaining groups were fed with the respective experimental diets. Each group was fed 5 %of their average bodyweight twice daily in an aquarium for 63 days. The results showed that there was no significant difference ($p>0.05$) between the fingerlings fed with commercial feed and the formulated feed F1with respect to their bodyweight (22.767±0.145g) and length (15.067±0.033cm) measurement. This trend was similar for biochemical parameters. However, there was significant difference ($p<0.05$) between fingerlings fed with commercial feed anddiets F2and F3.F1 is therefore, ideal for fingerlings indoor rearing.

Key Words: fish wastes, groundnut cake, guinea corn, bone meal, Hetero branchus bidorsalis

FB 025

EFFECT OF BLANCHING DURATION ON MINERAL AND PROXIMATE COMPOSITION OF SELECTED NIGERIAN VEGETABLES

*** Awe, A.O., Awodele, O.A., Lawrence-Azua, O.O., Popoola, M.A., Saka, A.A., Yahaya, M.O.**
**Email: ayorindeawe@gmail.com*

Abstract

Blanching is a common method of tenderising and improving palatability of vegetables. However, hot water dissolves some soluble materials in vegetables. This study was done to determine the effect of duration of blanching on mineral and proximate compositions of four common vegetables in Nigeria. *Amaranthus hybridus* ("Efo tete"), *Telfairia occidentalis* (fluted pumpkin), *Talinum triangulare* (water leaf) and *Vernonia amygdalina* (bitter leaf) were purchased from Apata market, Ibadan for this study. Three samples of 100g each were randomly taken from each vegetable species as samples A, B and C respectively. Sample A was unblanched vegetable, samples B and C were blanched for 5 and 10 minutes respectively. Mineral contents were determined using Atomic Absorption Spectrophotometer and Colorimeter. Proximate Analysis was done on the samples. Data were analysed using ANOVA and Duncan Multiple Range test to separate means at $p<0.05$. Results showed no significant reduction in Total ash in 10 minutes. Moisture content increased significantly (74.28-88.39%). Blanching had significant reduction on Nitrogen Free Extract (14.64-6.72%) at 5 minutes, while crude protein reduced significantly (4.82-1.89%), crude fat from 2.48-1.28%, crude fibre from 1.65-0.92%, all at 10 minutes. Calcium, Magnesium and Zinc reduced significantly at 10 minutes blanching (12881.50-8339.75mg/kg, 2123.44-958.76mg/kg and 22.50-11.23mg/kg respectively). Sodium, Potassium and Phosphorus reduced significantly at 5 minutes (839.11-551.53mg/kg, 8482.51-2131.54mg/kg and 169.36-6.27mg/kg respectively). Conclusively, blanching beyond 5 minutes causes more significant reduction in minerals and proximate composition of the vegetables. It is therefore recommended that vegetables should not be blanched beyond 5 minutes to preserve the minerals and proximate content as much as possible.

Keywords: Blanching, Mineral composition, Proximate Composition.

FB 026

EVALUATION OF THE TOXICOLOGICAL EFFECTS OF *Senecio aureus* EXTRACT ON THE LIVER AND HEMATOLOGICAL PARAMETERS IN WISTARA LBINO RATS

***Nadro Margaret[1] and Madu Joshua Osuigwe[2]**

[1]Department of Biochemistry, ModibboAdama University of Technology Yola, Nigeria

[2]Department of Chemistry, American University of Nigeria Yola, Nigeria

Abstract

The use of *Senecio aureus* for therapeutic purposes is well known; however, in recent times, much concern has been raised regarding the toxicity of this plant extract used in treatment of gynecological disorders and jaundice. The sub-chronic oral toxicity of *Senecio aureus* was investigated. 16 male Wistar albino rats were divided into four groups: control and treatments (100, 300 and 500 mg/kg body weight). Each group received the graded dose of the extract by gavage daily for 28 days while control received water. The administration of the extract resulted in significantly ($p<0.05$) increased total bilirubin and cholesterol and level from 29.14±1.18mg/dl and 83.00±7.16 mg/dl in the control to 53.19±6.11mg/dl and 166.67±14.03mg/dl, respectively, at dose of 500 mg/Kg body weight. In the hematological analysis, there were no significant changes compared to the control group ($p<0.05$). The present result suggests that the prolonged use of this plant extract at high dose in the treatment of diseases could be detrimental to the liver.

Keywords: *Senecio auerus*, toxicity, jaundice, liver, haematology.

FB 027

AMINO ACID AND MINERAL COMPOSITION OF *Egeria radiata* AND *Viviparus contectus* FROM THE NIGER DELTA REGION OF NIGERIA

***Felagha, I., Monanu, M. O., Amadi, B. A.,**

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Port Harcourt, Rivers state.

*Corresponding author's email: felagha007@gmail.com Phone: +2348065999537

Abstract

The present study investigates the amino acids and mineral composition of *Egeria radiata and Viviparus contectus*. All samples analyzed in this study were obtained from Bayelsa state and prepared for analyses following standard procedures. Amino acids and mineral composition were determined by gas chromatography (GC)and Atomic Absorption Spectrophotometry (AAS) respectively. The mineral content of the samples was as follows-*E. radiata:* Mn (0.934±0.00mg/Kg), Cu (0.189±0.00mg/Kg), Zn (8.534±0.004mg/Kg), Ca (7.209±0.00mg/Kg), Fe (10.738±0.00mg/Kg), Na (4.673±0.001mg/Kg), K (8.817±0.00mg/Kg), Mg (3.698±0.001mg/Kg), Mo (0.895±0.00mg/Kg);*V. contectus*: Mn (0.846±0.002mg/Kg), Cu (0.381±0.001mg/Kg), Zn (4.194±0.004mg/Kg), Ca (3.819±0.001mg/Kg), Fe (8.838±0.00mg/Kg), Na (3.218±0.002mg/Kg), K (6.616±0.00mg/Kg), Mg (3.299±0.00mg/Kg), Mo (0.869±0.00mg/Kg). A total of fourteen (14) amino acids were detected in both samples:glycine, alanine, serine, proline, valine, threonine, isoleucine, leucine, methionine, glutamic acid, phenylalanine, arginine, tyrosine and cysteine. In *E. raidata,* leucine had the highest concentration (21.287mg/100g) while proline was the least (2.854mg/100g); glutamic acid and methionine were the highest and least (19.389mg/100g and 2.996mg/100g respectively) in *V. Contectus* samples. *Egeria radiata and Viviparus contectus* are good sources of amino acids and nutritionally essential minerals hence their consumption is encouraged.

Key words: *E. radiata, V. contectus*, minerals, amino acids, concentration

FB 028

BIOCHEMICAL AND HORMONAL RESPONSES TO *Ocimum gratissimum*-SUPPLEMENTED DIETS IN RATS

***Iweala, EmekaEze Joshua, Kattiems, Paula Bamiand Dania, Elizabeth Omoremime**

Department of Biochemistry, Covenant University, Ota, Ogun State, Nigeria.
*Corresponding Author, emeka.iweala@covenantuniversity.edu.ng;+2348036738625

Abstract

This study evaluated the effects of *Ocimum gratissimum*-supplemented diet (OGSD) on some hormones and biochemical parameters in male Wistar rats. Twenty-eight rats were divided into four groups namely control group, group A, group B and group C consisting of 7 animals each. The groups were respectively fed with the control feed, Feed A (10g *Ocimum gratissimum*), Feed B (30g *Ocimum gratissimum*) and Feed C (50g *Ocimum gratissimum*). Biochemical parameters including body weight, lipid profile, blood glucose, testosterone and cortisol were determined. The results showed that there was a significant decrease ($p<0.05$) in body weight with increase in concentration of *Ocimum gratissimum*. There was a significant reduction ($p<0.05$) in blood glucose and triglyceride levels in groups A, B and C. HDL-Cholesterol was significantly increased while LDL-Cholesterol was significantly reduced ($p<0.05$) in groups A, B and C. There was a decrease of 5.31mmol/l in cortisol level in the groups fed with OGSD which was not significant. Testosterone was significantly reduced ($p<0.05$) with increase in concentration of *Ocimum gratissimum*. The findings in this study indicates that the consumption of *Ocimum gratissimum* vegetable may have blood sugar reducing and cardio-protective effects which may help in treatment of diabetes and heart diseases. The testosterone-reducing effect of the vegetable may also be important in management of prostate diseases associated with the high levels of the hormone.

FB 029

INVESTIGATING THE POTENTIALS OF *Citrullus lanatus* SEED POWDER AS PHYTOBIOTIC TO IMPROVE GROWTH PERFORMANCE, FEED EFFICIENCY, ANTIOXIDANT ENZYME ACTIVITY AND BLOOD BIOCHEMICAL PARAMETERS IN BROILER CHICKENS.

[1]H.M. Kure, [1]M. Aliyu-Paiko.
Department of biochemistry, IBB University Lapai.
Corresponding author: kurehajara@gmail.com. 07065528343

Abstract

Phytobiotics represent a new generation of growth stimulators and are defined as compounds of plant origin used in animal nutrition in other to enhance productivity by improving feed properties as well as quality of food of animal origin. This study investigated the use of *citrullus lanatus* whole seed powder as a phytobiotic to enhance the activity of some antioxidant enzymes, growth performance, feed efficiency, immune response and some blood biochemical parameters on broilers. 60 chickens of day old were grouped into 3, A, B and C. Group A served as control, group B consumed commercial feed mixed with 1% of *c. lanatus*, while group C consumed feed with 2% of *c.lanatus*. Both feed and water was given *ad libitum.* Water consumed was measured daily, birds were weighed on a weekly basis and feed intake was measured weekly. At the end of the experiment, body weights of group C were higher compared to group A and B, although this difference was statistically insignificant ($p>0.05$). There was also no significant difference observed in antioxidant enzyme activity. Feed consumption and feed conversion ratios were similar for all groups. Results for haematological parameters showed a significant difference in white blood cell number and urea level. Other haematological parameters showed insignificant difference at ($p>0.05$). From this study, *c. lanatus* was able to fight against infection and it can be concluded that *c. lanatus* has some antimicrobial activity and can be used without interfering with the overall health and performance of broiler chickens.

Keywords: *Citrullus lanatus*, antibiotics, antioxidant enzymes, broilers.

FB 030

FORMULATION AND SENSORY EVALUATION OF PROCESSED COMPLEMENTARY FOODS FOR INFANTS AND YOUNG CHILDREN

Abdullahi A.S*, Matazu K.I, Matazu N.U, Usman A, Yusuf, M.M.

Department of Biochemistry, Umaru Musa Yar'adua University, P.M.B. 2218, Katsina, Nigeria
*****Corresponding author; Tel.: +234 80 36306019; *E-mail: akilu.sada*@umyu.edu.ng

Abstract

Complementary foods were formulated from soybeans, millet and sorghum composite blends in different ratios 100%. Soybeans as a control; 65:15:20, 60:10:30, 70:15:15 soybeans, millet and sorghum respectively. The proximate composition of the different formulations was evaluated. The results of the sensory evaluation revealed that ash content ranges from 5.58±0.07 to 3.11± 0.10% with crude protein ranging from 3.05± 0.13 to 3.28± 0.20. Highest protein content was observed in the formulation with the ratio 65:15:20 with mean value of 3.28% and met the codex alimentarius commission guideline formulated supplementary food for older infants and young children. The crude fiber range from 16.10± 0.16 to 30.11± 0.10%, fat 7.39± 0.20 to 64.51± 0.34, moisture content 1.24± 0.09 to 8.28± 0.36. The carbohydrate content ranged from 49.61± 0.05 to 65.61± 0.1%. The formulated blends were found to be nutritionally enriched and could provide the daily recommended dietary allowance for protein, carbohydrate and some micronutrients in infants and young children.

Key words: Formulation, Complementary, foods, infants and children

FB 031

PREVALENCE OF CYSTICERCUS (BLADDER WORMS) IN PORK MEAT SOLD IN SELECTED MARKETS WITHIN KADUNA METROPOLIS, KADUNA STATE

*** Fatima Mohammed Musa., Rhoda Mosunmola Okunola and Ishaku Andrew Dangalo**
Department of Applied Sciences College of Science and Technology, Kaduna Polytechnic Kaduna
*Corresponding E- mail address/phone number fmmusa1@gmail.com/ 0706629228

Abstract

A study was undertaken in order to determine the prevalence of cysticercus in pork meat sold in selected markets within Kaduna metropolis, using liming techniques. A total of fifteen (15) slaughtered pigs were examined (5 each from Television, Narayi and Nasarawa markets). Of the fifteen (15) number of pigs examined, 4 (80 %) each from Television and Narayi markets were infected with cysticercus, while 3(60 %) were infected in Nasarawa market with overall prevalence rate of 73.3 % respectively. The frequency of occurrence of cysticercus in relation to the different parts of slaughtered pigs in the three markets, showed that the tongues of all the pigs that were examined, with the exception of the anus and chest portions harbored cysticercus (60% each) Similarly, 60 % each of the anal region of the animals obtained from Narayi and Nasarawa markets were also infected with cysticercus. This was followed by 40% each from the portions of pork examined from the chest respectively. Cysticercus was not detected along the leg region. On the basis of this finding, pork meat should be properly cooked or screened for the presence of cysticercus. An enlightment campaign on good sanitary methods should be carried out in order to minimize infection among humans and animals.

Key words: Cysticercus, Pork meat, Selected markets, Liming Techniques.

FB 032

COMPARATIVE EVALUATION OF THE PHYTOCHEMICALS AND NUTRITIONAL COMPOSITIONS OF FRESH, SPROUTED AND TOASTED *Citrullus lanatus* (Watermelon) Seeds

Titilayo O.Bamidele, Haruna Sunday Gambo, Auta Mathew, Jesse Ombugadu and Abdullahi Maryam

Department of Biochemistry and Molecular Biology, Nasarawa State University Keffi, Nasarawa State,
* Corresponding author: E mail address: titibamidele@nsuk.edu.ng Phone Number: 07038567716

Abstract

The study was aimed at comparing the phytochemicals, nutritional and anti-nutritional compositions of fresh, sprouted and toasted *Citrullus lanatus* seeds. The phytochemical, proximate,amino acids, microminerals and antinutrients compositions were determined following standard procedures. Data were analyzed using one-way ANOVA followed by LSD and Duncan test for levels of significance. Results showed the presence of all the phytochemicals tested except for saponins which was absent in fresh watermelon seeds and anthroquinones which was absent in sprouted and toasted watermelon seeds. There was no significant ($p > 0.05$) difference in concentrations of the phytochemicals in all the samples except for cyanogenic glycosides which was significantly ($p < 0.05$) high in the fresh sample. Percentage protein (24.87±0.48) was significantly ($p < 0.05$) higher in the sprouted sample, ash (2.63±0.11) was significantly ($p < 0.05$) lower in the sprouted, fibre (20.64±0.23) and moisture (2.88±0.19) were significantly ($p < 0.05$) lower in the toasted and carbohydrates (9.81±1.27) was significantly ($p < 0.05$) higher in the sprouted. Results obtained for Amino acids and mineral analyses showed no significant ($p > 0.05$) difference in the three samples. Saponins(2.15±0.07) ,Tannins (40.63± 0.13) Cyanogenic (3.55± 0.35) and Phytates (0.31± 0.01) were significantly ($p < 0.05$) higher in the fresh while oxalates (0.85±0.01) was significantly ($p < 0.05$) higher in the sprouted. Fresh, sprouted and toasted watermelon seeds may possess nutritional and health benefit by the virtue of their richness in phytochmicals, microminerals and amino acids.

Keywords: *Citrullus lanatus*, phytochemicals, proximate, micromineral, antinutrients,

FB 033

PERFORMANCE EVALUATION OF COMMUNITY VOLUNTEERS' (CVS) ROLES IN COMMUNITY MANAGEMENT OF ACUTE MALNUTRITION PROGRAMME AT ANGUWAN FATIKA, ZARIA LOCAL GOVERNMENT AREA OF KADUNA STATE

***Abdulbasit Muhammad Auwal, Ubangida Suleiman, Ezekiel Ishaku, Boniface Blessing Yina and Olumuyiwa Adeyemi Owolabi**

Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria. ***Correspondence to:**
Telephone: +2347032056301; E mail: abdulbasit.awwal@gmail.com

Abstract

Community mobilization is an integral aspect of Community Management of Acute Malnutrition (CMAM). Proper functioning of the Community Volunteers' (CVs), aspect of community mobilization is key to success of CMAM. Therefore, this study was carried out to evaluate the performance of CVs roles in the CMAM programme at Anguwan fatika, Zaria LGA. Qualitative and quantitative data collection methodologies were used to collect data from CVs, incharge of health facility, community leaders and caregivers of under fives with Severe Acute Malnutrition (SAM). The socioeconomic characteristics shows that majority of the CVs (51.1%) are within the age range of 26-30 years, 71.4% of them are married and 80% of them had at least secondary school education. About 43% of them were traders, 28.6% were civil servants and another 28.6% were fulltime housewives. 71.4% of the CVs were able to correctly access nutritional status of SAM children using mid upper arm circumference (MUAC) while only 28.6% were able to correctly access oedema. About 80% of the caregivers sampled were never visited by the CVs. The head of the health facility put the performance index of the CVs at 35%. We concluded that the CVs are not performing their roles efficiency and the implications of this results were discussed in relation to the success of CMAM programming in Nigeria.

FB 034
ISOLATION AND IDENTIFICATION OF FUNGAL ISOLATES FROM LOCALLY SOLD FURA DA NONO WITHIN KATSINA METROPOLIS

***Fatima Mukhtar and Bilkisu Bala**

Department of Microbiology, Umaru Musa Yar'adua University, Katsina

*fatima.muhktar@umyu.edu.ng (08039749909)

Abstract

This study was aimed at evaluating the fungal isolates capable of contaminating the locally sold Fura da Nono in Madacin Yan Nono, Kofar Guga, and KSTA Park. Thirty (30) samples were collected from the three sampling sites, standard procedures were employed in evaluating the fungal counts, their isolation and Identification. The fungal counts obtained were 1.70 $\times 10^2$ from Madacin Yan Nono samples, 1.62×10^2 and 1.90 $\times 10^2$ from Kofar Guga and KSTA Park samples respectively. Five (5) different fungal species were isolated which include *Aspergillus flavus*, *Aspergillus niger*, *Saccharomyces sp*., *Penicillium sp.*, and *Rhizopus sp.* *A. niger* had the highest frequency of occurrence with (34.18%) followed by *Sacchromyces species* (22.7%), *Rhizopus* (20.27%), *A. flavus* (18.98%) and lastly *Penicilium spp*. (3.79%) had the lowest frequency of occurrence. The study reveals that samples collected from Kofar Guga had the highest level of contaminants 28(35.89%), Madacin Yan Nono had 26 (33.33%) and samples collected from KSTA park had the lowest level of contaminants 24(30.76%). The study also showed that consumption of mixture of Fura da Nono is more hazardous due to high level of contamination than consuming Nono or Fura alone. However, it was noted that the fungal counts obtained from the samples does not exceed the maximum permissible limit of microbes in milk products fit for human consumption recommended by the Standard Organisation of Nigeria (SON) of 1984 which specified a limit of $1x10^5$ cfu/ml. Based on these findings, the products can be said to be fit for human consumption, but sanitary practices and hygienic condition must be improved to minimize the risk of exposing consumers to health related illnesses.

Key: Fura, Nono, Fungal isolates and consumers.

FB 035
PROXIMATE COMPOSITION, MINERAL AND SOME VITAMIN CONTENTS OF TIGERNUT (*Cyperus esculentus*)

[*1]Suleiman, Mohammed Salisu; Olajide Joseph Eniola; Omale, Jamila Audu; Abbah, Okpachi Christopher; and Ejembi, Daniel Ocholi

Department of Biochemistry, Faculty of Natural Sciences, Kogi State University Anyigba, PMB,1008 Kogi State, Nigeria
Corresponding Author's Email:salisus570@gmail.com, phone no.: +234-8155681382

Abstract

Fresh Tigernut (*Cyperus esculentus*) was evaluated for its proximate and Mineral compositions using methods described by the Association of Official Analytical Chemist (AOAC), 2010. The vitamin A content was determined using the method described by Rutkowsi, 2007, while the Vitamin C content was evaluated using the method described by Rahman *et al*., 2006. The proximate composition of 100g of fresh tigernut showed that moisture content has the highest value followed by carbohydrate, crude fat, crude fibre, crude protein and lowest ash content. The result of the mineral content of tigernut revealed highest value of potassium (K), followed by phosphorus (P), magnesium (Mg), calcium (Ca) sodium (Na), iron (Fe), zinc (Zn) and lowest copper (Cu) content. The result also showed that tigernut contain high levels of vitamin C than A. This result implies that this edible tuber which has been underutilized in the world can go a long way in providing most of the nutrients needed for life and can be used as supplement in the treatment of diseases that are caused primarily by deficiencies of minerals and vitamins.

Key Words: Tigernut, Proximate, Mineral, vitamin A, Vitamin C

FB 036

NUTRIENT PROFILING OF LEAVES AND SEEDS OF *Momordica charantia* (Bitter Melon)

Bashiru Ibrahim, Fatima Usman Suleiman and Emmanuel Oluwadare Balogun*
Department of Biochemistry, Faculty of Life Sciences, Ahmadu Bello University, Zaria
Corresponding author: Emmanuel Oluwadare Balogun: oluwadareus@yahoo.com, +2348183543631,
Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.

Abstract

Momordica charantia is a vegetable that is used for nutritional and medicinal purposes. Despite its wide usage, information about the nutritional composition is scanty. In this study the nutritional value of *M. charantia* leaves and seeds was estimated using standard analytical procedures. Proximate composition of the leaves showed 14.39±0.37% minerals, 27.38±0.44% protein, 2.19±0.27% Lipids, 3.48±0.23% fiber, and 41.08±0.92% carbohydrate while the seeds contained 9.83±0.33%, 19.78±0.28%, 11.88±0.56%, 26.09±0.14%, 11.54±0.31% of the respective nutrients, indicating significant mean difference between the leaves and seeds ($P<0.05$). Benitez method was used for amino acid profiling; eighteen amino acids- Ile, Leu, Lys, Met, Cys, Phe, Tyr, Thr, Val, Ala, Arg, Asp, Glu, Gly, His, Pro Ser and Trp were detected. Furthermore, the leaves contain twelve fatty acids of which six were unsaturated while the seeds contain seven fatty acids with four being unsaturated. Total saturated fatty acid in the leaves and seeds were 65.50% and 52.90% respectively. Dipalmitic acid and stearic acid were respectively the most predominant saturated fatty acids in the leaves and seed samples. The predominant unsaturated fatty acid in the leaves and seeds was oleic acid (8.30%) and (13.0%) respectively. The bitter component (momordicin) in the seed was estimated to be 3.8% (*w/w*) of the powdered dry sample. This results showed that *M. charantia* leaves and seeds could be an important green leafy vegetable and a source of nutrients to supplement other major sources.

FB 037

EVALUATION OF EFFECTIVENESS OF SUPPLEMENTARY FEEDING PROGRAMME IN RAFIN-MAGAJI PRIMARY HEALTH CARE CENTRE (PHC) KUFENA WARD, ZARIA LGA

*****Muhammad Auwal Saliu, Halliru Zailani, Umar Suleiman , Halimatu Sadiyya Adamu, Dorcas Bolanle James and Olumuyiwa Adeyemi Owolabi
Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
***Correspondence** Telephone: +2348138536397; E mail: auwaltamsab33@gmail.com

Abstract

Acute malnutrition is a major health problem worldwide where Moderate Acute Malnutrition (MAM) affects one in ten children under 5 years in developing countries. Nigeria is amidst top countries affected by MAM. Supplementary Feeding Programme (SFP) as a component of Community Management of Acute Malnutrition (CMAM) is suppose to provide supplementary food to children with MAM but in Nigeria, nutrition counseling is employed to MAM management. The study was aimed at evaluating the effectiveness of SFP in Rafin-Magaji PHC. Socio-demographic, IYCF practices, sanitation and hygiene among caregivers were assessed. An interview on implementation of nutritional counseling among health workers was conducted using survey methodology. About 33% of the caregivers are within age of 25-29 years, whereas 71.4% are without any formal education. All caregivers reported ever breastfeeding their children and continued breastfeeding at 1 year which significantly dropped at 2 years (25%). Early initiation of breastfeeding within 1 hour was low (14.3%) but 57.1% initiated breastfeeding within hours. Age-appropriate breastfeeding was at 58.8% while 23.5% of children were bottle-fed which is high, 67% of children ate solid, semi-solid or soft foods the previous day and 29.4 % of children met the minimum dietary diversity. Health workers in the facility have knowledge on nutrition counseling but its approaches are not implemented appropriately. Caregivers attending Rafin-Magaji PHC have knowledge on good hygiene practices and sanitation but not necessarily practice them. We concluded that the SFP/nutrition counseling for the management of MAM in Rafin-Magaji PHC needs improvement to be fully effective.

FB 038

EVALUATION OF NUTRITIONAL, CHEMICAL, VITAMINS AND AMINO ACID CONTENT OF TIGER NUT (*Cyperus esculentus*)

Auta R., Ahmad I., Aliyu I.J and Mohammed I.L
Department of Biochemistry, Kaduna State University, Kaduna, Nigeria
Correspondence email: zautarichard2004@yahoo.com

Abstract:

Tiger-nut (*Cyperus esculentus*) has been cultivated since early times for its small edible tuberous rhizomes, which can be eaten raw, roasted, dried, baked or made into a refreshing beverage. However, it has been for many years one of the underutilized food crops in Nigeria. The purpose of this research is to investigate the nutritional and anti-nutritional values of tiger nut. Phytochemical screening, elemental analysis, proximate composition, vitamins and amino acid contents were analyzed using standard methods. Alkaloids, saponins, tannins, glycoside, flavonoids, phytates and oxalates were all found to be present. Results of chemical analysis showed that tiger nut is rich in carbohydrate (47.04%) and lipid content (24.50%), it is also a good source of fiber (26.76%) and has a substantial amount of protein (7.82%). Result of elemental analysis in mg/100g showed that it is a good source of Iron (4.75), Magnesium (94.98), Calcium (100.00), Sodium (37.97) and Zinc (3.70). Tiger nut is also a good source of vitamin with vitamin E present at a concentration of (120.5ug/g) and vitamin C at (30.90ug/g), while Vitamin B complexes were also present. The result of amino acid composition revealed that tiger nut is rich in essential amino acid such as lysine, threonine, leucine, phenylalanine and cysteine. The result of this study thus shows that tiger nut is rich in nutritive contents, and therefore provides important information which will enable its enhanced utilization, increased production and help promote food security.

Keywords: Tiger nut, Vitamins, Amino acids, Nutrients

FB 039

ASSESSMENT OF RESVERATROL IN SOME SELECTED FOODS

[1,2]Yusuf Ibrahim IBRAHIM, [1,2]Zulaiha Gidado MUKHTAR and [1]Fikret KARATAS*

[1]Fırat University, Faculty of Science, Department of Chemistry, Elazig, Turkey.
[2]Kano State Polytechnic, School of Technology, Department of Science Laboratory Technology, Kano,
*Corresponding author: Yusuf Ibrahim Ibrahim, Department of Science Laboratory Technology, School of Technology, Kano State Polytechnic Tel: +2348033240470; Email: zgmukhtar.80@gmail.com.

Abstract

Resveratrol has been ranked as the most biologically important class of stilbenoid found in plants. Resveratrol has been proven to have antioxidant, anticancer, anti - inflammatory, vaso-relaxer, anti-diabetic, anti-aging and general antimicrobial activities. In this study, the amounts of cis and trans-resveratrol in different food sample were determined by using High performance liquid chromatography. The amount of cis-resveratrol in fresh food sample was found to be between 16.45 ± 1.31 to 50.76 ± 2.02 µg/g. In the same way, the amount of trans- resveratrol in fresh food samples was found between 18.96 ± 6.73 to 79.96 ± 12.14 µg/g. There is a difference between cis- and trans-resveratrol amounts in different food samples. The differences in samples are thought to be caused by the growth medium, self-time, climate and environmental conditions.

FB 040

THE IMPACT OF SYNBIOTICS AS DIETARY INTERVENTION ON INTESTINAL DYSFUNCTION AMONG PRETERM NEONATES

Ahmad M.A*, Abdulkadir, B and Danjuma, M.S.

Department of Microbiology, Umaru Musa Yar'adua University
Katsina, Katsina State, Nigeria.
Corresponding author; ahmad.abubakar@umyu.edu.ng (+2347031964683)

Abstract

Synbiotics refers to the combination of probiotics and prebiotics, probiotics are living organisms which when consumed with the diet in an adequate amounts, can bring health benefits to the host while prebiotics refers to the non-digestible dietary ingredients, usually polysaccharides and oligosaccharides that selectively promote the proliferation of beneficial bacteria in the host. On the other hand, intestinal dysfunction refers to all discomfort associated with the intestine, it includes necrotizing enterocolitis (NEC),sepsis ,intestinal dysbiosis etc., which are found very common in preterm neonates, Although, different studies have established the involvement of Synbiotics as intervention strategies to stop or reduces the severity of most intestinal dysfunction when use as drugs or food supplement in neonates, this review aimed to explain the Impact and importance of Synbiotics in reduction and prevention of intestinal dysfunction (i.e. NEC), it will also show the colonization pattern of some Synbiotics in the Neonatal Gut and lastly to demonstrated some of the Dietary strategies for Improving gut health which will go a long way in preventing intestinal dysfunction among preterm and term neonates. We therefore, recommend the utilization of Synbiotics in our dietary intake and as part of neonatal nutrition as it helps to re-shape and balance the gut microbiota.

Keywords: Dietary, Dysfunction, Necrotizing, Prebiotics, Probiotic, Synbiotics

FB 041

IMPACT OF NEONATAL NUTRITION ON NECROTIZING ENTEROCOLITIS IN PRETERM INFANTS

***Abdulkadir B. and Aisha A. S.**

Department of Microbiology Umaru Musa Yaradua University Katsina
***Corresponding Author**: bashir.abdulkadir@umyu.edu.ng (+2348065137374)

Abstract

Necrotizing enterocolitis is a catastrophic inflammatory disease of the intestines affecting preterm infants and it is the leading cause of morbidity and mortality in preterm infants. However its pathogenesis is poorly known but there are several approaches including adequate nutrition to reduce the occurrence of necrotizing enterocolitis. These Nutritional approaches include use of Human breast milk, probiotics, infant formula and prebiotics so as to boost the normal flora of the gut thus reducing the morbidity and mortality of preterm infants. This review is aimed at describing the impact of neonatal nutrition on Necrotizing enterocolitis in preterm infants. The Human milk is found to be the best source of nutrition for infants because of its nutritional components such as carbohydrates, proteins and lipids and non-nutritional components such as secretory IgA, specific lymphocytes and macrophages which enhances the production of *Bifido bacterium* and *Lactobacillus species* that are beneficial to the gut therefore preventing the occurrence of pathogenic bacteria in the gastrointestinal tract.

Keywords: Human Milk, Infection, Nutrition, Preterm infants, Prebiotics and Probiotics

FB 042

COMPARATIVE ANALYSIS OF ORGANOLEPTIC AND NUTRITIVE PROPERTIES OF FRESH AND POWDERED MILK YOGHURT

*** S.G. Ibrahim[1] and C.A. Otitolaiye[2]**

[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria
[2] Department of Biochemistry, Sokoto State University, Sokoto, Nigeria
*Corresponding author: ishafaatu@rocketmail.com, +234-8030571448

Abstract

Yoghurt is a dairy product produced by bacteria fermentation of milk sugar into lactic acid. It is often sold with a fruit vanilla or chocolate flavour but can be unflavoured. This study compared the consumers' acceptability and nutritive values of fresh milk yoghurt and powdered milk yoghurt. The pH value of both fresh and powdered milk yoghurts (4.28 and 4.89 respectively) indicates that the pH range for successful yoghurt production was met. Sensory evaluation was conducted on the processed yoghurts to determine the level of acceptability of the product. The sensory quality showed that mouth taste and general acceptability of fresh milk yoghurt were significantly (P<0.05) higher than that of powdered milk yoghurt while there was no significant difference P>0.05 in the colour and aroma of the yoghurt samples. There was a significant (P<0.05) decrease in the titrable acidity of fresh milk yoghurt to that of powdered milk yoghurt. The total solid, temperature and pH of both samples showed no significant difference (P>0.05). The minerals and vitamins content of powdered milk yoghurt were significantly higher compared to that of fresh milk yoghurt probably due to the fortification of powdered milk.

Keywords: Fresh, Nutrient, Organoleptic, Powder, Yoghurt

FB 043

EVALUATION OF FREE FATTY ACID, MINERALS AND PROXIMATE COMPOSITION IN MILK OF RUMINANTS.

Abdullahi Muhammad Labbo[1*], Ibrahim Bashiru[1], Mahmood Hassan Dalhat[2], Haris Jaafar Bello[3] and Zulkallaini Shehu[1]

[1]Department of Biochemistry, Sokoto State University, Nigeria. [2]Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Nigeria. [3]Department of Biomathematics National Mathematical Center Abuja.
*Corresponding author: E-mail: abdullahi.labbo@ssu.edu.ng Phone number: +2348069715925

Abstract

Ruminant animals are good sources of milk. Free fatty acid, protein, %ash and minerals content of goat, sheep and cow milk were examined. The comparative study of free fatty acid of goat, sheep and cow milk was examined using Gas chromatography-mass spectrometry (GCMS). Protein and %ash were analyzed using standard analytical methods while the mineral levels were estimated using atomic absorption spectrophotometry (AAS). Present study showed a significant difference ($P < 0.05$) in free fatty acid from goat, sheep and cow milk with highest percentage of unsaturated fatty acid seen in sheep milk (55%) compared to goat milk (47%) and cow milk (36%). No significant difference at ($P > 0.05$) was observed in the minerals i.e. Manganese, Iron and Zinc. However, a significant difference ($P < 0.05$) in Potassium was observed with highest value (0.096 ug/mL) recorded in Sheep milk. Proximate analysis showed a significant difference ($P < 0.05$) in protein and %ash, with highest value observed in sheep milk: crude protein (25.5±0.10 g/100g) and % ash (1.35±o.12 g/100g). Present study has shown that sheep milk has more nutritional benefit compared to goat and cow milk.

Keyword: Free fatty acid, GCMS, Milk and Ruminants

FB 044

COMPARATIVE PROXIMATE ANALYSIS OF DIFFERENT VARIETY OF PROCESSED GREEN TEA (*Camellia sinensis*)

[*1]Umar Aminu Imam, [1]Muhammad Nura Bello, [1]Salisu Shehu. and [2]Umar Asiya Imam.

[1]Department of Biochemistry, Sokoto State University, Sokoto
[2]Dept. of Medical Microbiology, School of Medical Laborotory Science, Usmanu Danfodiyo University, Sokoto
*Corresponding author: E - mail mamunetdaji@gmail.com Phone: +2348065310438

Abstract

Green tea has varieties of nutritional status. Many people consumed green tea in different parts of Sokoto metropolis without considering the nutritional effect. Proximate compositions of seven different varieties (*Almadina, Samira, Guemila, Adoua, D vert de chine, Tenere, and Bio organic*) were examined. Samples were analysed using the standard method of Association of official analytical chemist (AOAC). Difference between the mean obtained from the ANOVA were ascertained using Ducans multiple range. Samira was significantly higher (P<0.05) in ash and Fibre content (13.03% and 79.13±0.66) compared to other samples. No significant difference among the seven varieties in crude protein was observed (P<0.05). Lipid composition was significantly(P<0.05) low in *D vert* (98±0.04) compared to other samples. This is an indication of little or no cholesterol, High content of fibre in samira indicates lowering of blood sugar and low lipoprotein. High ash content in samira green means retarded growth of micro organismi with high content of mineral. Present study indicates that samples of green tea were nutritional benefits.

Keywords: Green tea, AOAC, Nutrition and Sokoto metropolis

FB 045

COMPARATIVE STUDY OF MINERALS CONTENT OF DIFFERENT VARIETIES OF DATE FRUIT, (*Phoenix dactylifera*) SOLD IN KANO METROPOLIS, KANO, NIGERIA.

Babandi, A. Murtala, Y., Abdulbaki, I., Shehu, D. and Abubakar, N.

1Department of Biochemistry, Federal University Dutse, PMB 7156- Jigawa, Nigeria
2Department of Biochemistry, Bayero University kano, PMB 3011-kano, Nigeria
Correspondence: nmatter54@yahoo.com/08069693917

Abstract

The Date fruit (*Phoenix dactylifera*) were collected from the Wambai market, Kano State, Nigeria. The sample was shade dried and crushed into powder, and the minerals content of three varieties of Date fruits (Dan Agadas, Dan Maradi and Dan Jigawa) were determined. A significant high level of Calcium was observed in Dan Jigawa Date fruits with mean value 4.71mg /kgcompared to that other verities Dan Agadas 2.21mg/kg and Dan Maradi 1.63mg /kg and also a significant high level of phosphorus was observed in Dan Jigawa Date fruits with mean value 10.02mg /kg compared to that other verities Dan Maradi 4.92mg /kg and Dan Agadas 9.14mg /kg at (P<0.05). On the other hand, the level of copper 1.17mg /kg was statistically significant(P<0.05) in Dan Agadas Date fruit, compared to other verities Dan Jigawa 0.68mg /kg and also a significant high level of iron 0.71mg /kg was observedin Dan Agadas Date fruit, compared to other verities Dan Jigawa 0.47mg /kg and Dan Maradi 0.31mg/kg. Zinc was observed to be very high in Dan Maradi 2.26mg/kg compared to other verities; Dan Agadas2.02mg/kg and Dan Jigawa1.45mg/kg. Among the three varieties of date fruit, it appears that Dan Jigawa has the highest minerals composition. But generally, all the varieties have high level of important mineral elements measured and may serve as a source of these elements.

FB 046

EFFECT OF OIL MARINATION ON NUTRIENT CONTENT OF FRESH TOMATO

*** S.G. Ibrahim[1] and Y.B. Rukayya[2]**

[1]Department of Biochemistry, Usmanu Danfodiyo University, Sokoto, Nigeria
[2] Department of Integrated Science, Shehu Shagari College of Education, Sokoto, Nigeria
*Corresponding author: shafaatu.ibrahim@udusok.edu.ng, +234-8030571448

Abstract

Tomato is one of the most widely consumed fresh vegetables in the world. This study was conducted to investigate the effect of oil marination on nutrient contents of fresh tomato. The tomatoes were grouped into three. The group 1 served as the fresh (control), group 2 was the unblanched and group 3 was the blanched tomatoes. Both the groups 2 and 3 were oil immersed and stored for 6 weeks. The vitamins (A, C and E) contents of the fresh marinated tomatoes (75.14mg/100g, 15.14mg/100g and 154.34mg/100g) respectively were significantly (P<0.05) higher than the concentration found in the unblanched and blanched marinated tomatoes. The lycopene content of the fresh oil marinated tomatoes is 21.53mg/100g which was significantly (P<0.05) higher than the unblanched tomatoes (16.64 to 17.81 mg/100g) and the blanched (19.05 to 20.63 mg/100g). The sodium ion concentration in fresh sample is 122.01mg/kg this value was significantly (P<0.05) higher than that of blanched and unblanched marinated tomatoes. There was no significant difference in the Calcium ion and Potassium ion concentration of the fresh tomatoes with that of blanched and unblanched samples. The Magnesium ion content in the fresh sample was 1.4 mg/kg which was significantly (P<0.05) greater than that of the blanched marinated tomatoes (0.95 to 1.26mg/kg) and the unblanched (0.89 to 1.14mg/kg). The oil marinated tomatoes did not rot for the entire six weeks under observation. This might be a better way for a long term preservation of fresh tomatoes.

Keywords: Blanch**,** Fresh**,** Nutrient**,** Oil marination**,** Tomato

FB 047

ASSESSMENT ON TOXIC ELEMENTS, ANTINUTRITIONAL FACTORS AND STARCH PROPERTIES IN (*Manihot esculenta*) LOCALLY PROCESSED BY ROADSIDE DRYING ALONG NSUKKA-MAKURDI HIGHWAY

Ozougwu E. Vincent*, Asadu H. Onyinye, Eze O.S. Oscar, Collins E. Oguh

Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
*Corresponding author: Vincent.ozougwu@unn.edu.ng; +2347036610711

Abstract

Cassava flour, generally consumed in Nigeria as food, is a major source of carbohydrate. Its common drying technique in Nigeria by roadside sun drying for cost optimization and for moisture content reduction process. The study aim to assess the level of starch properties, toxic elements (TEs), and antinutrient factors in *Manihot esculenta* process by roadside drying. Samples of cassava (*Manihot esculenta*) from same sources was collected from Nsukka-Benue Express way Road side while the other by indoor spreading served as control. Atomic Absorption Spectrophotometer was used to determine the levels of TEs in the tapioca samples. The result shows that cassava from roadside drying showed significant decrease in the levels of physicochemical properties (P<0.05) as compared to indoors dried samples (control). It also revealed that concentrations of TEs in cassava in roadside dried sample analysed were all above those obtained from the control site (indoors dried) with significant difference (p<0.05) between the two sample. The occurrence of both sample are Zn< Pb<As<Cd<Cr. All the TEs analyse are within the recommended values of FAO/WHO and CMH. The result also indicates a significant (p < 0.05) increased of Antinutrient factors in the roadside dried tapioca samples. Monitoring of Toxic metals in plant cassava is essential in order to prevent excessive build-up of these metals in the human food chain and hence it poses an important public health risk.

Keywords: *Manihot esculenta*, Toxic element, Antinutrient, Starch properties, Processing

FB 048

EVALUATION OF EFFECTIVENESS OF SUPPLEMENTARY FEEDING PROGRAMME IN RAFIN-MAGAJI PRIMARY HEALTH CARE CENTRE (PHC) KUFENA WARD, ZARIA LGA

***Muhammad Auwal Saliu, Halliru Zailani, Umar Suleiman , Halimatu Sadiyya Adamu, Dorcas Bolanle James and Olumuyiwa Adeyemi Owolabi**

Department of Biochemistry, Ahmadu Bello University, Zaria, Nigeria.
***Correspondence** Telephone: +2348138536397; E mail: auwaltamsab33@gmail.com

Abstract

Acute malnutrition is a major health problem worldwide where Moderate Acute Malnutrition (MAM) affects one in ten children under 5 years in developing countries. Nigeria is amidst top countries affected by MAM. Supplementary Feeding Programme (SFP) as a component of Community Management of Acute Malnutrition (CMAM) is suppose to provide supplementary food to children with MAM but in Nigeria, nutrition counseling is employed to MAM management. The study was aimed at evaluating the effectiveness of SFP in Rafin-Magaji PHC. Socio-demographic, IYCF practices, sanitation and hygiene among caregivers were assessed. An interview on implementation of nutritional counseling among health workers was conducted using survey methodology. About 33% of the caregivers are within age of 25-29 years, whereas 71.4% are without any formal education. All caregivers reported ever breastfeeding their children and continued breastfeeding at 1 year which significantly dropped at 2 years (25%). Early initiation of breastfeeding within 1 hour was low (14.3%) but 57.1% initiated breastfeeding within hours. Age-appropriate breastfeeding was at 58.8% while 23.5% of children were bottle-fed which is high, 67% of children ate solid, semi-solid or soft foods the previous day and 29.4 % of children met the minimum dietary diversity. Health workers in the facility have knowledge on nutrition counseling but its approaches are not implemented appropriately. Caregivers attending Rafin-Magaji PHC have knowledge on good hygiene practices and sanitation but not necessarily practice them. We concluded that the SFP/nutrition counseling for the management of MAM in Rafin-Magaji PHC needs improvement to be fully effective.

FB 049

NUTRIENT COMPOSITION OF *Costus lucanusianus* (SPIRAL GINGER) STEM

***Dr. D.E. Peters[1]; and Brown, N[1].**

[1] Department of Biochemistry, University of Port Harcourt, P.M.B 5323, Choba, Rivers State, Nigeria.
*Corresponding Author's Email:petersdikioye@ymail.com(08035429355)

Abstract

Nutritional deficiency is prevalent in developing countries like Nigeria. Hence, the purpose of this study was to evaluate the nutrient composition of *Costus lucanusianus* stem. Proximate composition was determined by the official method of AOAC, mineral using AAS, amino acid using GC-MS, and vitamins using UV spectrophotometer. Results of proximate composition showed moisture (74.87±0.70%), carbohydrate (19.44±0.98%), ash (0.89±0.19%), fibre (3.24±1.29%), crude lipids (1.10±0.26%) and crude protein (0.47±0.05%). Minerals were Ca (28.14±2.11 mg/kg), Mg (14.13±1.01 mg/kg), Na (5.18±0.64 mg/kg), P (20.50±1.70 mg/kg), Cl (8.25±0.43 mg/kg), K (18.34±1.12 mg/kg), Fe (35.46± 1.34 mg/kg), Zn (21.91±0.63mg/kg), Cr (10.78±0.56mg/kg), I (8.85±1.83mg/kg), Cu (8.09±1.58mg/kg) and Se (5.56±0.88mg/kg). Amino acids were valine (13.30±0.14 mg/kg), leucine (6.60±0.41 mg/kg), isoleucine (5.24±0.09 mg/kg), methionine (16.21±0.57), threonine (18.58±0.24), phenylalanine (13.47±0.41) and lysine (20.38±0.15 mg/kg).Vitamin found were vitamins A (1.04±0.00 mg/kg), D_3 (0.78±0.06 mg/kg), E (1.2±0.07 mg/kg), K (0.92±0.05 mg/kg), B_1 (1.36±0.10 mg/kg),B_2 (1.85±0.65 mg/kg), B_3 (0.87±0.10 mg/kg), B_5 (0.99±0.48 mg/kg), B_6 (1.75±0.01 mg/kg), B7 (0.91±0.02 mg/kg), B_9 (1.71±0.01 mg/kg), B_{12} (0.11±0.01 mg/kg), and C (1.57±0.35 mg/kg). *Costus lucanusianus* could serve as nutrient supplement and nutritional therapy for constipating, dehydrating and malnourished patients.

Key words: *Costus lucanusianus*, Proximate, nutrient, Mineral, Amino acid, Vitamin

FB 050

NUTRIENTS IN THE ROASTED SEEDS AND ROASTED SEEDS OIL OF NEGRO COFFEE PLANT *(Cassia occidentalis)*

Arekemase SO,[b] Abdulwaliyu I,[a] Batari ML[a], Idowu OO,[a] Mahmud MH,[a] Owolabi OO,[c] Aribido O,[a]

[a]Department of Basic Research, National Research Institute for Chemical Technology, Basawa, Zaria,
[b]Petrochemical and Allied Department, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.
[c]Bioresources Development Centre, National Biotechnology Development Agency, Lugbe, Abuja, Nigeria
Corresponding author: arekemaseshefiatolayemi@yahoo.com (07068048463)

Abstract

Cassia occidentalis, is a short lived small shrub, and widely distributed in nature. Seeds from this plant (*Cassia occidentalis)* can be roasted, and are sometimes used as substitute for coffee. Despite being used in roasted form "as coffee", nutrient in the roasted seeds of this plant, has not been largely explored. This allured our attention to investigate the nutrient in the roasted seeds and roasted seeds oil of this plant. To evaluate some nutrients in the roasted seeds and roasted seeds oil of *Cassia occidentalis.* The analyses (mineral, vitamins, amino acid, and fatty acid profiling) were carried out using standard protocol. Result obtained from the amino acid profiling showed that the roasted seeds of this plant contained essential amino acids (except tryptophan, which was not detected). The roasted seeds also revealed appreciable amount of minerals, and vitamins. The fatty acid profiling of the roasted seeds oil revealed reasonable percentages of 9-octadecenoic acid (oleic acid) (33.19%) and 9, 12-Octadecadienoic acid (linoleic acid) (21.22%), while tetradecanoic acid (myristic acid) (2.68%) ranked the lowest. The high nutrients content in the roasted seeds and the roasted seeds oil of this plant confirm it good nutritional value.

FB 051

EFFECT OF PROCESSING ON SOME NUTRIENTS AND ANTI-NUTRIENTS COMPOSITION OF *Sesbania sesban* SEED

Abdulwaliyu I,[a] Arekemase SO,[b] and Bala S[b]

[a]Department of Basic Research, National Research Institute for Chemical Technology, Basawa, Zaria,
[b]Department of Industrial and Environmental Technology, National Research Institute for Chemical Technology, Basawa, Zaria, Kaduna State, Nigeria.

Abstract

Sesbania sesban is widely distributed throughout Asia and Africa including Nigeria. Seeds from this plant (*Sesbania sesban*) contain nutrients needed by livestock. However, anti-nutritional factors present in the seeds are a big challenge for the exploitation of this plant seed, as alternative feeds for livestock. To assess effect of processing on some nutrients and anti-nutrients composition in the seed of *Sesbania sesban***.** The seeds of *Sesbania sesban* were soaked (24 hours) and boiled (2 hours) using water, calcium hydroxide and lye respectively. The processed samples obtained and the unprocessed sample was subjected to proximate, anti-nutrients, vitamins, minerals, and invitro protein digestibility analysis. All analyses were carried out using standard protocols. Proximate analysis revealed statistically significant ($p<0.05$) decrease in the moisture composition of processed samples as compared to the unprocessed sample. The percentage carbohydrate compositions were significantly ($p<0.05$) lower in all the processed samples as compared to as compared to the unprocessed sample. Vitamins and mineral analysis revealed significantly ($p<0.05$) higher composition of β-carotene, vitamin B_1**,** and zinc in the unprocessed sample compared to the composition revealed in the processed samples. Findings from the invitro protein digestibility revealed statistically significant ($p<0.05$) reduction in the unprocessed sample as compared to the processed samples. Nutrients in the seeds of *Sesbania sesban* qualifies the plant seeds as a potential alternative feeds for livestock. Moreso, the anti-nutritional factors present, could be reduced by processes employed in this study.

FB 052

PHYTOCHEMICAL SCREENING AND PROXIMATE ANALYSIS OF ROOT OF *Curcuma longa* LINN

Abdulrashid Mohammad*[1], Alhassan Muhammad Wudil[2], Adamu Jibrin Alhassan[2], Abdullahi Abdulkadir Imam[2], Salisu Maiwada Abubakar[2], Muhammad Ibrahim Usman [3] and Hassan Daniel Mhya[1]

1 Department of Biochemistry, College of Medical Sciences, Abubakar Tafawa Balewa University Bauchi. 2 Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano, Nigeria.
3 Department of Biochemistry, Faculty of Basic Medical Sciences, Yusuf Maitama Sule University, Kano Corresponding Author: Email: abdulrash2010@yahoo.com Tel: 08035069699

Abstract

Study on the evaluation of nutritional quality as well as phytochemical screening of poorly utilized plant products is of immense importance. This research work was aimed at screening the phytochemicals in different solvent (Aqueous, Methanol and n-hexane) extracts as well as proximate analysis of root of *Curcuma longa* Linn using standard methods. The results revealed the presence of Alkaloids, Flavonoids, Cardiac glycosides, Saponins and Tannins in all the three extracts, with methanol extract possessing the highest percentage of the phytochemicals followed by the aqueous extract and finally n-hexane extract. In addition to the above, the presence of balsams, terpenes and steroids, phenol and resins was detected in methanol extract while aqueous extract have resins, terpenes and steroids. Proximate analysis of the root of *Curcuma longa* Linn showed high carbohydrates content with low moisture, ash, crude protein, crude fiber and fat content.

Keywords: Phytochemicals screening, proximate analysis, *Curcuma longa*, and Root.

FB 053

DETERMINATION OF PROXIMATE, MINERALS, VITAMINS, AMINO ACIDS AND PHYTOCHEMICALS OF *Sorghum bicolor* and *Glycine max* SOLD IN RIMI MARKET KANO STATE

Alhassan Ahmad Siddan[1]*, Salisu Maiwada Abubakar[2], Aisha Muhammad Gadanya[2], Fatima Umar Maigari[1]

[1]Department of Biochemistry, Faculty of Science, Gombe State University Gombe
[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University Kano
Corresponding Author: alhassanahmadsiddan@gmail.com/+2348032050616/+2349065898989

Abstract:

This study investigated the proximate, minerals, vitamins, amino acids composition and phytochemicals of *Sorghum bicolor* and *Glycine max*. The parameters evaluated were moisture contents; ash contents; crude protein; crude lipids; crude fibre; carbohydrates; mineral ions; vitamins; amino acids and phytochemicals. The results obtained showed that, moisture content of *S. bicolor* and *G. max* are 6.44±0.16% and 5.31±0.13%, ash contents are 9.44±0.19% and 5.75±0.17%, crude protein are 33.24±0.74% and 41.25±0.27%, crude lipids are 3.07±0.08% and 9.66±0.19%, crude fibre are 3.35±0.17% and 5.14±0.14% and carbohydrate contents of *S. bicolor* and *G. max* are 44.45±1.02% and 32.88±0.28%. Sodium (Na^+) is high in *S. bicolor* 7.02±0.64mg/100g and 4.60±0.22 mg/100g in *G. max*, Magnesium (Mg^{2+}) in *S. bicolor* 2.40±0.07 and 2.03±0.15 in *G. max*. Potassium (K^+) content was 3.72±0.20mg/100g in *S. bicolor* and 3.10±0.13mg/100g in *G. max*. Iron (Fe^{2+}), Calcium (Ca^{2+}) was also detected in the two samples. While Copper (Cu^{2+}) was detected only in *G. max*. Vitamins A, C and E were detected in the two samples but higher in *S. bicolor*. Eighteen amino acids were detected in both the *S. bicolor* and *G. max*. Phytochemicals like saponins, glycosides, alkaloids, oxalates and phytates were present at moderately higher concentrations in *S. bicolor* while tannins, steroids and flavonoids were present in the samples. This work revealed that *S. bicolor* and *G. max* can be considered as a source of carbohydrates, mineral nutrients and quality amino acids and can play a major role in human nutrition and health.

FB 054

ISOLATION, IDENTIFICATION OF FUNGI AND AFLATOXIN B1 CONTENT OF MAIZE, MILLET AND SORGHUM COLLECTED FROM LAVUN AND MAGAMA LOCAL GOVERNMENT AREAS OF NIGER STATE, NIGERIA

Salahu Mohammed Sani

Department Of Biochemistry Faculty of Basic Medical Sciences Bayero University Kano, Kano State
EMAIL ADDRESS – salahumohammedsani@gmail.com, PHONE NUMBER – 07065853033

Abstract

In this study Samples of maize, millet and sorghum were collected from Magama and Lavun local government areas (LGAs) of Niger state. In the laboratory the samples were pulverized and divided into two portions. One portion was reserved for fungi isolation and the other portion for mycotoxins analysis. The main fungi genera isolated from these samples were from the Aspergillus, Penicillium, Fusarium Mucor, Rhizopus and Botryodiploidaia respectively in decreasing order of their infestations. AflatoxinB1, ochratoxin A and zearalelone were extracted using a solvent/solvent separation and column chromatography for purification. Thin layer chromatographic method was used to estimate the aflatoxinB1 by fluorescence intensity of standard spot using UV chromate view cabinet at 360nm. For Magama Local Government Area, Aflatoxin B1 was detected in the samples collected from Nasko and Salka markets at the concentration of 13.5µg/kg, 33.78µg/kg and 13.5µg/kg, for maize, millet and sorghum respectively. Whereas , for Lavun Local Government Area Aflatoxin B1 was detected in the samples collected from Kutigi town market at the concentration of 67.5µg/kg, 6.8µg/kg and 13.5µg/kg, for maize, millet and sorghum respectively. Both zearalelone and ochratoxin A were also extracted but could not be quantitated because their standards were being expected. From the results of this study it can be deduced that the concentration of aflatoxin B1 is low in millet from the Lavun LGA but high in millet from Magama LGA. Also for maize and sorghum from the both Local Government Areas are high, which at this rate will affect the health of human beings, livestock and international marketability of these cereal products.

Keywords: mycotoxins, fungi, cereals

FB 055

NUTRITIONAL AND ANTINUTRITIONAL COMPOSITION OF RAW AND FRESH RAFFIA PALM (*Raphia farinifera*) FRUITS

***Ndatsu Yakubu, Dunason Solomon David, Hamzat Usman Boko and Hassana Abubakar**

Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai, Nigeria
Corresponding author; yndatsu2011@gmail.com/08065940069

Abstract

Nutritional and anti-nutritional analysis was carried out on raffia palm (*raphia farinifera*) fruit which belong to the family of Arecaceae. The fresh fruit was cooked for one to two hours before carrying out the analysis. The result shows that the percentage of proximate, minerals and Antinutrients content of cooked palm fruits are generally less as compare with those of fresh palm fruits. The moisture had the highest value with 90.14% in fresh and 65.90% in cooked fruits while protein and fibre values were 2.50% (fresh), 1.50% (cooked) and 0.00% for both fresh and cooked fruits. Potassium had high value (375 mg/100g) for fresh and 314.4 mg/100g for the cooked fruits, respectively, while iron had the lowest value (4.57mg/100g) for fresh and 2.20 mg/100mg for cooked fruits. In anti-nutrient analysis, tannin had the high value (597 mg/100g) in fresh and 104.26mg/100g in cooked fruits while phytate had the value as 17.8mg/100g in fresh and 13.3mg/100g in cooked fruits. The value of carbohydrate recorded in both fresh and cooked fruits showed that the fruit could be used by food industries for the production of energy fruit juice. The high level of anti-nutrient like tannin could be useful in the reduction of iron in the system that causes colon cancer.

Key Words; nutrient, proximate analysis, raffia palm fruit, mineral, anti-nutrients

FB 056

CHEMICAL COMPOSITION OF TIGER NUT AND MELON SEEDS CONSUMED IN SOKOTO METROPOLIS, NIGERIA

Sumayya Ahmad Ayuba, Zainab Hassan Bello, Kabiru Sirajo, Zulkallaini Shehu, Abdullahi Muhammad Labbo, and Bashiru Ibrahim

Department of Biochemistry Sokoto state University, Sokoto, Nigeria
*Corresponding author: E-mail: ayubasumayya@gmail.com +2348039354675

Abstract

The research aimed to investigate the proximate and physicochemical composition of melon and tiger nut seeds. The proximate composition and physicochemical properties were investigated using standard analytical procedures. The parameters evaluated were moisture, ash, fat, crude fibre, crude protein and carbohydrates. The results obtained showed that, the carbohydrate content was generally higher (59.07 ± 002% and 73.30 ± 0.02%) in the melon and tiger nut seeds respectively. The values for crude fibre was found to be lower (0.30 ± 0.20 and 0.80 ±0.20) in both seeds. In other hand, the saponification value in all the seed under study (192.60 ± 0.20 and 194.32+ 0.02) compare to other physicochemical parameters. The results indicated that, the seeds could be considered as a source of carbohydrate, which are expected to speed up metabolic processes, improve growth and development.

Keywords: Phytochemical, Saponification, Carbohydrate, Moisture

FB 057

THE EFFECT OF AIR-DRYING ON NUTRITIONAL STATUS OF *Amaranthus hybridus* BOUGHT IN KAURA NAMODA MARKET

Hassan A.B[1], Kankara A.I[2] and Uthman K.S[3]

Department of Science Laboratory Technology Federal Polytechnic, Kaura – Namoda, Zamfara State.

hassanadebayobamidele@gmail.com 08034269002

Abstract

Green leafy vegetable (Amaranthus hybridus) is a highly perishable food item and it requires special processing treatments to prevent post harvest losses, enzymatic action, growth of micro – organisms and decay., therefore, air – drying is one of the methods used. The ascorbic acid content, total phenol contents, phytate content and reducing property of air-dried Amaranthus hybridus were assessed. The results were compared with the results that had been previously obtained for fresh Amaranth us hybridus. The result revealed that air-drying caused a decrease in the content of Ascorbic acid which was 137.5mg/100g. The total phenol content also reduced 16.7mg/g while in fresh it was 18.5mg/g. The phytate content was as show as 2.25% while in fresh, it was 2.55%. The average absorbance (nm) of the reducing properties ranging from 0.5ml – 2.5ml decreased from 1.10 -1.09 (nm). In view of this, it could be concluded that air-drying, the desirable qualities in Amarauthus hybridus to some extent reduced the storage volume and extended their shelf life but some anti-oxidant potentials in Amaranthus hybridus were drastically reduced.

Keyword:- Effect, Air-Drying, Nutritional, Amaranthus, And Hybridus In Kaura Namoda

FB 058

ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN IN BIRNIN KEBBI ORPHANAGE HOME, KEBBI STATE, NIGERIA.

Yusuf Abdulrahman Bashir[1]* and Abubakar Junaidu[1]

Department of Biochemistry and Molecular Biology, Federal University Birnin Kebbi, Kebbi State.
Email: yusuf.abdulrahman@fubk.edu.ng or dula2007@yahoo.com 08160240925 or 08074098591

Abstract

Nutritional assessment is the process used to evaluate nutritional status, identify disorders of nutrition, and determine which individuals need nutrition instruction and or nutrition support. The current study was conducted in Birnin Kebbi Orphanage Home to assess dietary pattern and nutritional status of the forty children. A questionnaire was used to collect data on socio -economic status, hygiene practices; 3-day and 24-hour foods re-call. Body parts were measured and examined for signs of malnutrition. Blood samples were collected to evaluate some biochemical and haematological parameters. Data were analyzed using SPSS version 20 and ENA SMART software. The prevalence of stunting, wasting, and underweight was 60%, 25%, 37.5% respectively. A few of the children (7.5%) had a MUAC less than 11.5cm while 7.5% had between 11.5- 12.5cm (Acute malnutrition). Clinical symptoms of Protein Energy Malnutrition were observed in 62.5% of the children, while conjunctiva pallor was noticed in 30% and angular stomatitis in 2.5% of the children. Biochemical analysis revealed that 58.82% have low serum total protein, while 52.9% have low serum albumin and 29.41% were anaemic. All the children have low levels of total cholesterol, while (52.94%) have low levels of HDL and 17.64% have low levels of triglyceride. Dietary pattern reveals that 68.32% of foods consumed by the children were cereal based, 5.8 % was from animal sources (meat, fish and poultry), 7% were tubers, 9.93% were legumes and nuts, 4.96 % was fruits and vegetables rich in vitamin A, and 3.99% were other fruits and vegetables. This study has established sub optimal nutritional status among the children in the orphanage, which may be attributed to poor infant and young child feeding practices.

Keywords: Children, Nutritional assessment, Nutritional Status and feeding practices.

FB 059

NUTRITIONAL, FUNCTIONAL, AND SENSORY EVALUATION OF SUPPLEMENTARY FOOD FORMULATIONS

Yusuf Abdulrahman Bashir[1]* and Mukhtar Hassana Alkali[1]

Department of Biochemistry and Molecular Biology, Federal University, Birnin Kebbi. Kebbi State.
Email: yusuf.abdulrahman@fubk.edu.ng or dula2007@yahoo.com 08160240925 or 08074098591

Abstract

Supplementary feeding is a food aid intervention mostly implemented by non-governmental agencies to treat children with moderate acute malnutrition or to prevent a deterioration of nutrition among at-risk populations. The current study was conducted to assess proximate, amino acid composition, functional and sensorial attributes of some formulated food blends. The results showed that protein content ranged from (6.50-10.12%), moisture (2.50-4.50%), fat (20.50-27.90%), ash (1.50-3.00%) crude fibre (2.10-4.50%), and carbohydrate (35.89-50.90%). The physicochemical and functional analyses showed that bulk density ranged from (0.58-1.93), water absorption capacity (0.36-0.49), swelling index (0.13-0.50) reconstitution index (0.17-0.45) and pH (6.71-6.81). The sensory evaluations showed mean scores range: taste (3.50-5.00), aroma (4.00-5.00), colour (3.00-5.00), Mouth feel (3.00-5.00), and overall acceptance (4.25-5.00). The amino acid compositions showed that all the essential amino acids were present in the six formulations and appreciable number of them met the Food and Agricultural Organization reference values. This study indicated that the food products formulated from Groundnut, Tiger nut and Milk can meet the nutritional needs of infants and young children. Therefore, the formulated foods can be used in supplementary feeding program to combat the problem of malnutrition among infants and young children in Nigeria and other developing countries.

Keywords: Supplementary foods, acute malnutrition, nutritional needs and Children.

FB 060

INCLUSION OF CASHEW NUT MEAL AS PHYTOBIOTIC IN FEEDS TO IMPROVE GROWTH PERFORMANCE, FEED EFFICIENCY, BLOOD METABOLIC AND ENZYMATIC PROFILE OF BROILER CHICKENS.

Yusuf, Hulelatu Umar, M. Aliyu-Paiko

Department of Biochemistry, Ibrahim Badamasi Babangida University, Lapai.

Abstract

Phytobiotics are natural products from parts of plants that exhibit diverse properties. Their inclusion in diets increases general performance of farm animals. This study evaluated the effects of including cashew nut meal (CNM) in feed on growth performance and other parameters in broiler chickens, after 6 weeks of feeding trial. Sixty birds were grouped into three treatments, where T_1 was fed commercial diet only. T_2 and T_3 were maintained on diets containing 2% and 4% CNM, respectively. Feed and water were supplied *ad-libitum* during the experimental period. Growth performance, feed consumption and water intake were monitored weekly, when also cages were cleaned. Results revealed that T_2 differed significantly ($P< 0.05$) in growth compared to T_1 and T_3. However, no significant ($p>0.05$) difference was noted in the concentrations of other monitored blood biochemical parameters. Similarly, the values for hematological parameters such as haematocrit (PCV), Hb, RBC, mean corpuscular haemoglobin concentration (MCHC), mean corpuscular haemoglobin (MCH), mean cell volume (MCV), PLT, RDWC, GRA, MID were also not significantly affected ($P>0.05$) by the dietary treatments. On the other hand, WBC count was higher in treatment groups compared to the control, as serum superoxide dismutase (SOD) and catalase (CAT) activities differed significantly ($P< 0.05$) in the treatment group except for T_2, which did not differ ($P>0.05$) from the T_1 treatment. Based on results in this study, CNM could be used to improve immune system of broiler chickens without adverse effect on growth performance and feed efficiency.

Keywords: Phytobiotics, Cashew nut meal, antioxidant enzymes, haematological parameters

FB 061

DETERMINATION OF PHYTOCHEMICALS COMPONENTS, NUTRIENTS AND MINERAL ELEMENTS ANALYSIS OF SICKLE POD, ROSELLE, JUTE AND LETTUCE

Zainab Hassan Bello[1*], Dalhat Mahmood Hassan[2], Sumayya Ahmad Ayuba[1] Abdullahi Muhammad labbo[1], Zulkallaini S[1] and Bashiru Ibrahim[1]

[1]Department of Biochemistry Sokoto state University, Sokoto, Nigeria

[2]Department of Biochemistry Usmanu Danfodiyo University, Sokoto, Nigeria

Correspondence author email: zainabhbello@gmail.com +2348060269494

Abstract

Phytochemicals are biologically active occurring chemicals compound found in plants which provide health benefits for human further than those attributed to macronutrients and micronutrients. Phytochemicals and minerals element of four leafy green vegetables collected from Nagarta college farm area, Sokoto state, Nigeria were assessed. Analysis were done using standard analytical methods. The phytochemical analysis shows the presence of flavaniods, tannins, saponins, cardiac glycosides, steroids, saponin glycosides, alkaloids, glycosides and balsams. Minerals analysis revealed that sodium was 16.80 ± 0.24, potassium 51.00 ± 0.82, Calcium 0.75 ± 0.02 and magnesium 0.65 ± 0.00. whereas proximate analysis showed that, carbohydrate, crude lipid, crude protein, ash, fiber and nitrogen in protein had values 16.74 ± 0.35, 0.55 ± 0.10, 9.38 ± 0.12, 8.50 ± 0.18, 0.59 ± 0.16 and 1.61 ± 0.12 respectively. The study indicated that, the plants have appreciable content of phytochemicals minerals and nutrients.

Keywords: Phytochemicals, Minerals, vegetables, Nutrient.

FB 062
PROXIMATE COMPOSITION AND GLYCEMIC INDICES OF DIFFERENT NIGERIAN TRADITIONAL CEREAL PUDDINGS (TUWO) WITH ADANSONIA DIGITATA SOUP (MIYAR KUKA)

***Zinat Suleiman Mohammed[1] Alhassan, Adamu Jibril[2], Muhammad Bello Hamman[1] Ahmad Mallam Ado[1], Maryam Abdulkadir Dangambo[2], and Sani Garba[1]**

[1]Department of Biochemistry, Faculty of Science, Bauchi State University Gadau, Gadau Campus Itas/Gadau L.G.A. P.M.B. 065 Azare, Bauchi State.

[2]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano

Corresponding Author: szinatmohammed@gmail.com Tel: +2348036953720.

Abstract

This study was carried out to evaluate the proximate composition and glycemic indices of cereal puddings prepared from millet (tuwon gero), sorghum (tuwon dawa), and rice (tuwon shinkafa), maize (tuwon masara) served with adansonia digitata leaf soup. Proximate compositions of the food products were evaluated and the carbohydrate content was determined. 10 apparently healthy volunteers were each fed with tuwon gero (80g), tuwon dawa (85g), tuwon shinkafa (85g), tuwon masara (75g) and 50g anhydrous glucose as the standard reference food. Volunteers were fed with one sample once in a week for five weeks after an overnight fast for 10-12hours starting with glucose in the first week. Blood glucose level was determined at 30mins intervals for 2 hours after fasting blood glucose test (0mins) and the areas under curve were calculated by trapezium method. There was significant difference in the ash, moisture, crude fibre, protein and carbohydrate content of sorghum and millet pudding except for the fat content ($P<0.05$). No significant difference in the ash, moisture, fat, and carbohydrate content of rice and maize pudding ($P<0.05$) with maize and sorghum having the highest carbohydrate and protein content respectively. The glycemic indices of all the food samples were high (>70) with millet, sorghum, rice and maize having glycemic index of 74.23, 76.55, 75.81 and 75.78 respectively with no significant difference ($P<0.05$). The result showed that cereal pudding from millet sorghum, rice and maize are high glycemic index diets and may not be suitable for people suffering from certain chronic diseases especially diabetes.

Keywords: Glycemic Indices, Millet, Sorghum, Rice and Maize.

FB 063
PHYSICOCHEMICAL ANALYSIS OF SELECTED OIL SEEDS GROWN IN SOKOTO AREA

©[1] Zulkallaini Shehu ,[2] Labbo Abdullahi Muhammad, [2]Bashiru Ibrahim, [2] Umar Aminu Imam, [2]Zainab Hassan Bello.

[1&2] Department of biochemistry sokoto state university, sokoto, Nigeria
©Corresponding author. zsb4mmz@gmail.com 07037484084

Abstract

Vegetables and edible oil had made an important contribution in the diet of people in many countries, serving as good source of proteins and lipid for human nutrition, as well as useful source of energy. The lipid analysis of some selected oil seed grown in sokoto area was carried out. The oils sample extracted from different oil seeds were analyzed for their various chemical properties. The parameters investigated include the saponification value (SV), acid value (AV), free fatty acid (FFA), iodine value (IV) and ester value (EV) using titration method. In comparism the outcome of the analysis showed, a significant variation at ($p=0.001$) in saponification value. Iodine value of melon seed and sesame are significantly higher at ($p=0.01$) in oil compared to groundnut oil. Acid value of groundnut oil showed no significant variation at ($p=0.01$) when compared to the sesame and melon oil seeds. The result showed that the oils are good nutritional value and are good for industrial application. Hence the oils pose no significant health risk.

Key words: Vegetable oil, Nutrition, Saponification, Free fatty acid

FB 064

NUTRIENTS, ANTINUTRIENT, MINERAL AND SECONDARY METABILOTES COMPOSITIONS OF DRY *Parquetina nigrescens* LEAF POWDER

[1]*Oyeniyi Deborah Abosede, [2]Jigam, A.A, &[3]Abubakar, A.

[1]*Department of Biochemistry, Federal University of Technology Minna, Niger state
*Corresponding author's Email: deboye17@gmail.com, +234-7030825984

Abstract

Parquetinanigrescens (Afzel.) Bullock is an herbal perennial climber which belongs to the family *Asclepiadaceae*. The plant is widely used by the traditional healers in the treatment of gastrointestinal disorders, sickle cell anaemia, gonorrhea, menstrual disorders and schizophrenia. It has also been reported to increase uterine contraction stimulations similar to the effect of oxytocin. This study was undertaken to evaluate leaf powder of *Parquetinanigrescens* for phytochemicals, antinutrients, nutrients, mineral, and vitamin compositions, in order to provide scientific values and knowledge on its benefits and safety to human health. Standard chemical procedures were used. The results showed, nutrients composition in percentage; moisture (8.00), ash (10.50), crude protein (21.02), crude lipid (7.00), crude fibre(5.80), and total carbohydrate content (47.68). Mineral compositions were Fe (13.50 mg/100g), Zn (95.40 mg/100g), Ca (84.60 mg/100g), Mn (3.95 mg/100g), Cu (1.45 mg/100g) and Mg (62.30 mg/100g). The values obtained for vitamins were A (0.13 µg/g), C (7.35 mg/100g) and E (2.25 mg/100g). Flavonoids (18.06 mg/100g), phenols (183.08 mg/100g), tannins (473.59 mg/100g), oxalate (0.50 mg/100g), phytate (352.50 mg/100g) and cyanide were detected in levels that are safe for oral administration. Antioxidant activity was also significant. Generally, the results indicate possible correlations between the diverse chemical compounds in *Parquetinanigrescens*leaf powder and its application in folkloric medicine.

Key words:*Parquetinanigrescens*, proximate, phytochemicals, antinutrients, minerals, vitamins, antioxidant, folklore medicine.

FB 065

PROXIMATE AND MINERAL ANALYSIS OF AFRICAN BIOFORTIFIED SORGHUM (ABS 188 AND ABS203) AND INDEGENEOUSE SORHUM BICOLAR

Sumayya hamza maishanu, Yahaya Abdullahi Umar, Mohammed Sani Abdulsalami, Abdulrazak Baba Ibrahim, Abdurrahman Elfulaty Ahmad, Gloria dada Chechet

Department of Biological Sciences, Nigerian Defence Academy, Kaduna, Department of Biochemistry, Ahmadu Bello University, Research Unit, DNAlabs Kaduna, Department of Medicine, Medical laboratory Science, Ahmadu Bello University

Corresponding author: thauratmaishanu@yahoo.co.uk 08065956083

Abstract

A Key Step Towards the Release of Genetically Modified (GM) Biofortified Sorghum is its Nutritional Evaluation and Risk Assessment Study. In this work, two genetically modified sorghum (ABS 188 and ABS 203) were subjected to proximate analysis, Amino acid determination, mineral analysis Following the molecular analysis of the two GM sorghum, the transgenes *Zeamays*Phytoene synthase gene (Zm-PSY1) and *Pantoeaananatis* Carotenoid Biosynthesis gene (PaCrT1) were confirmed in ABS 188 and ABS 203. Results of proximate analysis revealed the presence of the following expressed as percentage (%) ABS 188 contains Crude fibre (1.89), Ash (1.87), Crude protein (9.00), Oil (1.36), Lignin (8.83) dry Matter (91.17) and Nitrogen free extract (77.05); ABS 203 contains crude fibre (1.60), Ash (0.95), Crude protein (4.94), Oil (2.56), Lignin (8.37) Dry Matter (91.63) and Nitrogen free extract (81.58); Local

sorghum contains Crude fibre (2.08), Ash (0.85), Crude protein (4.56), Oil (1.12), Lignin (8.28) Dry Matter (91.72) and Nitrogen free extract (83.11); respectively. ABS 203 has the highest amount of β – Carotene (0.83ug/100mg), followed by 0.57ug/100mg for ABS 188 and 0.42ug/100mg for local sorghum. Results also revealed that the food samples contain almost all the essential amino acids in varying concentration, with glutamic acid occurring highest in the GM sorghum ABS 188 and ABS 203 having the highest for Leucine (14.01g/100g). Zinc was present in trace amount in all the samples (0.0003 – 0.033 mg/kg). In conclusion, ABS 188 and ABS 203 are considered to be as nutritious as local sorghum, with the advantage that the GM sorghum are biofortified with Vitamin A, Zinc and Iron.

Key words: Genetically Modified Sorghum, Biofortification, Nutrition and Transgene

FB 066

BIOSAFETY BASELINE FOR AFRICAN BIOFORTIFIED SORGHUM (ABS188 and ABS203) THROUGH FEEDING BIOASSAY

Sumayya Hamza Maishanu[1], Yahaya Abdullahi Umar[2], Mohammed Sani Abdulsalami[2], Abdulrazak Baba Ibrahim[3], Abdurrahman Elfulaty Ahmad[4], Gloria dada Chechet[5].

Department of Biological Sciences, Nigerian Defence Academy, Kaduna, Department of Biochemistry, Ahmadu Bello University, Research Unit, DNAlabs Kaduna, Department of Medicine, Medical laboratory Science, Ahmadu Bello University

Corresponding author: thauratmaishanu@yahoo.co.uk 08065956083

Abstract

A number of biofortified crops have been generated through transgenic technologies including sorghum. A key step towards the release of genetically modified (GM) biofortified sorghum is its nutritional evaluation and risk assessment study. In this work, two genetically modified sorghum ABS188 and ABS203 were administered on mice to evaluate the effect of their consumption on liver and spleen. Following the molecular analysis of the two GM sorghum, the transgenes *Zeamays*Phytoene synthase gene (Zm-PSY1) and *Pantoeaananatis* Carotenoid Biosynthesis gene (PaCrT1) were confirmed in ABS 188 and ABS 203. There was a loss in weight of mice fed with ABS 188 and ABS 203 while weight gain was recorded in mice fed with local sorghum. Their weight gain or loss could be a reflection of feeding rate and feed conversion ratio. In conclusion ABS 188 and ABS 203 are considered to be as safe and nutritious as local sorghum, with the advantage that the GM sorghum are biofortified with Vitamin A, Zinc and Iron.

Key words: Genetically Modified Sorghum, Biofortification, Nutrition and Transgene

FB 067

NUTRITIONAL PROFILING AND FUNCTIONAL PROPERTIES OF HERBAL TEA INFUSIONS OF GUAVA LEAVES SUPPLEMENTED WITH MORINGA AND GINGER POWDER

Yusuf, A. B[1]. and Sahabi M. A[1].

[1]Department of Biochemistry and Molecular Biology, Federal University, Birnin Kebbi, Kebbi State, Email of corresponding author: yusuf.abdulrahman@fubk.edu.ng or dula2007@yahoo.com +2348160240925 or +2348074098591

Abstract

Herbal teas are receiving increasing attention from consumers because of their perceived nutritional and health benefits. Therefore, the current study formulated and evaluated guava leaf teas supplemented with moringa and dry ginger powder as supporting and activating herb respectively. The formulated herbal combinations were packed as dip tea bags designated M1 and M2. Nutritional composition, functional

properties, and antinutritional factors were investigated using standard analytical methods of Association of Official Analytical Chemist. Data were analysed by ANOVA and results expressed as means and standard deviation. Result of proximate composition indicates that ash and moisture content were within ASEAN recommended standard. Amino acid profile revealed that the formulations contain appreciable amount of all essential amino acids. Functional properties indicate that bulk density ranged from 0.37-0.38, swelling index 2.8-3.7, reconstitution index 6.6-6.8, water absorption capacity 83.52-89.65, and pH 6.11-6.22. Selected micronutrient estimated suggest that the composite blends are good sources of minerals like Zn, Ca, and Fe which are of public health importance. Based on the results of this study, it can be concluded that guava leaves tea supplemented with moringa and ginger are reservoir of macro and micronutrients and may be an alternative to commercial tea (*Camelliasinensis*) with various health benefits.

Key words: Guava leaves, Herbal tea, Nutritional profile and Functional properties

FB 068
BIOSORPTION CHARACTERISTICS OF CHROMIUM (VI) BY *Aspergillus niger* BIOMASSIN CONTINOUS BIOREACTOR

*** H. Kassimu[1], A. B. Sallau[1], A. A. Kassimu[2], N. Kassimu[3], A.J. Nok[1]**

1 Department of Biochemistry, Faculty of Life Science, Ahmadu Bello University Zaria.
2 Air Force Research and Development Center, Kaduna
3 Department of Chemistry, Faculty of Physical Science, Ahmadu Bello University Zaria.
*Corresponding author- Kassimu, email: bibba4mee@gmail.com, 08038593438

Abstract
Recent development in the field of environmental biotechnology includes the search for microorganism/ biological materials as sorbents for heavy metals. Chromium (VI) represents an important environmental problem due to it toxic effects, serious ecological and health hazards it poses. This study was aimed at investigating the potential of *A. niger*biomassto biosorb chromium (VI) from its solution in continuous process using packed bed bioreactor. Effect of process parameters (biomass dosage, pH, time and temperature) on the biosorption process was investigated by Atomic Absorption Spectrophotometer (AAS) method. Also, participating functional groups as well as characteristics of the biomass were studied using Fourire-Transform Infrared spectroscopy (FTIR) and Scanning Electron Microscopy (SEM)respectively**.** From the results, FTIR revealed that SH, N=H, N-H, S=O and OH groups were responsible for the biosorption of Cr (VI), SEM analysis showed that there was biosorption of chromium onto the biomass surface. The biorption capacity of *A.niger*biomass for the period of shaking was found to be time dependent. Using Cr (VI) initial concentration of 10mM, a dose of 1.4g biomass was able to biosorb Cr (VI) up to 72% from 100ml of its solution in 120 minutes, at pH of 2.5 and optimum temperature of 40ºC.

FB 069
NUTRIENT EVALUATION OF MILLET BALLS (FURA) POWDER MADE WITH RIPE, UNRIPE PAPAW POWDER AND SOYA BEANS FLOUR IN KOGI STATE, NIGERIA

*** Oka Samson Ayodeji [1], Emmanuel Friday Titus[1] ,Shede Kehinde Timoth[2], Obaje Gideon[1]**

[1]Dept of Medical Biochemistry, Kogi State University, Anyigba. Kogi state Nigeria
[2]Dept of Food Science Technoology, Kogi State University, Anyigba.Nigeria
Email address: okasamson33@gmail.com, 08132382642, emmfriday@gmail.com, 08069608367

Abstract
Millet balls (Fura), an indigenous drink commonly consumed among Hausa/Fulani tribe of Nigeria is said to contain vitamins and minerals that support vital physiological processes in the body, reduce the effects of migraines and heart attacks due to the presence of magnesium. Pearl millet, (*Pennistumglaucum*), pawpaw (*Carica papaya*) and soyabean (*Glycine max*) were cleaned and milled to produce fura powder. The pawpaw powder and the soya bean flour was substituted into the pearl millet flour and mixed with spice. This was conditioned using 1.5 litres of tap water to improve molding. Two samples were obtained based on percentage

content. Sample AAA (60% Fura Powder, 20% Ripe Pawpaw Powder and 20% Soya beans flour) and sample BBB (60% Fura Powder, 20% Unripe Pawpaw Powder and 20% Soya beans flour). The samples were analyzed for chemical, sensory, antinutrient and mineral properties. The results were analyzed using ANOVA ($p<0.05$). Results showed that moisture content, ash, protein, crude fiber, carbohydrate and fat ranged between 11.14±0.04 to 10.85±0.05, 2.48±0.00 to 2.70±0.00, 13.35±0.2 to 14.87±0.06, 5.82±0.03 to 6.18±0.03 and 57.88±0.07 to 54.95±0.11 respectively while sensory evaluation showed that sample AAA was most acceptable. This study showed improvement in the qualities of fura enriched with pawpaw and soybeans flour.

Keywords: Fura, Nutrient, migrains, Hearth attack, Kogi State.

FB 070

THE RELATIONSHIP BETWEEN SOCIO-ECONOMIC INDICES AND NUTRITIONAL STATUS OF ADOLESCENTS WITH SICKLE CELL ANAEMIA AT A TERTIARY HOSPITAL IN NORTHERN NIGERIA.

***Olorunfemi-Kayode A.M, [1]Aimola I.A,[1]Ndidi U.S,[1] Nzelibe H.C,[1] Bello-Manga H,[2]Mamman A.I[3]**

[1]Department of biochemistry, Faculty of life sciences, Ahmadu Bello University, Zaria
[2]Department of Hematology and Blood Transfusion, College of Medicine, Kaduna State University,
[3] Department of Hematology and Blood Transfusion, College of Medical Sciences, Ahmadu Bello University, Zaria
Email: adaolorunfemikayode@gmail.com; Phone: 08023846309

Abstract

Sicklecellanaemia (SCA) is the most predominant genetic disorder world wide with Nigeria being home to a large proportion of sufferers. Fifty consenting participants, 46% males and 54% females aged 10- 19 years in steady state were enrolled in this cross-sectional study. Meanage and weight of the adolescents were 14.3±2.8 years and 35.9±10.4kg. Majority 44% of the care givers had secondary education. Fifty-four percent of the participants came from house holds with 5-10 members and 24% of the care givers were civil servants. Eight percent had normal BMI 6% were femaleswhile 2% male. Over weight and obesity was 6% with 2% male and 4% female. Thinness and severe thinness were 42% and 38%. Gender, educational level of adolescent and number of house holds had nos ignificant($p>0.05$) effect on nutritional status whereas factors such as age, caregivers in come and level of education had significant($p<0.05$) effect. Poor socioeconomic factors: age, caregiver's level of education and monthly income had adverse impact on the nutritional status of adolescents with SCA.

Keywords:*Adolescents, Nutritional Status, Sickle Cell anaemia, Socio-Economic Indices*

FB 071

ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN ATTENDING SOME PUBLIC PRIMARY SCHOOLS IN ITAS-GADAU LOCAL GOVERNMENT AREA OF BAUCHI STATE, NIGERIA

***Ahmad Mallam Ado[1], Mariam Danladi Solomon[2], Zinat Sulaiman Muhammad[1], Adamu Idris Matinja[1], and Abubakar Mohammed[1]**

[1]Department of Biochemistry, Faculty of Science, Bauchi State University, Gadau, Bauchi State,
[2]Department of Biochemistry, Faculty of Medical Sciences, University of Jos, Jos, Plateau State,
[*]Corresponding Author Email: ahmadado20@gmail.com Phone no: +2348137469546

Abstract

Nutritional status is the current body status of a person or a population group related to their state of nourishment (the consumption and utilization of nutrient). This study assessed the nutritional status of 172 selected children (88 boys and 84 girls) between the ages of 6 to 12 years by measuring their weight, height and mid-upper arm circumference (MUAC). The weight-for-age, height-for-age, weight-for-height, and BMI-for-age was then computed for each child and compared with the WHO growth reference data Z-scores.The MUAC for each child was measured and compared with the WHO growth reference data for boys and girls and interpreted as the weight-for-age (underweight), height-for-age (stunting), weight-for-height (wasting) and BMI-for- age (underweight, stunting, wasting, and overweight).The mean weight and height of boys was found

to be higher than girls of age 6, 7, 8, 9 and 12 but in age 11, the mean weight and height of boys and girls was found to be the same, while in age 10 the mean weight and height of girls was found be higher than boys. None of the children was found to be underweight (low weight-for-age), stunting (low height-for-age) and wasting (low weight-for-height) using weight- for-age, height-for-age, weight-for-height, BMI-for-age Z-scores as well as MUAC cut off points for classification of nutritional status. Altogether 167 children were normal, among them, 84 (95.46%) were boys and 83 (98.89%) were girls. Only 5 of the children (2.91%) (4 boys and 1 girl) were found to be malnourished (over weight) in all the selected subjects. The study shows that majority of the children attending some public primary schools in Itas/Gadau L.G.A. were normal nutritionally, while very few were overweight nutritionally.

Keywords: Nutritional status, weight-for-age, height-for-age, weight-for-height, BMI-for-age, Mid-upper arm circumference

FB 072

NUTRITIONAL STATUS ASSESSMENT OF UNDER-FIVE YEARS (6-59 MONTHS) CHILDREN ATTENDING DALHATU ARAF SPECIALIST HOSPITAL LAFIA, NASARAWA STATE, NIGERIA

*Francis, E.K., Bamidele, T.O. and Enemali, M.O.

Department of Biochemistry and Molecular Biology, Faculty of Natural and Applied Sciences Nasarawa State University,PMB 1022 Keffi - Nigeria

***Corresponding Author:**Email/phone number -kigbufrancis@gmail.com/+2347036137020)

Abstract

Malnutrition is a major public health challenge in developing countries, as such the nutritional status of children serve as an indicator to rate the overall wellbeing of a society. In this study, the nutritional status of under-five children attending DalhatuAraf Specialist Hospital (DASH), Lafia, was assessed. One hundred and sixty five (165), under five children (51.5% of which were males) were randomly recruited into the study. The socio-demographic and nutritional information of the children and mother were obtained using structured questionnaires. Anthropometric assessment was done on each child and blood samples analyzed using standard biochemical techniques. The data obtained were statistically analyzed. Out of the 165 children, 41.2% showed prevalence of Malnutrition, 15.8% and 25.5% indicated moderate acute malnutrition (MAM) and Severe Acute Malnutrition (SAM) respectively. The Mid-upper arm circumference (MUAC) measures of 33.9% of the children were out of the normal range of 12.5-14.6cm. The result of the study of the biochemical parameters showed an average PCV of 33.32±4.49% and total protein of 34.53±13.26g/L which were lower than the normal ranges. Blood glucose concentration of 4.52±0.97mmol/L and Calcium of 2.14±0.25mmol/L were within the normal ranges and albumin of 64.16±16.87g/L was above the normal range. This study has successfully revealed a significant relationship between nutritional knowledge of the mother, socioeconomic status, child feeding practices, and the nutritional status of the children, under five years attending the DASH, Lafia, Nasarawa State, Nigeria and the need for critical intervention initiatives among children in the state and by extension, Nigeria.

Keywords: Nutritional status, MUAC, Anthropometric assessment, Malnutrition, Socio-dermographic

FB 073

STUDY ON NUTRITIONAL BENEFIT OF PROCESSED ALMOND NUTS ON 14 DAYS OLD WISTAR RATS

Okere Peace Ijeoma, *Onyegeme-Okerenta Blessing, Omeodu Steve

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Rivers State, Nigeria.
*Correspondace: e-mail: blessing.onyegeme-okerenta@uniport.edu.ng +234 (0)803 5201 039

Abstract

This study evaluated the nutritional benefit of processed almond nuts on 14 days old Wistar rats. The rats were weighed and grouped into two. Group one (control) was fed with commercial rat feed and distilled water while Group two was fed with processed almond nuts and distilled water for four weeks. The biochemical and haematological analysis was carried out using standard methods and procedures. Results for proximate

analysis showed that almond nut is composed of 3.84% Ash, 8.72% crude moisture, 38.26% crude lipid, 15.43%, 26.95 crude fibre and 20.16% carbohydrate Plasma enzyme activities of rats fed with Almond nuts were: ALT (23.66±1.22U/l), AST (70.40±3.33 U/l), ALP (63.88±21.28 (U/l) and GGT (23.09±1.60 (U/l). Total protein, albumin and total bilirubin concentrations were 60.73±1.72 g/dl, 36.34±10.88g/dl and 2.51±0.11g/dl respectively. Total cholesterol, triglyceride, LDL and HDL, concentrations were 2.74±0.12 mmol/l, 0.78±0.03 mmol/l, 3.82±0.09 mmol/l, 4.65±0.13 mmol/l. The PCV, Hb, WBC, RBC, Platelet and MCV concentrations of rats fed with almond nuts were 45.20±3.11%, 13.98±1.12 g/dl, 8.52±0.25 $X10^3/mm^3$, 7.04±0.09$X10^6/mm^3$, 233.80±5.79 $X10^3$/ml and 6.42±0.39 $X10^{-7}$fl respectively which were significantly ($p<0.05$) different from the control values. The decreased plasma liver enzyme activities, increased total lipid, triglycerides and HDL is suggestive that almond nuts may be used in the formulation of a supplementary diet for Wistar rats.

Keywords: Almond nuts, proximate analysis, nutritional benefit, Wistar rats

FB 074

INFLUENCE OF FEEDING HABIT AND ANTIBIOTIC USE ON DISTRIBUTION OF BIFIDOBACTERIA IN INFANTS 0-2 YEARS KADUNA NORTH LGA OF KADUNA STATE

[*1]Umar Zahra'u, [1]Yahaya Abdullahi Umar, [2]Ahmad Babangida Suleiman,[1] Ali Hadiza Idris , [3]Anka Hadiza Abubakar,

[1] Department of Biological Sciences Faculty of Science, Nigerian Defence Academy Kaduna, Nigeria
[2] Department of Microbiology, Faculty of life Sciences, Ahmadu Bello University Zaria, Kaduna
[3] Departments of Nutrition and Dietetics, College of Science and Technology, Hassan Usman Katsina Polytechnic, Katsina, Nigeria.
[*]Corresponding author: zaraubello48@gmail.com, Phone no: +2348030485342

Abstract

Bifidobacteria are one of the most abundant genera present in healthy infant gut and represent a significant portion of the microbiota throughout life of a healthy individual, playing an important role in gut homeostasis and also serves as a barrier against harmful components of the diet as well as against pathogenic bacteria. The theory is that taking Bifidobacterium probiotics during antibiotic treatment can prevent or minimize the death of good bacteria and the take-over by bad bacteria. This research aimed at determining the influence of feeding habit and antibiotic use on distribution of bifidobacteria in infants 0-2 year's infants from three public health facilities providing postnatal services in Kaduna North LGA of Kaduna State. A descriptive survey design was employed in this research with multi-stage sampling technique where questionnaires were administered, the sample size was estimated based on the prevalence and the population of the study were children between the age of 0-2 years attending post natal clinic at Yusuf Dantsoho Memorial Hospital (YDMH), Medical Centre Nigerian Defence Academy (MCNDA), and Badarawa Public Health Care Centre (BPHCC), Kaduna North, Kaduna State. Occurrence of bacterial growth was observed most in infants 1-6 months; 35(60%) and the least occurrence was observed in infants 18-24 months; 2(3%). There was low prevalence in infants; 0-1month; 8(14%). Also there was occurrence of bacteria in 42(73%) of exclusively breastfed infants and 14(24%) in non-exclusively breastfed infants. There is 50% occurrence of bacteria in both Male and Female infants. About 35(60%) of the infants have taken Antibiotics, while 23 (40%) have never taken Antibiotics. Also, 8(14%) took Antibiotics a week before sample collection, 11(19%) took 4 weeks before sample collection and 16 (27%) took 2 months and above. Three out of the 5 (60%) bifidos isolated were either on or have previously taken antibiotics (Ampiclox and/or Flagyl).

Keywords: Bifidobacteria, microbiota, infants, exclusive breastfeeding, saliva, antibiotics, Colostrum.

FB 075

EFFECT OF PROCESSING ON THE NUTRITIONAL, ANTI-NUTRITIONAL AND FUNCTIONAL PROPERTIES OF *Mucuna flagellipes* (OX-EYED BEAN) SEED FLOUR.

[*a]Immaculate Uzoamaka Nwajagu, [a]Auwalu Garba, [a]Humphery Chukwuemeka Nzelibe [a]Bashiru Ibrahim, [b]Umar Taminu Abubakar

[a]Department of Biochemistry, Ahmadu Bello University Zaria Kaduna State, Nigeria
[b]NAFDAC Area Laboratory Kaduna, Kaduna State Nigeria
Correspondence: immanwajagu@gmail.com +2347035439383

Abstract

This research aimed at determining the effect of processing on the nutritional, anti-nutritional and functional properties of *Mucuna flagellies* seed flour, a highly nutritional underutilized legume. The seeds were soaked, roasted, boiled, autoclaved and analysed for their proximate compositions, amino acids profile, micronutrient compositions, anti-nutritional factors and functional properties respectively. The proximate composition (%) showed moisture, protein, fat, ash, crude fibre and carbohydrate contents of the flour varied respectively between 7.37 to 11.46, 18.21 to 28.53, 2.93 to 3.97, 2.74 to 4.69, 8.06 to 12.90 and 38.45 to 59.09. The amino acid profile (mg/100g) showed lysine, leucine, tryptophan and aspartic acid in the raw flour at 5.70, 8.75, 5.24 and 11.67 but significantly ($P \leq 0.05$) reduced by roasting at 4.62, 6.56, 3.53 and 8.71 respectively. The vitamins A, C and E composition (mg/100g) varied respectively between; 0.15 to 3.46, 0.03 to 85.54, 3.41 to 14.24. The calcium, potassium, phosphorus, magnesium, iron, zinc and iodine contents (mg/100g) of the flour varied between 132.02 to 167.00, 85.91 to 145.00, 80.95 to 132.87, 83.74 to 145.19, 19.90 to 33.16, 3.96 to 6.26 and 53.41 to 112.22 respectively. The phytate, tannins, cyanide and trypsin inhibitors were significantly ($P \leq 0.05$) reduced by autoclaving, boiling, roasting and soaking. The swelling index, emulsification and gelation capacities were significantly ($P \leq 0.05$) increased by autoclaving, roasting and soaking. The properties of the flours evaluated suggest its potentials to be used both as nutritional supplements and functional ingredients in the preparation of baked and complementary food products.

Key words; *Mucuna flagellipes*, processing, proximate, amino acids, micro nutrients, anti-nutrients, functional properties.

FB 076

AWARENESS AND USE OF FOLIC ACID FOR PREVENTION OF NEURAL TUBE DEFECTS AMONG WOMEN OF CHILD-BEARING AGE IN KURA, KANO STATE, NORTH-WESTERN NIGERIA

Adamu, Hassana[1], Ameh, Danladi Amodu [1], Adamu, Zainab[2]* Momohjimoh, Yusuf[3], Adamu, Hussaina[4]

[1] Department of Biochemistry, Ahmadu Bello University, Zaria
[2] Department of Biochemistry, Federal University of technology Minna,
[3] Department of Pharmacy Aminu Kano Teaching Hospital, Kano
[4] Department of Food Technology and Home Economics NAERLS Ahmadu Bello University, Zaria
*Corresponding Author's tel. and email: 08032819940, zainab.adamu@futminna.edu.ng

Abstract

The prevalence of neural tube defects in Kano state is one of the highest in the region according to current reports. The World Health Organization has recommended periconceptional folic acid supplementation to prevent the anomaly. The aim of this study was to assess the knowledge and use of folic acid among women of child-bearing age in Kura community, Kano state. A cross sectional, descriptive study was conducted amongst women attending Kura General Hospital for antenatal or postnatal care using interview-administered questionnaires. A total of 111 women took part in the study. 64.9% of respondents have heard of folic acid, 51.4% know that it is used in pregnancy while only 45% have taken folic acid in their current pregnancy. Although 66% indicated they took other blood supplements which usually contain folic acid. 83.7% admitted they do not know the reason for taking folic acid in pregnancy while 16.3% indicated they know why the drug is prescribed in pregnancy. Only 6.3% however were aware of the actual reason for its prescription in pregnancy. Chi-square test revealed a significant relationship between awareness of folic acid and planned pregnancy. No relationship was observed between educational status of respondent and awareness of folic acid or reason for its prescription in pregnancy at $p < 0.05$. None of the respondent got their information from the media nor could mention any natural source of folic acid. The study revealed a low awareness level which can be improved via comprehensive education plan, marriage counseling and media awareness campaign.

FB 077

PRODUCTION OF BUTANOL FROM PLANTAIN TRUNK HYDROLYSATE USING *Clostridium acetobutylicum* IN A SUBMERGED FERMENTATION

Egwim Evans Chidi*, Makun Husseini, Michael Jegede and Yemisi Omonije

Biochemistry Department, Federal University of Technology, Niger State PMB 65, Nigeria
Correspondence: evanschidi@gmail.com

Abstract

Biobutanol from lignocellulosic biomass has gained much attention as a source of bioenergy production. However, the availability and the cost of the biomass are important factors. In this work, plantain trunk biomass was used as feedstock for the production of biobutanol through submerged fermentation. The plantain trunk biomass were sun dried, and milled into fine particles using blender, followed by pre-treatment with dilute sodium hydroxide 4 %(w/v). Enzymatic hydrolysis of un-pretreated and pretreated plantain trunk biomass was carried out for 5 days using cellulase and pectinase separately and later combined for comparison. *Clostridium acetobutylicum* isolated from spoilt beef was used to ferment the enzymatic hydrolysate under aerobic and anaerobic condition to monitor glucose consumption for 7 days of fermentation. The fermentation products were analyzed by using gas chromatography GC (SRI 8610). Highest glucose yield (79.59 mg/g) was obtained when cellulase and pectinase were combined on pretreated biomass. Also glucose consumption was higher in anaerobic compared to aerobic fermentation resulting in butanol yield of 0.0243 ml/l and 0.0198 ml/l respectively. The result indicates that alkaline pretreatment of plantain trunk biomass when hydrolysed with combined cellulase and pectinase in anaerobic fermentation could give a high yield of lignocellulosic biobutanol.

Key words: Lignocellulosic wastes, pretreatment, plantain trunk, fermentation, biobutanol

FB 078

EFFECTS OF SPROUTING ON NUTRITIONAL AND FUNCTIONAL PROPERTIES OF FINGER MILLET AND WATER MELON SEED (FLOURS)

Omotina Victory Thomas*, Egwim Evans Chidi, Tawakaltu AbdulRasheed-Adeleke

Department of Biochemistry, Federal University of Technology Minna, Nigeria
Corresponding author: E-mail thomasomotina@gmail.com Tel: +2347031628138

Abstract

Food processing, particularly sprouting induces activation and synthesis of hydrolytic enzymes that increases nutrient availability in food crops. The demand in sprouted seeds has been focused on low cost of processing, additive free and thus beneficial for human consumption. Consumer's interest for healthy and convenient foods has increased due to concerns for Diabetics, Obesity and Cholesterol. More so, there is no guideline about how much sprouted seeds food products should contain to exert any health benefits. In this study, we investigated the effects of different sprouting days on the nutritional and functional properties of finger millet and water melon seed (flours). The nutrient compositions and functional properties of flour samples were determined using standard analytical methods .vitamin (B2, B3 B6, B9, A, C and E increased significantly during sprouting and the highest vitamin score was observed at day six as follows: 1.630±0.025, 3.237±0.015,2.753±0.026,1.390±0.006,2.033±0.009,4.293±0.023,2.147±0.012 and 4.097±0.038, 4.753±0.050,4.090±0.035,1.697±0.044,7.027±0.022,4.867±0.024,5.843±0.026 for both finger millet and water melon seed (flours) respectively. Protein contents increased in sprouting and were highest at day six which were 26.610±0.052 and 34.630±0.030 for both flours respectively. Antinutrients were reduced to minimal level in sprouting for both flour samples. There were significant ($P \leq 0.05$) differences in the functional properties of the flour blends for both finger millet and water melon seeds respectively. Results showed that sprouting can be used for improving nutrient quality of food crops. The current findings suggest that composite flour of sprouted finger millet and water melon seeds may be used in confectionaries for preparing gluten free foods.

Key words: Sprouting, Finger millet, Water melon seed, Hydrolytic enzymes, Composite flour

FB 079

STUDY ON NUTRITIONAL BENEFIT OF PROCESSED ALMOND NUTS ON 14 DAYS OLD WISTAR RATS

Okere Peace Ijeoma, *Onyegeme-Okerenta Blessing, Omeodu Steve

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Rivers State, Nigeria.
*Corresponding Author: e-mail: blessing.onyegeme-okerenta@uniport.edu.ng
Tel: +234 (0)803 5201 039

Abstract

This study evaluated the nutritional benefit of processed almond nuts on 14 days old Wistar rats. The rats were weighed and grouped into two. Group one (control) was fed with commercial rat feed and distilled water while Group two was fed with processed almond nuts and distilled water for four weeks. The biochemical and haematological analysis was carried out using standard methods and procedures. Results for proximate analysis showed that almond nut is composed of 3.84% Ash, 8.72% crude moisture, 38.26% crude lipid, 15.43%, 26.95 crude fibre and 20.16% carbohydrate Plasma enzyme activities of rats fed with Almond nuts were: ALT (23.66±1.22U/l), AST (70.40±3.33 U/l), ALP (63.88±21.28 (U/l) and GGT (23.09±1.60 (U/l). Total protein, albumin and total bilirubin concentrations were 60.73±1.72 g/dl, 36.34±10.88g/dl and 2.51±0.11g/dl respectively. Total cholesterol, triglyceride, LDL and HDL, concentrations were 2.74±0.12 mmol/l, 0.78±0.03 mmol/l, 3.82±0.09 mmol/l, 4.65±0.13 mmol/l. The PCV, Hb, WBC, RBC, Platelet and MCV concentrations of rats fed with almond nuts were 45.20±3.11%, 13.98±1.12 g/dl, 8.52±0.25 $X10^3/mm^3$, 7.04±0.09$X10^6/mm^3$, 233.80±5.79 $X10^3$/ml and 6.42±0.39 $X10^{-7}$fl respectively which were significantly ($p<0.05$) different from the control values. The decreased plasma liver enzyme activities, increased total lipid, triglycerides and HDL is suggestive that almond nuts may be used in the formulation of a supplementary diet for Wistar rats.

Keywords: Almond nuts, proximate analysis, nutritional benefit, Wistar rats

FB 080

PREVALENCE OF BACTERIA ASSOCIATED WITH RAW MEAT IN ABATTOIR KATSINA STATE

Sani Aliyu

Department of Microbiology, Umaru Musa Yar'adua University, Katsina.
Corresponding author: aliyu.sani@umyu.edu.ng 08068986670.

Abstract

Raw meat are the perishable of all important food since it contains special nutrients needed to support the growth of microorganisms. Foodborne infections and illnesses is the major international health problem with consequence economic reduction. It is the major cause of illness and death worldwide. The aim of the study is to analyze and differentiate bacterial pathogen associated with meat. Isolation, Enumeration, Gram Staining and Pour Plates techniques were employed in the study. A total of 50 samples of raw meat were randomly collected from different locations and at different stage of meat processing within the Abattoir and analyzed. The total viable count ranged from *Staphyloccocus aureus Escherichia coli* and *Bacillus subtilis*, there was no *Salmonella* or *Shigella* species isolated in the samples. The meat bacterial load counts indicated *Escherichia coli* (1.1 X 10^7 cfu/ml), *Staphyloccocus aureus* (1.2 X 10^3 cfu/ml), and *Bacillus subtilis* (1.0 X 10^2 cfu/ml), the highest bacteria isolated across all the samples collected was *Escherichia coli* with 1.1 X 10^7 cfu/ml which may be indirectly due to the contamination from around. This study reveals that raw meat sold in the area contained some bacteria. The presence of this organisms in raw meat should receive particular attention, because their presence indicate public health hazard and give warning signal for the possible occurrence of foodborne intoxication. Therefore, government should enforce proper hygiene within the slaughter house and environment using clean water and disinfectant in washing meat contact surfaces and table thoroughly before and after used.

Key wards: Foodborne, Infections, Bacteria, Raw, Meat, Abattoir, Contamination, Pathogen.

FB 081

FOOD SECURITY AND INSECTICIDES RESISTANCE: A BOTANICAL BIOCONTROL APPROACH- REVIEW

[1,2*]Babandi, A., [2]Anosike, C.A. and [2]Ezeanyika, L.U.S.
[1]Department of Biochemistry, Bayero University, P.M.B. 3011, Kano-Nigeria.
[2]Department of Biochemistry, University of Nigeria, Nsukka, Nigeia
*Correspondence email: ababandi.bch@buk.edu.ng; +2348086303170

Abstract
Plants contain a wide range of biochemical compounds. When extracted from the plant material, these compounds show useful biological activities such as repelling insects and food crop pests or altering insect feeding behavior, killing larvae, or disrupting growth. However, the use of synthetic insecticides imposes threats not only to human health but also to the ecosystem because of persistency. It can also disrupt natural biological control systems that sometimes results into a widespread development of resistance. This phenomenon has triggered and urged the development of alternatives using natural products**.** Botanicals containing active insecticidal phytochemicals, appear to be promising to address food insecurity, environmental pollution, insecticide resistance and vector control in developing countries. African medicinal plants may serves as a big reservoir of bioactive substances with therapeutic and tropical diseases vector biocontrol potentials, many of them could eventually serve as background for the development of new chemical entities in future. We reviewed the use of plant compounds (essential oils, flavonoids, polyphenols, alkaloids, glycosides, esters and fatty acids) having anti-insect effects and their importance as an alternative to the chemical/synthesize compounds used in the elimination of insect pests and vectors. This review collated some of the available data published on identified pests biocontrol bioactive components of plants commonly found in Nigeria as well as their reported biocontrol system mechanisms. The materials were sourced from peer reviewed articles recently published in Elsevier, Science directs, Pubmed, PLoS one and many other local journals. The information were extracted and comprehensively presented. This could enlighten general public toward combating disease vectors, environmental pollutions, and insecticide resistance and ensure food availability.

Keywords : Food security, Insecticides, Phytochemicals, Resistance, Synergy

FB 082

EFFECT OF SPROUTING ON PROXIMATE AND ANTI NUTRIENTS OF WATERMELON (C*itrallus lanatus*) SEEDS

***Saba, Maryam Hassan; Egwim, Chidi Evans; Shittu, Kudirat Oluwatosin; Ajodo, Endurance Uneojo and Moses, Bali Emmanuel**

Department of Biochemistry, Federal University of Technology, Minna, Niger State
*Corresponding author Tel: +234 8026738310 E-mail: mimisaba92@gmail.com

Abstract
Watermelon (*Citrullus lanatus*) seeds are often discarded while the fruit is eaten. In this study the nutritional qualities of sprouted watermelon (*Citrallus lanatus*) seeds were therefore evaluated. The proximate analysis of the samples for moisture, total ash, crude fibre and fats were carried out in triplicate. The nitrogen was determined by micro Kjeldah method and the nitrogen content was converted to protein through multiplication by a factor of 6.25 and total carbohydrate content was estimated by 'difference'. From the percentage results obtained, fat (1.94±0.02 to 1.04±0.00), crude fibre (4.62±0.25 to 3.71±0.10), carbohydrate (27.45±0.18 to 20.67±0.33), ash content (1.10±0.00 to 0.91±0.01) reduced significantly ($p<0.05$) from day 2 to day 8.Similarly, there is significant ($p<0.05$) decrease in anti-nutritional factors such as oxalate (0.97±0.03 to 0.49±0.06), cyanide (0.102±0.00 to 0.047±0.00) and phytate (6.50±0.05 to 3.10±0.10). However, moisture content (55.96±0.29 to 65.10±0.13) was increasing significantly ($p<0.05$) from day 2 to day 8 and there was significant ($p<0.05$) increase in protein (10.53±0.08)at day 4 and decreasing subsequently. Likewise, there was significant ($p<0.05$) increase in tanins (8.54±0.06 to 10.74±0.11) from day 2 to day 8. Therefore, the number of sprouting days decreases the anti-nutritional factors which affect nutrient uptake and increase protein content which contribute greatly to recommended daily allowance and maintenance of good nutritional status and hence good health for both man and livestock.

Keywords: Watermelon, Proximate Analysis, *Citrullus lanatus*, Sprouting, Anti-Nutritional Factors

FB 083

SAPONIN EXTRACT FROM *Vernonia amygdaling* LEAVES ATTENUATES NEPHROLITHIASIS *IN VIVO* AND *IN VITRO*

***Mikhail O. NAFIU, Albert A. KURE, Musa O. SALAWU, Hamdalat F. MURITALA & Musbau A. AKANJI**

Department of Biochemistry, University of Ilorin, P. M. B. 1515, Ilorin, Nigeria.
Correspondence: *olumikail@gmail.com +2348054208511

Abstract:
The anti-nephrolithiasis effect of a saponin extract from *amygdalina* leaves was studied using *in vitro* and *in vivo* models. The formation of calcium oxalate stones in the presence or absence of the saponin extract was measured *in vitro* while the *in vivo* prophylactic, protective and curative anti- nephrolithiasis effects of the saponin extract (500 mg/kg b. w.) were evaluated in rat nephrolithiasis models induced by administration of Ammonium Chloride (0.5%) and Ethylen Glycol (0.75%). The intervention lasted for 14 days and Cystone (750 mg/kg b.w.) was used as standard drug. The results showed greater *in vitro* inhibition of calcium oxalate (CaOx) nucleation and aggregation to factors of about 5% and 11% than cystone drug at concentrations of 1000 and 1500 µg of saponin per ml of the dissolving solution (distilled water) respectively. *in vivo* treatment with saponin significantly decreased ($p < 0.05$) serum magnesium, sodium, urea and creatinine as well as concentrations of kidney Malondialdehyde, calcium and oxalate to levels lower than that observed in the lithiatic control group. Significant elevations in Superoxide dismutase activity and levels of reduced glutathione in kidneys plus serum potassium were obtained on treatment with extract while kidney histology showed disappearance of microscopic granulations of CaOx deposits prominent in lithiatic group. Saponin extract from *V. amygdalina* displayed prophylactic, protective and curative effects in nephrolithiatic rats by balancing stone promoters and inhibitors, decreasing deposition and facilitating excretion of small CaOx crystals or maintaining antioxidant environment. Thus, saponin extract from *V. amygdalina* is a promising potential alternatives drug for nephrolithiasis.

Key words: Nephrolithiatic, *Vernonia amygdalina*, Saponin, nucleation and aggregation

FB 084

EFFECTS OF FERMENTATION ON THE PHYSICOCHEMICAL PROPERTIES OF *Parkia biglobosa* (LOCUST BEAN) AND *Glycine max* (SOYA BEAN) SEEDS.

Faila, Atika Abubakar* and Dakare, M.A.

Department of Biochemistry, Kaduna State University, Kaduna, NIGERIA.
*Corresponding author Email: failaatikaabubakar@gmail.com

Abstract
The study was conducted to investigate the effect of fermentation on the physical properties (pH and temperature), proximate (Crude Protein, Moisture Content, Crude Fat, Crude Fibre, Ash, Carbohydrate) and antinutrient (Flavonoid, Alkaloid, Cyanogenic glycoside, Phytate, Saponins) contents of *Parkia biglobosa* (Locust bean) and *Glycine max* (Soya bean) seeds. The seeds were subjected to natural (spontaneous) fermentation to produce a condiment (Daddawa). The nutrient and antinutrient contents of both unfermented and fermented samples were analyzed. At the end of the experiment, it was observed that fermentation led to increased in pH, temperature, moisture, crude protein, crude lipid and ash contents of the two fermented locust bean and soya bean seeds but decreased the carbohydrate content of the two fermented products. The antinutrients evaluated were reduced in the two fermented samples. There was also, a significant ($p<0.05$) difference between the fermented and unfermented seeds in both the nutrient and antinutrient content determined. Fermentation appears to have enhanced the nutritional values of the fermented locust bean and soya bean seeds.

Keywords: Fermentation, Proximate Composition, Antinutrients, *Parkia biglobosa*, *Glycine max.*

FB 085

COMPARATIVE ANALYSIS OF BACTERIA SPECIES ON FRESH AND SMOKED-DRIED *Clarias gerienpinus* SOLD IN ARGUNGU L.G.

Mohammed Naka Keta., *Mubarak Aminu.,Jibrin Naka Keta.,Musa Isah., and Grace B. Gudu

Department of Biological Sciences, Kebbi State University of Science and Technology, Aliero, Kebbi
Department of Biological Sciences, Federal University, Gusau, Zamfara State
Correspondent address:Moubaraqameenuaburga30@gamail.com Phone no: 08034779185

Abstract
Comparative analyses of bacterial species on fresh and smoked *Clarias gariepinus* fish were determined. The bacterial species were determined using pour plate Methods. Five (5) areas in Argungu local government area were sampled and selected for sample collections were: Matanfada, Natsini, Merawa, Lelaba and Koffar yan keffi. Ten (10) samples, five fresh and five smoked fish were collected from each of the sampled area making a total of fifty (50) smoked and fresh fish samples. The samples were analyzed and Six (6) bacterial species were isolated and identified in fresh fish samples were namely; *Bacillus subtilis*, *Pseudomonas aureuginosa*, *Staphylococcus*, *Salmonella typhii*, *Shigella* spp. and *Escherichia coli*. While Seven (7) bacterial species isolated and analyzed in smoked fish samples were: *Bacillus*spp, *Pseudomona s*spp, *Staphylococcus epidermis*, S*almonella typhii*, *Shigella*, *Escherichia coli* and *Klebsiella pneumoniae* respectively. From the results of the obtained showed that *Bacillus subtilis* had the highest bacterial loads of (23.80%) and lowest were obtained in *Pseudomonas aeruginosa* (10.52%) on fresh fish. While in smoked fish, the highest prevalent of bacterial loads were recorded in *Salmonella typhii* (20.83%)and lowest were obtained in *E. coli* with (08.33%) respectively. The implication of this study could be that the processing and preserved of locally produced fish needs to be critically monitored to avoid transmission of diseases to consumers. It is also very necessary that local producers should be enlightened about good processing practices and the effect of proper preservation, process as this will ensure products free of pathogenic microorganisms.

Keywords: C*larias gerienpinus*, bacteria, fresh and smoked-dried fish and Argungu L.G.

FB 086

CHARACTERIZATION AND IDENTIFICATION OF BACTERIAL SPECIES ASSOCIATED WITH THE SPOILAGE OF COCOYAM IN KEBBI STATE.

[1]Muhammed NakaKeta.,[1]MubarakAminu.,[2]Jibrin Naka Keta.,[1]G.B. Gudu. and[1]AnasHamisu

[1]Department of Biological Sciences, Kebbi state University of Science and Technology, Aliero, Kebbi
[2]Department of Biological Sciences, Federal University, Gusau, Zamfara State
Correspondent address:moubaraqameenuaburga30@gamail.com Phone number: 08034779185

Abstract
The study was carried out to determine the bacterial species associated with Cocoyam obtained in Gotomo village of Gwandu local government, Kebbi State, Nigeria. Standard microbiological techniques such aspour plate method was used in the enumeration of potential spoilage organism in cocoyam samples.A total of eight (7) bacterial species were isolated and identified namely; *Staphylococcus aureus*, *Salmonella* spp, *S. epidermis*, *E. coli*, *Bacillus* spp, *Klebsiella* and *Shigella* spp. The most prevalent bacterial isolate was *Staphylococcus aureus* 40% and *Bacillus* spp was the leas tprevalent isolate with 15% in all the three areas. The resulted of mean microbial count showed that cocoyam obtained from Rafin raggaye had the highest bacterial load $12x10^4$and the lowest was recorded in Shiyar gobirawa with $1.20x10^4$respectively.Thesemicroorganisms isolated in this research are said to be pathogenic and have the potential of causing diseases in human and hence their presence on cocoyam may be additional reservoirs for the transmission of pathogenic microorganisms and this could results to bacterial infections for consumers. This couldraise concern over public health risks that may be associated with the consumption of spoilt cocoyam if proper storage is not taken to reduce these microbes.

Keywords: Bacterial, cocoyam, microbial load and Kebbi state

FB 087

QUALITATIVE AND QUANTITATIVE ANALYSIS OF PHYTOCHEMICALS PRESENT IN *CASSIA TORA* LEAF EXTRACTS (ETHANOL AND AQUEOUS)

[*1]Rawayau AbubakarMannir., [1]Mustapha Halima Zango., and [1]Runka Tanimu Rufaatu.,

[1]Department of Biochemistry Umaru Musa Yaradua University, Katsina.
*Corresponding Author: Abumannirrawayau101@gmail.com +2348187601105

Abstract

Plants comparatively have a much greater biosynthetic ability than animals. Not only do plants make all the biomolecules that are universally required in living organisms, they also synthesise a vast array or complex chemicals, which are unique to them.The study aims to determine the phytochemicals and their amount present in both aqueous and solvent extract of the plant. Qualitative phytochemical analysis was carried out using the method described by Evans and Trease, 1989.Quantitative phytochemical analysis of the extracts was carried out for alkaloids, flavonoids, saponins, and tannins using the standard methods as described byAgbaire*et al.*, 2011.Phytochemical screening of the plant extracts (ethanol and aqueous) revealed the presence of alkaloids, flavonoids, tannins, and saponins among others. The aqueous extract of the sample showed presence of all compounds tested and alkaloids, total phenols, and flavonoidsare present in high concentration than that from ethanolic extract of the same sample. The ethanolic extract showed the presence of all the phytochemicals tested with alkaloids high colour intensity.The quantitative analysis of the phytochemicals found in the ethanol sample shows 48.28% total phenol, 21.32% flavonoid and 0.12% alkaloid. Aqueous extract shows high phytochemicals as evident from total phenols 62.78%, flavonoid 47.32%, and alkaloid 0.32%. The quantity of total phenols in both samples (48.28% and 62.78%) was relatively higher than that of flavonoid also in both samples (21.32% and 47.32%) which is true as flavonoid is one of the phenolic compounds, this at the same time shows that apart from flavonoid there are other phenolic compounds found in the plant. The high concentration in aqueous sample may be due to water serving as a universal extractor to almost all phytochemicals. The low concentration of alkaloid in both samples (0.12% and 0.32%) may signifies the non-toxic nature of the plant as reported by many literature that high quantity of alkaloids is responsible for toxic nature of many medicinal plant.

Keywords: Phytochemicals, Qualitative, Quantitative, Analysis, Ethanol, Aqueous, *Cassia tora Linn*

SUB-THEME

MOLECULAR BIOLOGY, BIOTECHNOLOGY AND BIOINFORMATICS

(MBB)

MBB 001

RECOMBINANT DNA (R-DNA) TECHNOLOGY IN AGRICULTURE: CURRENT STATUS AND FUTURE PROSPECTS

***[1]Abdulhamid Yusuf, [2]Ibrahim Hamza Kankia, [3] Mudassir Iliysau, [3]Alyasa`u Miita Abba and [4]Mukhtar Aliyu**

[1]Department of Biology, SPRS-Umaru Musa Yar`adua University, Katsina, Nigeria
[2]Department of Biochemistry, Umaru Musa Yar`adua University, Katsina, Nigeria
[3]Department of Biological Sciences, Nigerian Defence Academy, Kaduna, Nigeria
[4]Department of Biochemistry & Molecular Biology, Federal University, Dutsin-ma, Katsina state-Nigeria
Corresponding Author`s email address: abdulyusufk2@gmail.com

Abstract

Recombinant DNA (R-DNA) technology or Genetic engineering, offers many opportunities for improving agriculture. This technology transcends classical plant and animal breeding by permitting the rapid transfer of genetic traits between entirely different organisms. This paper aims to review the application of Recombinant DNA (R-DNA) technology in agriculture. It will explore its role, benefits and Risks, Acceptance; it's before, the now and its future Technological innovations in agriculture are being used to sustain the rapid growth in population. The frightening demographic trend faced by humankind, rapid growth of the already massive population, is demanding technological breakthroughs in agricultural production. Recombinant DNA (R-DNA) technology might appear to be the best for this job. Since the advent of biotechnology, there have been a number of claims from anti-biotechnology activists that genetically-modified (GM) crops don't increase yields. Some have claimed that GM crops actually have lower yields than non-GM crops. More than half of the land growing cotton, corn, and soybeans in the US is now planted with genetically modified varieties and more countries are currently following suit. Worldwide, almost 90% of the human food supply is provided by only 15 crop species and 8 livestock species, small numbers when compared with the estimated 10-30 million species inhabiting our biosphere. This review analyzes the answers to two questions: (1) how far have we come? And (2) what impact, if any, will the new biotechnologies have in this field?

Key word: Genetic Engineering, Recombinant DNA, transgenic, Impact, Risks, Agriculture

MBB 002

ROLE OF FTSH12 GENE IN REGULATING ABIOTIC STRESS OF *Arabidopsis thaliana*

Kamaluddeen Kabir and Ibrahim Hamza Kankia

Department of Microbiology, Umaru Musa Yar'adua University, Katsina
Department of Biochemistry, Umaru Musa Yar'adua University, Katsina

Abstract

FtsH membrane proteases are found in eubacteria, animals and plants and are known to have a crucial role in housekeeping and proteolysis of membrane proteins. *Arabidopsis thaliana*, a plant has twelve FtsH family members (FtsH1-12) and their subcellular localization is restricted to mitochondria and chloroplasts. Similarly, most of the FtsH family are found to be working in pairs, some have overlapping functions as shown for FtsH1/5 and FtsH2/8. However, the function of FtsH12 in *Arabidopsis thaliana* remains a question. Attempt to knockout the FtsH12 gene in *Arabidopsis thaliana* results in failure germination and thus, plant death. In this research, FtsH12 gene of *Arabidopsis thaliana* was knockdown using the siRNA. The knockdown specie of *Arabidopsis thaliana* and wild type were subjected to osmotic and oxidative stresses with an intension of understanding the gene function. The root germination data and the root length data were analysed using different statistical tools and the result shows that *A. thaliana* wild type responds to the stress tolerance more than FtsH12 knockdown. This revealed a link between FtsH12 proteases and stress tolerance.

Keywords: FtsH12 gene; *Arabidopsis thaliana*; Stress; Regulation

MBB 003

PYRETHEROIDS RESISTANCE PROFILE AND MOLECULAR SPECIE IDENTIFICATION OF *Anopheles gambiae sensu lato* BREED IN LADANAI AREA OF NASARAWA LOCAL GOVT KANO STATE, NORTHWEST NIGERIA

***Mahmud Safiyanu, Umma Lawan, Muhammad Mahe Mukhtar**

[1]Department of Biochemistry, Yusuf Maitama Sule University, Kano
[2]Department of Biochemistry, Yusuf Maitama Sule University, Kano
[3]Department of Biochemistry, Bayero University Kano
Corresponding Author: samahmoud9@gmail.com, 08031967006

Abstract

Insecticides resistance has been a major setback in malaria control effort worldwide. Understanding specie composition and their resistance profile towards the major insecticides for vector control will immensely contributes in addressing these challenges. Larvae of anopheles mosquitoes collected from Ladanai, Nasarawa Local Govt, were reared to adults, after morphological identification of *An gambiae s.l* and their resistance profile, DNA extracts were used for determination of molecular specie composition. The result of the study shows that *An gambiae s.l*, the major malaria vector in the study site where highly resistant to pyretheroids permethrin and delatmethrin insecticides. Although some traces of *An gambiae ss* and *An arabiensis* were detected, *An colluzii* is the major molecular form specie identified in the site. The finding of this study established the presence of insecticides resistance in the study area which may be triggered by indiscriminate use of insecticides for residential and agricultural purposes. Establishment of Insecticide resistance in the study sites and predominance of *An colluzii* can guide the stake holders in implementing the most appropriate measures of vector control strategy in the study area.

MBB 004

MOLECULAR DETECTION OF *Toxoplasma gondii* AMONG CHILDREN ATTENDING SELECTED SCHOOLS IN KADUNA STATE

***Shitu, S.[1], Lawal, S.M.[2] and Hussaini, I.M.[2]**

[1]Scientific and Industrial Research Department,
National Research Institute for Chemical Technology, Zaria
[2]Department of Microbiology, Faculty of Life Sciences, Ahmadu Bello University, Zaria
*Corresponding Author; E-mail:sabiushitu22@gmail.com, +2348034640901

Abstract

Toxoplasmosis is a zoonotic infection of both humans and animals and has a worldwide distribution. A total of 300 blood samples were collected from school children in Kaduna state. The sera were screened for *Toxoplasma gondii* IgM and IgG antibodies by Enzyme Linked Immunosorbent Assay (ELISA). The seropositive samples were screened for *T. gondii* specific B1 gene. Out of the 300 blood samples screened for *Toxoplasma* IgM antibody, 108 (36.0%) were positive while 50 (16.67%) were seropositive for the *Toxoplasma* IgG antibody. Also 24 (8.0%) samples were seropositive for *Toxoplasma*IgG+IgM antibodies. B1 gene specific for *T. gondii* was detected by PCR in the ELISA positive samples. This confirms the presence of the parasite among the school children in Kaduna state.

Keywords: *Toxoplasma gondii*, antibodies, Kaduna, PCR, ELISA, children, school

MBB 005

NOVEL GENES INVOLVED IN BACTERIAL BIOSORPTION OF HEAVY METALS; A REVIEW

[1]U.B. IBRAHIM AND [2]A.H. KAWO

[1]Department Of Microbiology, Faculty of Science, Usmanu Danfodiyo University, Sokoto
[2]Department Of Microbiology, Faculty of Life Sciences, Bayero University, Kano
Correspondence: PHONE: +234 7035729586 EMAIL: umar.ibrahim3@udusok.edu.ng

Abstract

Over decades, our societies had become wealthier as a result of anthropogenic activities and this has created more diverse pollutants with no effective remediation measure in place. Although the limited pollution reduction measures in place are being exploited, in no distant future, the population growth, coupled with urbanization and industrialization, the pollution level will outperform them. The ability of microorganisms, most especially bacteria to remove heavy metal ions, radionuclide and, or to promote their transformation to less toxic forms has attracted the attention of environmental scientist, engineers and biotechnologist. Some strategies developed by bacteria efflux system encoded by resistance which comprises of several operons have being reported. It is therefore important to explore the genes involved metal regulation which can be an alternative to conventional methods for the removal of toxic heavy metals from both industrial and non industrial effluents. It offers several advantages including cost effectiveness, high efficiency, minimization of chemical/biological sludge, and regeneration of biosorbent with possibility of metal recovery. Most significantly, the metal removal capacity of biological biomass is a good or better than other conventional adsorbents. The new biologically based technologies need not necessarily replace conventional treatment approaches but may complement them.

Keywords: Contamination, Genes, Heavy Metals, Pollution

MBB 006

TISSUE CULTURE REQUIREMENTS FOR OPTIMAL PLANT GROWTH: REVIEW

Abdulaziz Rabiu Abdulkadir[1]*, Usman

[1,2]Shelterbelt research station, forestry research institute of Nigeria.
***Corresponding author**: Tel: +2348133090984 Email: warure089@gmail.com

Abstract

Generally plants are propagated by seeding or stem cuttings; the former has many obstacles which include, seed dormancy, low germination rate and progeny variation in some plant species. While the later may be disturbed by fungal, bacterial, viral and many micoplasmal diseases gained from the soil, air and sometimes insect vectors, this may lead to the declines of its productivity. Thus an alternative method may be through tissue culture. *In vitro* plant culture ultimately depends on composition of the culture medium. However different tissues may have different requirements for satisfactory growth. The use of *In vitro* plant tissue culture is steadily increasing especially in the mass propagation of economically important or elite plants including endangered species to avoid extinction. Each plant may have different composition of culture media thus there is no universal media that can be applicable to all types of organ or plant. Many culture media composes of some or all of the following component such as Macro elements, Micro elements, Vitamins, organic components (eg amino acids), plant growth regulators, Gelling agents (if semi solid). Plant growth regulators or phytohomones is up paramount important, thus it may directly or indirectly affect the plant growth. the activities of phytohomones relay on the concentration used, where at low concentrations it regulate nearest all the physiological and developmental processes in the life cycle of plants. There are five major classes of compounds with plant growth regulatory activities include auxins, cytokinins, gibberellins, abscisic acid and ethylene.

Keywords: Tissue culture, media, phytohomones

MBB 007

PRODUCTION OF HUMAN INSULIN HORMONE (HUMULIN) THROUGH GENETIC ENGINEERING USING *Escherichia coli* SPECIES

Yahaya Riko Yunusa and Umar Zubairu Darma

Department of Microbiology, Umaru Musa Yar'adua University, Katsina
zubairu.umar@umyu.edu.ng

Abstract

Diabetes is a hyperglycemic metabolic disorder resulting from insufficient production of insulin, with consequent metabolic dysfunctions as more than 425 million people are affected. In Nigeria, diabetes prevalence ranges from 2-12% of the adult population, which increases annually. Considering its flexibility genome and fast replication rates, *E. coli* remains the best bacterium prototype for rDNA experiments to produce Humulin. This hormone can signal the cleavage of the polypeptides in the Islets of Langerhans and makes the preproinsulin to produce proinsulin. The enzymatic removal of the link chain gave Humulin 51 amino-acids polypeptide of the mass 5808Da. Humulin produced from *E coli* can be used to eliminate zoonotic autoimmune-diseases risk which more economical. The manufacturing process can be from separate A and B polypeptide chains, or from proinsulin. An amino acid sequencer manufactures the sequences, which are cloned onto a plasmid. The bacteria are transfected, and placed in fermentation tanks. The insulin molecules are stored in inclusion bodies and solubilisation by chemicals and enzymes. Recent advances in the field, such as the application of bioinformatics in synthesis of insulin analogs, and novel delivery systems for the hormone are reviewed also. It is recommended that this new technology be applied in Nigeria in view of the prevalence of diabetes disease.

Keywords: Diabetes, Escherichia coli, Insulin, Genetic Engineering

MBB 008

MATRIX-ASSISTED LASER DESORPTION IONISATION TIME-OF-FLIGHT MASS SPECTROMETRY (MALDITOF-MS): A PROTEIN-BASED TECHNIQUE FOR MICROBIAL IDENTIFICATION AND RESISTANCE DETERMINATION

Yahaya Riko Yunusa and Umar Zubairu Darma

Department of Microbiology, Umaru Musa Yar'adua University, Katsina
E-mail: zubairu.umar@umyu.edu.ng

Abstract

Conventional microbial identifications are previously done based on microscopy, culture and biochemical characterizations. These techniques are time consuming and hardly can ascertain the real identity of a specific microbe while Immuno-based assays are costly, required much technical expertise and may not confirm serovars and strains comprehensively. Considering the scientific advancement in the molecular aspect, MALDI TOF-MS is a promising new technique for fast, easy, reliable and efficient microbial identification and resistance determination. In this technique, sample is deposited onto a matrix compound such as 2,(4,hydroxyphenylazo)benzoic acid (HABA). This matrix will act as desorptive agent in ionizing the surface proteins of the microbes with the ions travelling within a straight or curved reflector. The ions time-of-flight are measured in microseconds and are used as index to establish the mass per charge ratio. The ratio hence obtained can be compared with the standard software containing pre-put protein peptide mass fingerprints' spectra for comparison and detection. In susceptibility testing, spectral peaks are used as indices for detection of resistance determinants. This technique has the potentials to spearhead a revolution in microbial detection and resistance determination.

MBB 009

VISUALISATION OF NUCLEAR 80S RIBOSOMES AT DIFFERENT STAGES OF CELL CYCLE IN *Drosophila melanogaster* CELLS

[1]*Abdullahi A.S and [2]Brogna S.

[1] Department of Biochemistry, Umaru Musa Yar'adua University, P.M.B. 2218, Katsina, Nigeria
[2] School of Biosciences, University of Birmingham, B15 2TT, Birmingham, United Kingdom
***Corresponding author; Tel.: +234 80 36306019; *E-mail: akilu.sada@*umyu.edu.ng

Abstract

The contentious issue of nuclear translation has been debated between scientists for over 5 decades. While there exist evidences that supports translation can also occur in the nucleus, the general consensus is that translation is restricted to only the cytoplasm. In recent years, more evidences are being presented that suggest this theory is incorrect. Here we employed the Ribo-BiFC technique which can detect assembled, and potentially translating, ribosomes within cells and studied nuclear 80S assembly and translation at different stages of the cell cycle in Drosophila cells. The results of my experiments suggest that 80S ribosomes are present within the nucleus and especially within the nucleolus across all the cell cycle stages in *Drosophila* larvae that were visualised. The outcome of my investigation supports the many other previous findings that nuclear translation may occur in eukaryotic organisms.

Key words: Nucleus, Nucleolus, Ribosomes, Translation,

MBB 010

COMPLEMENTARY DNA SYNTHESIS AND STRUCTURAL ANALYSIS OF LACCASE 1 GENE FROM NEWLY ISOLATED STRAIN OF *Trametes polyzona* WRF03

[1]Ezike, T.C., [1]*Ezugwu, A.L., [1]Chilaka, F.C. and Eze, S.O.O.

[1] Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria
Email: linus.ezugwu@unn.edu.ng Phone: +2348063743436

Abstract

Laccase (EC 1.10.3.2) has attracted great attention because of its broad substrate specificity and high catalytic efficiency, which makes the enzyme applicable to several industrial processes. The biotechnological importance of laccase has stimulated the search for genes coding for them in different organisms for structure/function analyses and heterologous expression for commercial application. Genomic DNA and total RNA were extracted from fresh mycelia of *Trametes polyzona* WRF03 (*Tp*WRF03) using *AccuPrep*® DNA Extraction kit and *AccuPrep*® RNA Extraction kit respectively by following manufacturer's instructions. The complementary DNA (cDNA) was synthesized by reverse transcription tandem PCR (RT-PCR) using gene specific primers designed from the conserved copper-binding region I and IV in fungal laccases. The amplified gene was sequenced by dye terminator cycle sequencing with quick start kit according to manufacturer's instructions. The sequence obtained was analysed using some bioinformatics and computational chemistry tools. The *Tp*WRF03 cDNA contained 1563 bp segment encoding 520 amino acids. The coding region is interrupted by 10 introns of about 51- 62 bp with typical four ungapped conserved regions, HWHGFFQ, TFWYHSH, HPFHLHG, and PWFLHCH, which are required to coordinate the four copper atoms at the active site of the enzyme and four potential *N*-glycosylation sites at positions of 31, 96, 260 and 369. The theoretical isoelectric point and molecular weight are calculated to be 5.10 and 56 kDa respectively. Homology modelling with SWISS MODEL template library indicates that the *Tp*WRF03 lacc1 protein is a monomer and exhibited a molecular architecture organized in three sequentially arranged cupredoxin-like domains of a typical laccase. Thus, the cDNA could serve as a suitable template for strain improvement and production of large quantity of purified laccase required for industrial application.

MBB 011

BIOSTIMULATION OF BACTERIA AND FUNGI FOR THE DEGRADATION OF ATRAZINE CONTAMINATED SOIL.

[1]Danjuma Isah*., [1]Mohammed Adamu Milala and [2]Adams Lawan Ngala

[1]Department of Biochemistry, Faculty of Science, University of Maiduguri, Borno State, Nigeria
[2]Department of Soil Science, Faculty of Agriculture, University of Maiduguri, Borno State, Nigeria
Email: isahdanjuma2003@gmail.com Phone number: 07032220299

Abstract

Atrazine is a chlorinated selective systemic herbicide widely used globally. This work was designed to investigate the effect of using a biostimulant (cow dung) on bacterial and fungal strains for the possible degradation of atrazine contaminated soil. The soil and cow dung physicochemical characteristics were determined using standard methods. The effect of biostimulation on microbial population pre and post stimulation of both bacterial and fungal species were carried out using enumeration techniques. Bacterial isolates were identified based on gram staining and some biochemical tests. Fungal strains used were determined based on macroscopic and microscopic identification. The results of the soil physicochemical characteristics show slightly acidic pH (6.70±0.99), moderate calcium (6.37±0.19Cmol/kg), high magnesium (5.10±0.38Cmol/kg), moderate potassium (0.48±0.02Cmol/kg), moderately low nitrogen (0.16±0.01g/kg), moderate phosphorus (12.22±1.45g/kg) high O.C (15.38±0.05g/kg) were obtained respectively. The effect of pH and temperature on atrazine chlorohydrolase, hydroxyatrazine ethylaminohydrolase and N-isopropylammelide isopropylaminohydrolase showed the enzyme activities of 0.69umol/min, 0.32umol/min, 0.29umol/min and 0.51umol/min, 0.41umol/min, 0.31umol/min at optimum pH of 7.0 and temperature of 40^{o}C respectively by *P. aeruginosa*, the enzymes activities of 0.66umol/min, 0.35umol/min,0.29umol/min and 0.41umol/min, 0.34umol/min 0.29umol/min at optimum pH of 7.0 and temperature of 30^{o}C respectively by *T. harzianum* and the enzyme activities were 0.65umol/min, 0.45umol/min 0.37umol/min and 0.35umol/min, 0.27umol/min, 0.22umol/min by *A. niger* at an optimum pH of 7.0 and temperature of 30^{o}C respectively. The atrazine metabolites produced were identified using GC-MS techniques with the retention time and total percentage area of 16.33min and 0.3% for 4-chloro-6-methyl-1,3,5-triazine-2-amine. The total percentage area was lower for soil inoculated with a consortium of microorganisms with a retention time and total percentage area of 21.01min and 0.93% respectively for 5-hydroxy-1-(3-isoproxy-propyl, retention time and total percentage area of 23.47min and 0.33% respectively for 1,3 5-triazine whereas atrazine gave retention time and total percentage area of 13.33min and 68.8% respectively. From the study, the biostimulant (cow-dung) was found to be capable of enhancing microbial growth and activity. Hence, *Pseudomonas aeruginosa, Trichoderma harzianum* and *Aspergillus niger* have good potential as agent for the bioremediation.

MBB 012

IN SILICO SITE-DIRECTED MUTAGENESIS AND THE PREDICTED 3D STRUCTURE OF GST FROM *Acidivoras sp.* KKS102

***Murtala, Y.[1] and Ezeanyika, L. U. S.[2]**

[1]Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano
[2]Department of Biochemistry, Faculty of Biological Sciences, University of Nigeria, Nsukka
*Corresponding author: murtalakanya@mail.com

Abstract

Bacterial glutathione s-transferases (GSTs) are known to have variety of functions in detoxification processes. It is familiar that this detoxification ability is achieved through the attack of the thiolate form of glutathione on the electrophilic centres of toxic compounds. Indeed, bacterial glutathione s-tranferase from *Acidovorax* sp. KKS102 is now known to have a dehalogenation function. However, little is known about the specific amino acids involved in this catalytic process. In this study, we investigated the effect of *in silico* site-directed mutagenesis of the highly conserved amino acids, Ser11 and Lys107, on the

theoretical 3D structure of GST from *Acidovorax* sp. KKS102 (GST-KKS102) using Deep View/Swiss-Pdb Viewer. All amino acid substitutions were found to affect the overall structure of the GST-KKS102. However, substitution at Ser11, with aromatic amino acids Tyr, Phe and Trp and positively charged amino acids, Arg, His and lys produced the greatest effect on the 3D structure of the protein. Indeed, at Lys107, substitution with aromatic amino acid, Pro produced the highest effect on the 3D structure of the GST-KKS102. This *in silico* analysis suggests that Deep View scores could aid in planning *in vitro* site-directed mutagenesis studies in protein engineering. Detail analysis of enzyme activity of mutant GST-KKS102 could help in the understanding of the role of these amino acids in determining enzyme activity levels, substrate binding or specificity.

Keywords: Glutathione s-transferase, *Acidovoras sp.* KKS102, Site-directed mutagenesis, 3D structure

MBB 013

BIOCHAR AS A TOOL FOR THE OPTIMIZATION OF BIOGAS PRODUCTION

Okeke, Chioma Blessing* and Ubani, Chike Samuel.

Department of Biochemistry, University of Nigeria, Nsukka, Enugu State, Nigeria.
okekecb10752@gmail.com, +2347061159646.

Abstract

This study investigated the effect of biochar from the pyrolysis of coconut shell in the anaerobic digestion of poultry dropping and cassava peels regarding biogas production. The setup include loading two 32L capacity biodigesters of fixed dome prototype with the poultry droppings and cassava peels in the ratio 3:1 respectively. The blends were labelled A and B. Blend A had 70% of the poultry dropping and 30% cassava peel while blend B had 70% of the poultry dropping, 30% cassava peel and 5% biochar. Biodigestion of the blends were carried out simultaneously under the same environmental and operational conditions for 40 days. Biogas production and the methane yield increased to around 42.6% and 10.82% with the addition of 5% biochar. The addition of biochar also had an effect on the total viable count, the C/N ratio, the lag period and the volatile organic acids. The results of this study favour biochar as an effective tool for the optimization biogas production.

Keywords: biochar; biodigestion; biogas; anaerobic digestion; methane

MBB 014

DETECTION OF EXTENDED SPECTRUM BETA LACTAMASE PRODUCING ISOLATES FROM CLINICAL SAMPLES USING POLYMERASE CHAIN REACTION

***[1]Hussain Yahaya UK, [2]Bulus Matthew Wulni, [3]Sa'adatu Muazu Jodi, [4]Alhassan Muhammad Alhassan, [5]Ahmed Olowo-Okere, and [6]Nuhu Tanko**

1,2,3,5,6 Department of Pharmaceutics and Pharamceutical Microbiology, Faculty of Pharmaceutical, Usmanu Danfodiyo Uinversity, Sokoto

4 Department ofPharmaceutical Chemistry and Drug Development, Faculty of Pharmaceutical Sciences, Usmanu Danfodiyo University, Sokoto

*Corresponding author: ungpkorehussain@yahoo.com nuhu.tanko@yahoo.com 08033647999

Abstract

There are numerous reported cases of extended spectrum beta lactamases (ESBLs) producing enterobacteriaceae in Nigeria, with little effort done on the molecular detection. Epidemiological studies around the world have investigated the prevalence of ESBL-producing enterobacteriaceae and they have seen multiple mechanisms of drug-resistance. Our study was designed to detect ESBLs genes such as CTX-M, SHV, and TEM using PCR from clinical isolates in a tertiary hospital in Sokoto metropolis. Clinical isolates from the Microbiology laboratory of the tertiary hospital was collected for 3 months.

These isolates were identified using standard microbiological methods. They were tested against 8 antibiotics using the modified Kirby Baeur disc diffusion method. Multidrug resistant isolates were screened for ESBL production, and further confirmed by the Double Disc Synergy Test (DDST). Genotypic confirmation was carried out using multiplex Polymerase Chain Reaction (PCR). A total of 47 isolates made up of 21 *E. coli* (44.6%), 13 Klebsiella spp (27.6%), 7 Salmonella spp (14.9%), 5 Proteus mirabilis (10.6%), and 1 Enterobacter spp (2.1%) were obtained from urine, stool, and wound swab. Out of the 47 isolates, (45) 95.7% were multidrug resistant. Twenty five (53.2%) were potential ESBL producers, while only 5 (20.0%) were confirmed phenotypically using DDST. PCR results revealed 4 out of 5 of the isolates were possessing ESBL genes. It also revealed that 3 isolates co-produce TEM and SHV at 403bp and 293bp respectively. Only 1 isolate produced CTX-M gene at 569bp. The prevalence of ESBL production in the Gram negative enterobacteriaceae in our study did not indicate a high prevalence as reported by some studies in Sokoto and Northwest Nigeria.

Keywords: Molecular detection, ESBLs, Clinical isolates, PCR

MBB 015

EVALUATION OF GENETIC DIVERSITY AND CARDIOVASCULAR DISEASE SUSCEPTIBILITY OF SICKLE CELL DISEASE USING SINGLE NUCLEOTIDE POLYMORPHISM

Oyawoye Fatima Olatundunmomi[1*], Oni Azeezat Omobukola[1], Kelani Teslimat Olamide[1], Oseni G.O [2] Afolabi-Balogun Nusrah Bolatitio[1]

[1]Molecular Biology & Genetic Diversity Research Laboratory, Biochemistry Unit, Department of Chemical Sciences, College of Natural & Applied Sciences, Fountain University, Osogbo, Osun State, [2]Ladoke Akintola University Teaching Hospital, Idi Sheke, Osogbo-Osun State, Nigeria.
Email: princessthintima@gmail.com Phone number: +2347059937059

Abstract

Sickle cell disease is a genetic disorder of the red blood cell common in sub-Saharan Africa, India and Middle East. The sickle cell individuals are susceptible to infections like *Chlamydia trachoma* and other non-infectious diseases like cardiovascular diseases. This study, carried out among sickle cell individuals within Fountain University Osogbo, and their relations, set to verify the degree of manifestation of genetic variation in sickle cell cases using established variant; single nucleotide polymorphism sequences in Galnt13 gene encoding polypeptide N-acetylgalactosaminyltransferase 13, ADORA2B encoding Adenosine receptor A2B, DRD2 encoding Dopamine receptor D2 and PRELP encoding proline and arginine rich end leucine rich repeat protein were evaluated on ensemble (www.ensembl.org/Homo_sapiens/Tools/VEP) and National Centre for Biotechnology Information (www.ncbi.nlm.nih.gov/variation/tools/reporter/) to give insight into the susceptibility of sickle cell individuals to pulmonary arterial hypertension (PAH). This revealed susceptibility to pulmonary hypertension followed a phenotype dependent pattern with those of the blood group B with sickle cell trait been more susceptible to mutational changes in PRELP, while no mutational changes were detected in GALNT13, ADORA2B and DRD2 gene of the studied group. However, other variations were observed and evaluation of the variant for clinical significant shows no recorded significance. Thus this study revealed susceptibility to PAH in SCA/D individuals is phenotypically dependent, with individuals with Blood Group B been more susceptible to mutation in PRELP (rs2794452 NC_000001.11:g.203468576T>C. However, the need to expand the scope of the work to sickle clinics using a large sample size is inevitable to establish our findings reported to be associated with PAH in the African SCA/D. Further verify the effects of the intergenic variant observed in all studied participants.

Keywords: Sickle cell disease, cardiovascular disease, pulmonary arterial hypertension, susceptibility, GALNT13, DRD2, ADORA2 and PRELP

MBB 016

MOLECULAR DOCKING AND SELECTIVE BINDING AFFINITY OF GEDUNIN AND ITS MONOSUBSTITUTED DERIVATIVES AS POTENTIAL ANTICANCER AGENTS TARGETING THE HUMAN NAD$^+$ KINASE

***[1]S. Cosmas, [1]O. A Durojaye, [1]D. E Anyebe, [1]P. T Okoli, [1]R. O Asomadu, [1]E. N Akpan**

[1]Department of Biochemistry, University of Nigeria, Nsukka, University of Nigeria, Nsukka.
Corresponding Author Cos242@yahoo.com, +2348163289986

Abstract

The successful treatment of cancer has encountered a major obstacle and this is due to the development of resistance to chemotherapeutic agents by cancer cells. The genetic instability of cancer allows it to opt for the most adaptable mutation in order to circumvent drug effects because most cancer therapies often target a single oncogenic protein. The phosphorylation of nicotinamide adenine dinucleotide (NAD^+) to nicotinamide adenine dinucleotide phosphate ($NADP^+$) is catalyzed by NAD^+ kinase (NADK), which utilizes ATP as the phosphate donor. The reduction of $NADP^+$ to NADPH is then catalyzed by specific dehydrogenases (glucose-6-phosphate dehydrogenase and the malic enzymes). Proliferating cancer cells demand a high concentration of NADPH because of its action as a cofactor in synthesizing fatty acids, nucleotides and proteins. Gedunin, a tetranortriterpenoid isolated from *Azadirachta indica*, was recently shown to manifest anticancer activities. The Autodock Vina software was used in carrying out a molecular docking study on gedunin and seven of its structurally diverse analogues against the human NAD^+ kinase. The physiochemical analysis, lipophilicity, solubility, pharmacokinetics and lipinski druglikeness of these molecules were also evaluated through extensive structure-activity relationship study. The monosubstituted analogues of gedunin were designed by the substitution of a single methyl group for C=O, C_2H_5, CHO, $C_3H_6O_2$, $C_4H_8O_2$, OCH_3 and OH while the inhibitory effect of the ligands were estimated using the scoring function obtained from the docking process. The free binding energies of gedunin and its monosubstituted analogues (C=O, C_2H_5, CHO, $C_3H_6O_2$, $C_4H_8O_2$, OCH_3 and OH) against the human NADK were -8.0, -7.7, -8.5, -7.5, -6.7, -7.3, -6.9 and -9.0Kcal/mol respectively. Gedunin and all its analogues exhibited a high binding energy with the target enzyme, but the OH analogue showed the lowest value against the enzyme. The low free binding energy value (more negative value) exhibited by the OH analogue shows it is a better anticancer agent. The inability of all the molecules to cross the blood brain barrier as displayed in the structure-activity relationship results shows that they pose no threat to the brain function. Gedunin and all its monosubstituted derivatives exhibited a high gastrointestinal absorption rate and are also moderately soluble in water. The results showed that the OH analogue of gedunin might be a better anticancer agent. The laboratory synthesis and preclinical study of the compound is therefore recommended in order to confirm this potential.

Keywords: Docking; Gedunin; NAD^+ kinase; Pharmacokinetics; Blood Brain Barrier.

MBB 017

A COMPARATIVE GENOMIC STUDY ON THE DIHYDROFOLATE REDUCTASE-THYMIDYLATE SYNTHASE OF *Plasmodium sp*; PREDICTION OF POTENTIAL THERAPEUTIC TARGETS USING THE ENZYME PHYSIOCHEMICAL CHARACTERISTICS

[1]P. E Joshua, *[1]O. A Durojaye, [1]S. Cosmas, [1]C. A Difa, [2]R. Ojo, [1]P. T Okoli, [1]D. E Anyebe

[1]Department of Biochemistry, University of Nigeria, Nsukka, University of Nigeria, Nsukka;
[2]Department of Biochemistry, Ahmadu Bello University, Zaria.
Corresponding Author's Email and Phone Number: lanre.durojaye@yahoo.com, +2348120814475

Abstract

Plasmodium is a genus of unicellular eukaryotes that are obligate parasites of vertebrates and insects. Over the course of the 20th century, many other species were discovered in various hosts and classified, including five species that regularly infect humans: *P. vivax*, *P. falciparum*, *P. malariae*, *P. ovale*, and *P. knowlesi*. *P. falciparum* is by far the most lethal in humans, resulting in hundreds of thousands of deaths

per year. A number of drugs have been developed to treat *Plasmodium* infection; however, the parasites have evolved resistance to each drug developed. Dihydrofolate reductase-thymidylate synthase is a bifunctional enzyme found in some plant species and protozoal parasites including malarial species and trypanosomes. Five species of *Plasmodium* were used for the purpose of this study and the amino acid sequences of their dihydrofolate reductase-thymidylate synthase enzyme were retrieved from the NCBI database. Subcellular localization was predicted using the PSORTb prediction tool while the sequence alignment and identification of protein conserved domains were achieved using ClustalO and MEGA 7 software respectively. The physiochemical characteristics of each protein were predicted using the ExPASy-ProtParam tool and the secondary structure and evolutionary relationship between the proteins were predicted by utilizing the CFSSP server and MEGA 7 respectively. The Phylogeny.fr was used to predict the evolutionary relationship between the proteins. The results obtained from the subcellular localization prediction of the enzymes showed that the *Plasmodium* dihydrofolate reductase-thymidylate synthase is a cytosolic enzyme while the minimum percentage identity observed between the proteins is 72.85. *Plasmodium ovale* also showed the highest value from the instability indices results of the physiochemical characteristics. The physiochemical characteristics result showed that *Plasmodium ovale* dihydrofolate reductase-thymidylate synthase might be the most unstable of the five proteins while the *Plasmodium falciparum* dihydrofolate reductase-thymidylate synthase might be the most stable having exhibited an instability index value of 34.81. The 3D structure modeling and molecular docking study of these enzymes is therefore recommended.

Keywords: *Plasmodium*; Dihydrofolate reductase-thymidylate synthase; Enzyme

MBB 018

IN SILICO ANALYSIS OF *Helicobacter pylori* 26695 VIRULENCE GENES

Lawal, H.M.*, Nahantsi, M.S and Tukur, U.

Department of Biology, Shehu Shagari College of Education P.M.B. 2129 Sokoto.
*__Author of Correspondence__:hmuhdlawal@yahoo.com. +234(0)7060429418.

Abstract

The spore-forming pathogenic bacterium *Helicobacter pylori* colonizes the human stomach and has been implicated in affecting half of the human population and causing a variety of diseases such as gastritis, gastric & duodenal ulcers. In some cases, these diseases might persist to gastric cancer depending on the strain that cause the infection. Hence, there is need to further understand the virulent factors associated with *H. pylori* infection and the mechanism by which they cause damage to human health. This study used Web Artemis Comparison Tool (webACT) and The National Center for Biotechnology Information (NCBI) website to study the genome of *H. pylori* 26695 strain for the presence of virulence genes that might be associated with its pathogenicity. Several virulent factors were observed by comparative analysis of *H. pylori* 26695 genome with close specie of same strain *H. pylori* J99 and other related specie *C. jejuni*. *H. pylori* was found to possess the following genes: Hp0232 for motility, Hp0887 for vacuolating cytotoxin, Hp0289 & Hp0922 for toxin-like outer membrane protein, and Hp0529, Hp0538 for Cag pathogenicity island that encode several proteins essential for inflammation. These identified traits *in H. pylori* might help in colonization of the gastric epithelial cells and damage to tissues and could therefore contributes to the pathogenecity of *H. pylori* 26695.

Key words: *H. pylori* , Virulence, pathogenicity ,genome , genes

MBB 019

SCREENING OF DNA gyrase A *(GYRA)* VARIANT IN CLINICAL SAMPLE OF *Salmonella entrica* SEROVA TYPHI

Bashiru Ibrahim[1*], Dalhat Mahmood Hassan.[2], Ibrahim Muhmmad Suru[2] Kabiru Sirajo[1], Maimuna Musa.[3], Abdullahi Muhammad Labbo.[1] and Zulkallaini Shehu.[1]

[1]Department of Biochemistry, Sokoto State University,Sokoto, Nigeria.
[2] Department of Biochemistry, Usmanu Danfodiyo University Sokoto, Nigeria.
[3]Department of Biological Sciences, Usmanu Danfodiyo University Sokoto, Nigeria.
*Corresponding author: E-mail: ibrahim.bashiru@ssu.edu.ng +2348032767648

Abstract

Salmonella species are gram negative, facultative anaerobic and non-spore forming bacteria. Quinolones are widely consumed class of synthetic drugs extended spectrum b- lactomases (ESBLs) like ciprofloxacin are highly effective against gram negative bacteria, especially salmonella entrica serova typhi. In salmonella entrica serova typhi the major target for quinolone is DNA *gyr* A. This enzyme is composed of two subunits *gyr* A and *gyr* B encoding by *gyr* A and *gyr* B respectively. Mutation in *gyr* A genes cause quinolone resistance found in quinolome resistance determining region (QRDR) section of *gyr* A. In this study, automated DNA sequence method was used. Result obtained after using bioinformatics tools revealed the presence insertion of Thymine (T) nucleotide at position 975655, insertion of T in the *gyr* A gene led to premature production of stop codon which implicated in nonsense mutation. Mutatiom in nucleotide sequence of salmonella entrica serova typhi might result in ciprofloxacin acts by inhibiting the action of gyr A. In conclusion, salmonella sntrica typhi that we screened might be resistant to quinolone because of nonsense mutation

Keywords: Salmonella, DNA gyrase A, Mutation, Nucleotide

MBB 020

EFFECTS OF PEPTIDE TAGS ON PROTEIN EXPRESSION AND PROPERTIES

Ibrahim Khalil Adam[1*] and Bello Aminu Bello[1]
Departments of Biochemistry, Federal University Dutse, Jigawa State, Nigeria
Corresponding author: ibrahimkhalil_adam@yahoo.com; 07063455543

Abstract

Proteins are important biomolecules in the cell, their functions and properties are determined by the respective amino acids composition. This work focused on engineering of the proteins by addition of peptide motifs or tags; and determining the effect of the different fusions on protein expression *in planta* as well as protein properties. *H. vulgare* (barley) alpha amylase 2 (Hvamy2) was used. Short fusions of Hvamy2 including histidine octapeptide, ER retention motif HDEL and its derivative such as KDEL and EDDHDEL and long fusion, calreticulin with or without HDEL were generated. In addition, the glycan mutants of the different proteins were also generated. Different expression systems were used; transient expression in tobacco protoplasts and *Agrobacterium* infiltration as well as stable expression by generating transgenic plants expressing the proteins. Results showed that none of the amylases was glycosylated in tobacco protoplasts. However, amylase fused to histidine and amylase fused to calreticulin with or without HDEL were glycosylated on transient expressions in infiltrated leaves epidermal cells, in contrast, Hvamy2, amylase-HDEL and amylase-EDDHDEL were not. The Hvamy2 and all the different fusion proteins were glycosylated on stable expression. The amount of the proteins and activities were also depended on the expression systems. Thus, the results revealed an effect of peptide tags on N-linked glycosylation as well as evidence that expression levels and systems can strongly affect glycosylation of proteins in the secretory pathway. The results obtained also generated evidence for context-dependence of the ER retention motif HDEL, and existence of an HDEL-independent ER retention mechanism.

MBB 021

EXPLORING THE ROLES OF PHARMACEUTICAL BIOTECHNOLOGY AS A TRENDING PARADIGM IN NATIONAL DEVELOPMENT: AN OVERVIEW

Mujahid Hussaini

Department of Microbiology, Umaru Musa Yar'adua University, P.M.B 2218, Katsina-Nigeria.
mujahidbinhussaini@gmail.com +2347035266992

Abstract

Biotechnology which is a broader branch of science generally encompasses the use of biological and technological approaches by making use of tools, products and concepts which are prerequisites of pharmaceutical manufacturing companies. Pharmaceutical biotechnology in relative to other disciples, is still a relatively newly developing branch of biotechnology which forecast many promising future benefits to our immediate community and the world at large. In our modern world, there have being trending and increasing challenges such as the presence of rampant notorious infectious and clinical diseases, ill-health and insufficient countering measures. In fact, our life styles and the rising threats of antimicrobial resistance have compounded the problems more. And as humans remain the key component of the environment, in absence of a healthy state, the progress of all other activities executed by man will definitely drawback. Pharmaceutical biotechnology has being gradually helping in arresting these challenges, majorly by enhancing the efficiency and efficacy of many pharmaceutical products such as drugs, hormones, monoclonal antibodies and vaccines. Thus, Pharmaceutical biotechnology can create a path-breaking solution to our modern world challenges, thereby improving our health, standards of living and subsequently decreasing the global mortality rate. As adopting the new technologies and upgrading the older ones are central to pharmaceutical biotechnology, its foredeals to the future even holds more.

Keywords: Biotechnology**;** Challenges: Pharmaceutical biotechnology; Pharmaceutical Products.

MBB 022

SANGER SEQUENCING OF HEAVY METAL RESISTANT COCCI BACTERIA

Adebo, Adeyinka[1, 2*]; Umeh, Ebele Uchenna[2]; Gberikon, Grace Mwuese [2] and Ogbonna, Innocent Okonkwo[2]

[1]Department of Biological Sciences, University of Mkar, Mkar. Gboko Benue State.
[2]Department of Microbiology, University of Agriculture Makurdi, Benue State.
E-mail: joseph_adeyinka35@yahoo.co.uk, Phone number: 08038253418

Abstract

Heavy metals are classified as one of the environmental pollutants because of their toxic effects on plants, animals, human beings and microorganisms. Heavy metals occur in soil microbial habitat due to natural and anthropogenic processes. Hence, microbes especially bacteria have acquired varied mechanisms of adaptation, biotransformation and detoxification responses to heavy metals. Microbes that are able to survive in heavy metal polluted sites are of great interest as bioremediation agents. The aim of this study was to carry out Sanger sequencing of 16S rRNA genes of heavy metal resistant cocci bacteria isolated from industrial and waste site soil of a cement factory. Bacterial isolates were assayed for resistance to heavy metals such as cadmium (Cd), cobalt (Co), copper (Cu), chromium (Cr), lead (Pb), iron (Fe) and zinc (Zn). Bacterial isolates were inoculated on nutrient agar supplemented with salts of various heavy metals at different concentrations (mg/L). Minimum inhibitory concentration (MIC) of the heavy metals

on cocci bacteria was determined at concentrations: 0.00, 0.25, 0.50, 0.75, 1.00, 1.25 and 1.50 mg/mL. Plasmid profiling of bacteria was carried out. Chromosomal DNA was extracted from the bacteria using Quick-DNA™ Universal Kit by Zymo Research USA. The purity of extracted DNAs' was determined by NanoDrop Spectrophotometer. Twenty-five (25) microlitre (µl) volumes were used for polymerase chain reaction. Amplicons were electrophoresed and sequenced. Forward and reverse nucleotides sequences were aligned using Geneious software. Nucleotides sequences were subjected to blast at ncbi website. Cocci bacteria showed resistance to the test heavy metals. MIC was determined for heavy metals. Plasmid profiling shown that cocci bacteria habour mega plasmids (23000bp). Values gotten from NanoDrop Spectrophotometer confirmed the purity of the DNAs' at OD260: OD280. Electrophoresis revealed that 16S rRNA genes amplified at 1500 base pair. Blast analysis revealed that the cocci bacteria are *Macrococcus brunensis* (Strain ADY37) and *Aerococcus urinaeequi* (Strain ADY10) with accession numbers MH084821 and MH084799. The findings of this research revealed that these cocci bacteria are potential bioremediation agents of heavy metals in polluted sites.

Key words: Sanger Sequencing**,** Cocci Bacteria, Resistance, Heavy Metal, 16S rRNA gene and Bioremediation

MBB 023

MOLECULAR BIOLOGY, TRENDING PARADIGM IN RESOLVNG PLANT PHYLOGENY: THE TRIBE DESMODIEAE

Ibrahim Adamu Tahir[1], Abubakar Bello[2], Sani Muhammad Gidado[2] and Aliyu Habib[3]

[1]Biology Departmen,t Federal College of Education, Katsina.
[2]Center for Biodiversity and Conservation, Biology Department Umaru Musa Yar'adua University, Katsina.
[3]Biology Department, School of pre degree Umaru Musa Yar'adua University, Katsina
Corresponding author: 08022662023, pgbio150006@students.umyu.edu.ng

Abstract

The tribe Desmodieae has a pantropical distribution and is considered to be the most advanced tribe in the Papilionoideae. With its greatest centres of development in tropical Asia and America, Africa is relatively poorly endowed and only four genera comprising twenty five species occur in the Flora of West Tropical Africa. Many of these species are widespread in the old World tropics and the few African endemics appear to be closely related to them hence the need to establish their relationship. To achieve the said objectives, sequences from internal transcribed spacer (ITS) of nuclear ribosomal DNA obtained from freshly collected samples of *Alysicarpus* and those of other tribe members uploaded in the genbank were downloaded and used in the study. Datasets were analysed using maximum likelihood approaches. The result revealed the tribe to be polyphyletic and could be divided into four distinct clades compose of six genera; *Alysicarpus*, *Desmodium, Uraria, Hylodesmum* and *Pseudarthria*. It was suggested that sequence from chlorophlast DNA be incorporated to the present study to resolve the relationship within the tribe.

Key words: Desmodieae, ITS, Maximum likelihood, polyphyletic

MBB 024

EXPRESSION OF D-SPECIFIC DEHALOGENASE GENE IN *Escherichia coli* K-12

Ismaila Yada Sudi[1*], Azzmer Azzar Abdul Hamid[2], Fahrul Huyop[3]

[1]Department of Biochemistry, Faculty of Science, Adamawa State University, Mubi, Nigeria.
[2]Faculty of Science, International Islamic University Malaysia, Kuantan, Pahang, Malaysia.
[3]Faculty of Biosciences and Medical Engineering (FBME), Universiti Teknologi Malaysia, Johor Bahru, Johor, Malaysia
*Corresponding author: Email, yada280@gmail.com H/P, +2348160787132

Abstarct

Haloalkanoic acids are toxic compounds with limited organisms capable of degrading D-isomers and development of dehalogenating enzymes for use as industrial biocatalyst and bioremediation have been limited. Dehalogenase D (DehD) is produced by *Rhizobium* sp. RC1 which breakdown carbon-halogen bond of D-halogenated compounds. DehD is stereospecific to only D-enantiomers causing an inversion in the carbon-2 (C_2) configuration of the hydroxyalkanoic acid. The present work was to optimize the growth conditions necessary for the expression of the DehD protein. DehD was previously cloned into *Escherichia coli* K-12 strain NM522, used as host for a vector pUC19 plasmid for protein expression. This was aimed for possible bioremediation of environmental haloalkanoic acid toxicants. Transformed bacterial cells harboring pSC3 encoding dehD gene cloned in pUC19 were cultured in Luria bartini (LB) broth at temperatures between 20°C – 37°C. Cell extracts were prepared from *E. coli* K-12 cells in the mid-exponential to late-exponential phase of growth using MSE Soniprep 150 ultrasonicator, by centrifugation at 20000 g for 15 min at 4ºC. The cell free extracts from recombinant cells were then subjected to SDS-PAGE analysis. The dehD expression with 0.1 mM IPTG at temperatures of 20 ºC to 37 ºC presented to some extent protein expression for both IPTG induced and non-induced expressions in both CFE and insoluble fractions. The optimum expression was observed at 20 ºC, 25 ºC and 37 ºC.

Keywords: Dehalogenase, Stereospecific, Bioremediation, Recombinant cells, DehD expression

MBB 025

OPERATIONAL MECHANISMS AND FUNCTIONALITY OF BIOINFORMATICS SYSTEMS- AN OVERVIEW

Abdulsamad Adamu Aliyu [1] , Ibrahim Hamza Kankia PhD[2]

[1] Directorate of ICT. Umaru Musa Yar'adua University Katsina-Nigeria
[2] Department of Biochemistry, Umaru Musa Yar'adua University Katsina-Nigeria
Corresponding author: abdulsamad.adamu@umyu.edu.ng

Abstract

Three (3) interdisciplinary fields brings together a platform called Bioinformatics systems; this includes Computational Sciences (Mathematics and Algorithms), Engineering and Technologies, and Biotechnology (modern Biological Sciences), this helps scientists tremendously in solving complex biological problems through information technology platform. Considering the impact and contributions of bioinformatics systems in the area of biological computation and medical sectors in terms of behavioral analysis, new discoveries, structure predictions, and medical diagnosis of health data, then it has become significant and important for this research to review the functionalities of such application platforms and its operational mechanisms based on the available literatures and articles that has made contributions in that area. This will help in finding the overall

efficiency of the tools for the benefits of scientists and researchers of different purposes. The process of developing the operational algorithms using analytical and theoretical methods, mathematical modeling and computational simulation techniques of studying the biological behaviors and systems allows scientists to acquire and capture data from genes or DNA, proteins sequence, drug ingredients and metabolic systems using analysis methods and visualizations, the data can be organized and stored for computational interpretation. This can be achieved using activity monitoring and studying processes of behaviors and life style of the data.

Key Words: Bioinformatics, Sequence analyses, Molecular structure prediction, application software, tools

MBB 026

MOLECULAR PROFILING OF THE *FTO* GENE GXPRESSION IN THE HYPOTHALAMUS OF DIET-INDUCED OBESITY RATS TREATED WITH *Solanum melongena* AND *Solanum aethiopicum* FRUIT-BASED DIETS.

***Edeke, Affiong Asuquo[1,3], Enomfon Akpan[3], Odiba, Solomon Arome[1,2] , Nwanguma Bennette[1,2] and Fred Nwodo[1]**

[1]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State

[2]Department of Molecular Biology and Genetics, University of Nigeria, Nsukka

[3]Department of Biochemistry, Faculty of Basic Medical Sciences, University of Uyo, Akwa Ibom State

***Corresponding Author:** (affiong.edeke.pg79260@unn.edu.ng/+2347011118147)

Abstract

The fat mass and obesity (FTO) gene is a nucleic acid demethylase, with preference for thymine and uracil and it is abundantly expressed in all hypothalamic sites governing feeding behavior. In this study, the comparative effects of *Solanum melongena* fruit (SMF) and *Solanum aethiopicum* fruit (SAF) on the gene expression level of FTO were evaluated in the hypothalamus of high-fat diet (HFD) induced obesity rats. Sixty female Wistar rats were randomly grouped into ten groups (1-10) after induction of obesity using HFD for six weeks. Group 1 received normal diet (ND), Group 2/untreated control (ND), Group 3 (ND + orlistat), Group 4 (ND + 10% SMF), Group 5 (ND + 20% SMF), Group 6 (ND + 30% SMF) Group 7 (ND + 10% SAF), Group 8 (ND + 20% SAF), Group 9 (ND + 30% SAF) and Group 10 (ND + 15% SAF + 15% SMF). Sequencing and expressions of FTO gene was measured by relative quantification PCR using SYBR green chemistry. Data were analyzed using Applied Biosystems SDS software 1.4 and Graphpad prism 5.0. Results show that consumption of HFD for six week significantly ($p < 0.05$) increased the mRNA level of FTO in HFD induced rats than normal control. However, administration of SMF and SAF supplemented diet for six weeks significantly ($p < 0.05$) decreased the mRNA expressions of FTO gene in the treated groups compared to untreated control. The decreases posessed by both fruit samples may probably be mediated by other bioactive components in these plants.

MBB 027

PRODUCTION OF BUTANOL FROM PLANTAIN TRUNK HYDROLYSATE USING *Clostridium acetobutylicum* IN A SUBMERGED FERMENTATION

Egwim Evans Chidi*, Makun Husseini, Michael Jegede and Yemisi Omonije

Biochemistry Department, Federal University of Technology, Niger State PMB 65, Nigeria

Correspondence: evanschidi@gmail.com

Abstract

Biobutanol from lignocellulosic biomass has gained much attention as a source of bioenergy production. However, the availability and the cost of the biomass are important factors. In this work, plantain trunk biomass was used as feedstock for the production of biobutanol through submerged fermentation. The plantain trunk biomass were sun dried, and milled into fine particles using blender, followed by pre-

treatment with dilute sodium hydroxide 4 %(w/v). Enzymatic hydrolysis of un-pretreated and pretreated plantain trunk biomass was carried out for 5 days using cellulase and pectinase separately and later combined for comparison. *Clostridium acetobutylicum* isolated from spoilt beef was used to ferment the enzymatic hydrolysate under aerobic and anaerobic condition to monitor glucose consumption for 7 days of fermentation. The fermentation products were analyzed by using gas chromatography GC (SRI 8610). Highest glucose yield (79.59 mg/g) was obtained when cellulase and pectinase were combined on pretreated biomass. Also glucose consumption was higher in anaerobic compared to aerobic fermentation resulting in butanol yield of 0.0243 ml/l and 0.0198 ml/l respectively. The result indicates that alkaline pretreatment of plantain trunk biomass when hydrolysed with combined cellulase and pectinase in anaerobic fermentation could give a high yield of lignocellulosic biobutanol.

Key words: Lignocellulosic wastes, pretreatment, plantain trunk, fermentation, biobutanol

MBB 028

PHYTO-MEDIATED SYNTHESIS OF ZINC OXIDE NANOPARTICLES: A NEW FRONTIER IN BIOTECHNOLOGY.

Dangana S. Reuben[1] and Femi K. Agboola[2*]

Department of Biochemistry and Molecular Biology, Obafemi Awolowo University, Ile Ife, Nigeria.
Corresponding author: E-mail: fagboola@yahoo.com; Phone: +2348034738078

Abstract

Bio-nanotechnology has gained wide attention in the research field of modern materials science over the past decade. Biogenic synthesis of Zinc oxide nanoparticles (ZnO NPs) is currently attracting great deal of research efforts because of their broad range of applications and relatively non-toxicity, particularly in targeted delivery in anticancer therapy and antibacterial fields, which are involved with their potent ability to trigger excess reactive oxygen species (ROS) production, release zinc ions, and induce cell apoptosis. The recent advances in green synthetic methods of ZnO NPs are reviewed in this paper and discussed in the light of their applications of ZnO NPs in drug delivery, theranosty, biosensors, and gene delivery as well as supplementation of organic fertilizers with ZnO NPs. In addition, advantage of green synthesis over physical and chemical methods and the future perspective are also discussed and highlighted.

MBB 029

IDENTIFICATION OF SINGLE SPECIMENS OF THE *Anopheles gambiae* COMPLEX FROM UNGUWAN JUMA ZARIA BY THE POLYMERASE CHAIN REACTION (PCR)

Fauziyya Abubakar Adamu[1], Zilkifil Abulhassan (*) [2], Aisha Adam Muhammad[1], Aisha Abba Habib[1], Daha Umar Ishaq[2] and Binta Garba Kurfi[2]

[1]Department of Science Laboratory Technology, School of Technology Kano. and [2] Department of Biochemistry, Faculty of Basic Medical Sciences, Bayero University, Kano.
xikprof@gmail.com +2348069430606, Nigeria.

Abstract

Identification of *Anopheles coluzii*, *Anopheles arabiensis* and *Anopheles funestus* from field-collected *Anopheles gambiae* complex is often necessary in basic and applied research, and in operational control programs. The currently accepted method involves use of standard polymerase chain reaction PCR amplification of ribosomal DNA (rDNA) from the 3' 28S to 5' intergenic spacer region of the genome, and visual confirmation of amplicons of predicted size on agarose gels, after electrophoresis. Mosquitoes

were identified morphologically as *An. gambiae* complex species using the morphological identification keys Gillies and Coetzee. Genomic DNA was extracted from the indoor collected *An. gambiae* mosquitoes from unguwan juma zaria using the LIVAK extraction protocol and the extracted DNA of *An. gambiae* mosquitoes brought from unguwan juma zaria were further analyzed using SINE PCR Method for species identification. Approximately 23.5% of the mosquitoes were *An. Arabiensis*, 35.3% mosquitoes were *An. funestus* and 11.8 % mosquitoes were *An. coluzzii* because the PCR product of 220bp, 240bp and 479 bp was amplified respectively. polymerase chain reaction proved to be a rapid method for identification of *An. gambiae* complex with a high success rate and specific results.

MBB 030

BIOPROSPECTING AND CHARACTERISATION OF LIPASE-PRODUCING BACTERIA FROM OIL CONTAMINATED SOILS

Zakariya'u Aliyu Maiyaki[1], Shamsudeen Umar Dandare[1], Rabi'u Umar Aliyu[1], Aliyu Ibrahim Dabai[2]

[1]Department of Biochemistry, [2]Department of Microbiology
Faculty of Science, Usmanu Danfodiyo University Sokoto, P.M.B 2346, Nigeria
Email of Corresponding author: umar.shamsuddeen@udusok.edu.ng Phone Number: 08034097491

Abstract

Lipases are enzymes that catalyze the hydrolysis of triacylglycerols to free fatty acids and glycerol over an oil-water interface. Plants, animals and microorganisms including bacteria and fungi have been found to produce lipases. Although microbial lipases, especially those from bacteria, are more useful than their plant and animal derivatives because of several important properties. This research was designed to isolate, identify and characterize lipase producing bacteria from oil contaminated soils. Bacteria were isolated from oil (groundnut oil and diesel) contaminated soils following serial dilutions and growth on nutrient agar, all the isolates were found to be gram positive. The isolates were screened for lipase production and activity in Tween-20 agar and Phenol-Red, a clear zone of hydrolysis indicated enzyme production. Out of eight (8) bacterial isolates screened, six (6) lipase producing bacterial strains were confirmed by formation of zone of hydrolysis/clearance in the Tween-20 agar medium. The six (6) bacterial strains were identified up to species levels with the help of Advanced Bacterial Identification Software (ABIS) online analysis tool. Identification revealed that the organisms are of the *Bacillus* (BLC) and *Pseudomonas* (ARCSE) genus which were further identified using molecular studies of 16s rRNA gene PCR and sequencing. These bacterial strains can be used to produce lipases for industrial applications. This study has important implications in bioprospecting and exploitation of novel enzymes from the soil microbiome.

Keywords: Bacteria, Lipases, Soil, Culture, Isolation.

MBB 031

Solanum melongena SUPRESSES WEIGHT GAIN AND ALTERS EXPRESSION OF THE FTO GENE IN WHITE ADIPOSE TISSUE OF HIGH-FAT DIET INDUCED OBESE FEMALE RATS

***Edeke, Affiong[1], Odiba Solomon[1,2] and Nwanguma Bennette[1,2]**

[1]Department of Biochemistry, University of Nigeria, Nsukka, Enugu State
[2]Department of Molecular Biology and Genetics, University of Nigeria, Nsukka
*Corresponding Author: (affiong.edeke.pg79260@unn.edu.ng/+2347011118147)

Abstract

The fat mass and obesity associated (FTO) gene has a relative effect on obesity and it is associated with obesity-related anthropometric traits. This study assessed SMF diet supplementation effects on body weight, leptin levels, ghrelin levels and FTO gene expression in a high-fat diet (HFD) induced obesity rats. Thirty six female Wistar rats were randomly grouped into six groups (1 - 6) after induction of obesity using HFD for six weeks. Group 1 received normal diet (ND), Group 2/untreated control (ND), Group 3 (ND + orlistat), Group 4 (ND + 10% SMF), Group 5 (ND + 20% SMF) and Group 6 (ND + 30% SMF). After six weeks of treatment with SMF-based diet, the animals were sacrificed and the following parameters determined; weight gain, ghrelin levels, Leptin levels and evaluating the expression of the FTO gene using commercial kits and PCR methods. Consumption of HFD for six weeks significantly ($p < 0.05$) increased body weight and leptin levels of the induced rats. Ghrelin levels decreased significantly ($p > 0.05$) compared to normal control. The FTO gene expressions in HFD induced rats were significantly higher than that of normal control (Group 1). Histological examination showed increase in the adipocytes of the HFD induced obesity rats compared to normal control. This study indicated that administration of SMF supplemented diet for six weeks could ameliorate obesity induced by HFD and that the molecular mechanism might be associated with the expression of the FTO gene.

Keywords: *S. melongena,* Obesity, High-fat diets, FTO gene, Adipocytes

MBB 032

SANGER SEQUENCING OF HEAVY METAL RESISTANT COCCI BACTERIA

Adebo, Adeyinka[1, 2*]; Umeh, Ebele Uchenna[2]; Gberikon, Grace Mwuese [2] and Ogbonna, Innocent Okonkwo[2]

[1]Department of Biological Sciences, University of Mkar, Mkar. Gboko Benue State.
[2]Department of Microbiology, University of Agriculture Makurdi, Benue State.
E-mail: joseph_adeyinka35@yahoo.co.uk, Phone number: 08038253418

Abstract

Heavy metals are classified as one of the environmental pollutants because of their toxic effects on plants, animals, human beings and microorganisms. Heavy metals occur in soil microbial habitat due to natural and anthropogenic processes. Hence, microbes especially bacteria have acquired varied mechanisms of adaptation, biotransformation and detoxification responses to heavy metals. Microbes that are able to survive in heavy metal polluted sites are of great interest as bioremediation agents. The aim of this study was to carry out Sanger sequencing of 16S rRNA genes of heavy metal resistant cocci bacteria isolated from industrial and waste site soil of a cement factory. Bacterial isolates were assayed for resistance to heavy metals such as cadmium (Cd), cobalt (Co), copper (Cu), chromium (Cr), lead (Pb), iron (Fe) and zinc (Zn). Bacterial isolates were inoculated on nutrient agar supplemented with salts of various heavy metals at different concentrations (mg/L). Minimum inhibitory concentration (MIC) of the heavy metals on cocci bacteria was determined at concentrations: 0.00, 0.25, 0.50, 0.75, 1.00, 1.25 and 1.50 mg/mL. Plasmid profiling of bacteria was carried out. Chromosomal DNA was extracted from the bacteria using Quick-DNA™ Universal Kit by Zymo Research USA. The purity of extracted DNAs' was determined by NanoDrop Spectrophotometer. Twenty-five (25) microlitre (µl) volumes were used for polymerase chain reaction. Amplicons were electrophoresed and sequenced. Forward and reverse nucleotides sequences were aligned using Geneious software. Nucleotides sequences were subjected to blast at ncbi

website. Cocci bacteria showed resistance to the test heavy metals. MIC was determined for heavy metals. Plasmid profiling shown that cocci bacteria habour mega plasmids (23000bp). Values gotten from NanoDrop Spectrophotometer confirmed the purity of the DNAs' at OD260: OD280. Electrophoresis revealed that 16S rRNA genes amplified at 1500 base pair. Blast analysis revealed that the cocci bacteria are *Macrococcus brunensis* (Strain ADY37) and *Aerococcus urinaeequi* (Strain ADY10) with accession numbers MH084821 and MH084799. The findings of this research revealed that these cocci bacteria are potential bioremediation agents of heavy metals in polluted sites.

Key words: Sanger Sequencing**,** Cocci Bacteria, Resistance, Heavy Metal, 16S rRNA gene and Bioremediation

MBB 033

MOLECULAR MAKERS OF ACT RESISTANCE AMONG MALARIA PAEDIATRIC PATIENTS ATTENDING PUBLIC HEALTH HOSPITAL IN KANO STATE-NIGERIA

Aminu Sahalu Bello[1], Nasir Abdullahi, Hadiza Abdullahi[2] and Abdullahi A. Imam[1]

[1]Department of Biochemistry, Faculty of Basic Medical Science,Bayero University Kano of Nigeria, Kano State North-west Nigeria.

[2]Yusuf Maitama Sule Universit, KanoState -Nigeria

Corresponding Author: Tel.: +2348062218456 ; E-mail: asbello.bch@buk.edu.ng

Abstract

The spread of artemisinin resistant *P. falciparum* compromises the therapeutic efficacy of artemisinin combination therapies (ACT) and is the threat to global initiatives to control and eliminate malaria.This is particularly relevant in Kano North-west Nigeria, where artemisinin (ACT) is the recommended for *P. falciparum*. Fifty pediatrics patients were recruited in which 60% of them were males,the mean age of participants is 8.7 years, minimum and maximum age were 3 and 14 years, while 40% of them fall within the range of 11 to 14 years.The in-vitro ACT susceptibility test of blood isolate incubated for 48 hours with ACT concentration of 1250ug/ml, 2500ug/ml, 5000ug/ml and 10000ug/ml revealed the percentage elimination of 31.6%, 45.2%, 67.6% and 87.2%.The propeller domain gene of K13, a marker of artemisinin resistance, was sequenced in 33 out of 50 *P. falciparum* isolates collected from pariticipants residing in Kano munincipal, Fagge, Dala, Nassarawa ,Gwale,Kumbotso and Tarauni L.G.A of Kano state. K13 propeller domain mutations were found in 30.3% (10/33) of the samples .A total of 16 unique mutations were detected, of which twelve were non-synonymous while four were synonymous. Two blood samples obtained from Kano munincipal and Fagge local government area of Kano consist of more than one single nucleotide polymorphism.The 11 different amino acids and positions affected include: Leu440Phe, Tyr441Leu, Phe439Val, Gly670Ala, Met671Lys, Asn672Asp, Leu673Term, Tyr682Phe, Ser694Ille, Gln701Leu and Trip726Leu.These findings suggest that K13-propeller mutations are present in artemisinin-sensitive parasites as well as reduced in-vitro susceptibility to the ACT which provides prevalence of K13-propeller mutations in Kano

MBB 034
DECOLOURIZATION OF ACID ORANGE 7 AND BIOELECTRICITY GENERATION IN A MICROBIAL FUEL CELL

Hindatu Yusuf.[1*], Zaharah Ibrahim[2], Mohamad Suffian Mohamad Annuar [3]

[1*]Department of Biochemistry, Faculty of Science, Bauchi State University, P.M.B. 65 Gadau, Bauchi State, Nigeria
[2]Department of Biosciences and Health Sciences, Faculty of Biosciences and Medical Engineering, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia
[3]Institute of Biological Sciences, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia.
E-mail: yusufhindat@yahoo.com: hindatuyusuf@basug.edu.ng
Phone number: 08069594199: 09027620056

Abstract

A large percentage of wastewater is generated from the textile industry. Dye loss in textile wastewater results from inadequate exhaustion of dye onto the fibre thereby elevating environmental pollution. Removal of azo dyes from textile wastewater conventionally is ineffective and costly hence, bioremediation was considered a good alternative. In bioremediation, the microorganism adapts to the toxic environment in wastewater while degrading the pollutants. In this study, a strain of *Lysinibacillus fusiformis* earlier isolated from textile industrial effluent was utilized to decolorize Acid orange 7 (AO7) and generate bioelectricity in a double chamber Microbial Fuel cell. Optimization was performed in a shake flask under varying operational condition. The optimum pH, temperature and inoculum size were 5 – 8 pH units, 37 °C and 10 % respectively. Decolourisation was better under static (88 %) than agitated condition. At dye concentration above 200 mg/L growth and decolourization decreases. Yeast extract was found to be a good co-substrate for decolourization than glucose. AO7 decolourization was confirmed by the presence of sulphanilic acid in the High-Performance Liquid Chromatography (HPLC) peaks. Although the bacteria were able to decolourise the acid orange 7, however, bioelectricity generation was minimal.

Keywords: Azo dye, Acid Orange 7, Lysinibacillus Fusiformis, Microbial Fuel cell, Wastewater.

MBB 035
IDENTIFICATION OF SINGLE NEUCLEOTIDE POLYMORPHISMS IN EXTRACELLULAR SUPEROXIDE DISMUTASE 3 GENE IN TYPE 2 DIABETES MELLITUS PATIENTS IN KANO

Halliru Hassan [1], Muhammad Mahmood Minna[3], Abdullahi Hassan[1] , Nasiru Abdullahi [*2]

Department of Medical Laboratory Science, College of Health Science Bayero University Kano [1],
Department of Biochemistry, College of Health Science Bayero University Kano [2].
Federal College of Education, Kano [3]
*Correspond Author: nabdullahi.bch@buk.edu.ng: Phone: 09079461475

Abstract

Diabetes is a group of metabolic disorder characterized by hyperglycemia and in which glucose is underutilized due to defects in insulin secretion, insulin action, or both. The aim of the study is to identify single nucleotide polymorphism (SNP) in the extra-cellular superoxide dismutase 3 (EC-SOD3) genes. Forty (40) Type 2 Diabetes Mellitus (T2DM) patients and ten (10) control subjects were recruited from Murtala Muhammad Specialist Hospital. DNA from study subjects were extracted and amplification of the gene was done using PCR and genotyping was done using PCR-based direct DNA sequencing. Serum glucose and lipid profile were also assayed. Results revealed new variants in the utr region 3' of the gene, the new variants are CTT and TCT respectively. Evaluation of clinical parameters of diabetic patients showed that, subjects with the new variant have higher mean serum glucose (9.78±2.24), while subjects without the new variant have a slight lower mean serum glucose (9.12±1.70). The mean serum glucose was significantly lower when compared with non-diabetics (4.37± 0.35). Furthermore, the mean serum LDL-C (2.87±0.01 mmol/L) was significantly higher in subject with the new variant when compared with those without the variant or the control group.

Keywords: Extracellular superoxide dismutase, SNP, type 2 diabetes mellitus.

MBB 036

GENETIC VARIABILITY OF THE HUMAN FILARIAL PARASITE, *Wuchereria bancrofti* IN PARTS OF NORTH-WEST NIGERIA.

Lawal S. B[1*], Balogun E. O[2], Shuaibu M.N[1], and Ndams I.S[2].

*Correspondence: sbagiwa123@gmail.com 08036076065
1 Department of Zoology, Faculty of Life Sciences. Ahmadu Bello University, Zaria
2 Department of Biochemistry, Faculty of Life Sciences. Ahmadu Bello University, Zaria

Abstract

Wuchereria bancrofti is a parasitic nematode that primarily causes lymphatic filariasis – a disease specific to humans. Current research has focused primarily on the clinical manifestation of the disease but there is paucity of information regarding the genetic diversity of *W. bancrofti*. This study was therefore aimed at understanding the possible impacts of *W. bancrofti* diversity on the epidemiology and control of LF in Nigeria. The genetic variability of the parasite isolated from human blood (collected between 2200 and 0200hrs) and mosquito vector from three districts (Kankia, Matazu and Dutsin–Ma) in Katsina, North-west region of Nigeria were studied. The Mitochondrial Cytochrome C Oxidase I gene of W. bancrofti samples was sequenced and analyzed. The evolutionary history was inferred using the Neighbor Joining method. 20 samples were sequenced and a BLASTN analysis of the 20 sequences derived from the amplicons revealed that each sequence is specific to MtDNA of *W.bancrofti.* Single nucleotide polymorphisms (SNPs) were detected on some locations of the gene. Two variants were detected in the entire 20 DNA sequences leading to two consensus sequences with a pairwise percentage similarity of 95%. Interestingly, sequences isolated were found to cluster together when compared to sequences from other geographical regions showing region specific clustering in the phylogenetic tree. Although we cannot conclude that the finding of two genetic "variants" in the study would have any effect on the disease epidemiology, but the observed differences have provided a base line for further research on parasite populations across different ecological zones in the country.

Keywords: Genetic variability, Lymphatic filariasis, Nigeria, *Wuchereria bancrofti*

MBB 037

PRODUCTION OF MICROBIAL BIOSURFACTANT BY *Bacillus subtilis* ISOLATED FROM THREE DIFFERENT AUTO-MECHANIC SOIL ENVIRONMENT IN PORT HARCOURT

Nda-Wonodi Woroma, *Onyegeme-Okerenta Blessing, Wegwu Matthew Owhonda

Department of Biochemistry, Faculty of Science, University of Port Harcourt, Rivers State, Nigeria.
*Correspondance: e-mail: blessing.onyegeme-okerenta@uniport.edu.ng Tel: +234 (0)803 5201 039

Abstract

Biosurfactants are surface-active molecules that are produced from different microorganisms. They have both a hydrophilic and a hydrophobic end and this helps to reduce the surface and interfacial tension between molecules. The present study isolated *Bacillus subtilis*, a microbial biosurfactant producing organism from three different auto-mechanic-polluted soil environment in Port Harcourt Local Government Area of Rivers State. The isolate was identified by morphological, biochemical and physiological characterization. Biosurfactant activity using haemolysis test, emulsification index test and oil spreading test was carried out using the organism. *B. subtilis* exhibited a large zone of haemolysis on blood agar plates with a diameter of 3.9±0.15cm. The diameter of the oil spreading ability was 5.6±0.15cm. The emulsification ability of the biosurfactant was analysed on some hydrocarbons such as kerosene, diesel, engine oil, and crude oil. *B. subtilis* showed emulsification indices of 87 ±1.53%, 92 ±1.53%, 84 ±1.53% and 98 ±1.53% for kerosene, diesel, engine oil, and crude oil respectively. Due to its high surfactant ability, the biosurfactant it produced was extracted and used to compare with that of a synthetic surfactant based on their level of degradability on fuel. The zone of inhibition was measured with lipopeptide showing a diameter of 3.6±0.15cm (36±1.5mm) and Sodium Dodecyl Sulphate (SDS) a diameter of 3.4±0.15cm (34±1.5mm). Therefore, lipopeptide which is the biosurfactant produced by *B. subtilis* may be efficient for the bioremediation of hydrocarbon-polluted soil environment.

Keywords: *Bacillus subtilis*, Biosurfactant, lipopeptide, Sodium Dodecyl Sulphate, auto-mechanic-polluted

MBB 038

POLYMERASE CHAIN REACTION (PCR) OPTIMISATION OF PCR PRODUCT, MGCL CONCENTRATIONS AND TEMPERATURE

***[1]N. U. Matazu, [2]A. Ahmed, [2]M. A. Yusuf, [2]A.M. Dauda, [1]K. I. Matazu, [1]I. H. Kankia, [1]A. Nasir, [1]I. A Yaradua, [1]A. S Abdullahi, [1]A. Usman, [1]Z. S Suleiman, [1]I. Muhammad, [1]S. Yau, [2]A. M Darma**

[1]Department of Biochemistry, Umaru Musa Yar'adua University, PMB 2218, Katsina.
[2]Department of Biology, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, PMB 2218, Katsina.
[3]Department of Geography, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, PMB 2218, Katsina.
[*]Correspondence email: nasiruddeen.umar@umyu.edu.ng

Abstract

Many and multiple Polymerase chain reaction approaches are evolving from different specialisations in Biosciences research and disease diagnostics; as such none of these procedures is suitable for all conditions. The PCR optimisation needs an exquisite structure that stabilises across the specific product thereby preventing the amplification of nonspecific DNA products. Priority was given right from the extraction of DNA template, heating and cooling cycles of temperature variations at positioned time interval temperatures. The purpose is to evaluate the criteria which define amplification of DNA specificity and efficacy. Denaturation, annealing, and elongation; temperatures, DNA template and magnesium chloride concentrations were the parameters analysed after 40cycles. DNA melting and annealing temperatures and magnesium chloride concentrations were found to be significant. The DNA concentrations were purely based on the materials use for the extraction and or source from where the DNA has been extracted.

Keywords: Optimisation, denaturation, annealing, amplification

MBBB 039

NOVEL GENES INVOLVED IN BACTERIAL BIOSORPTION OF HEAVY METALS; A REVIEW

[1]U.B. Ibrahim and [2]A.H. Kawo

[1]Department of Microbiology, Faculty of Science, Usmanu Danfodiyo University, Sokoto
[2]Department of Microbiology, Faculty of Life Sciences, Bayero University, Kano
Correspondence: PHONE: +234 7035729586 EMAIL: umar.ibrahim3@udusok.edu.ng

Abstract

Over decades, our societies had become wealthier as a result of anthropogenic activities and this has created more diverse pollutants with no effective remediation measure in place. Although the limited pollution reduction measures in place are being exploited, in no distant future, the population growth, coupled with urbanization and industrialization, the pollution level will outperform them. The ability of microorganisms, most especially bacteria to remove heavy metal ions, radionuclide and, or to promote their transformation to less toxic forms has attracted the attention of environmental scientist, engineers and biotechnologist. Some strategies developed by bacteria efflux system encoded by resistance which comprises of several operons have being reported. It is therefore important to explore the genes involved metal regulation which can be an alternative to conventional methods for the removal of toxic heavy metals from both industrial and non industrial effluents. It offers several advantages including cost

effectiveness, high efficiency, minimization of chemical/biological sludge, and regeneration of biosorbent with possibility of metal recovery. Most significantly, the metal removal capacity of biological biomass is a good or better than other conventional adsorbents. The new biologically based technologies need not necessarily replace conventional treatment approaches but may complement them.

Keywords: Contamination, Genes, Heavy Metals, Pollution

Central Research and Diagnostic Lab.

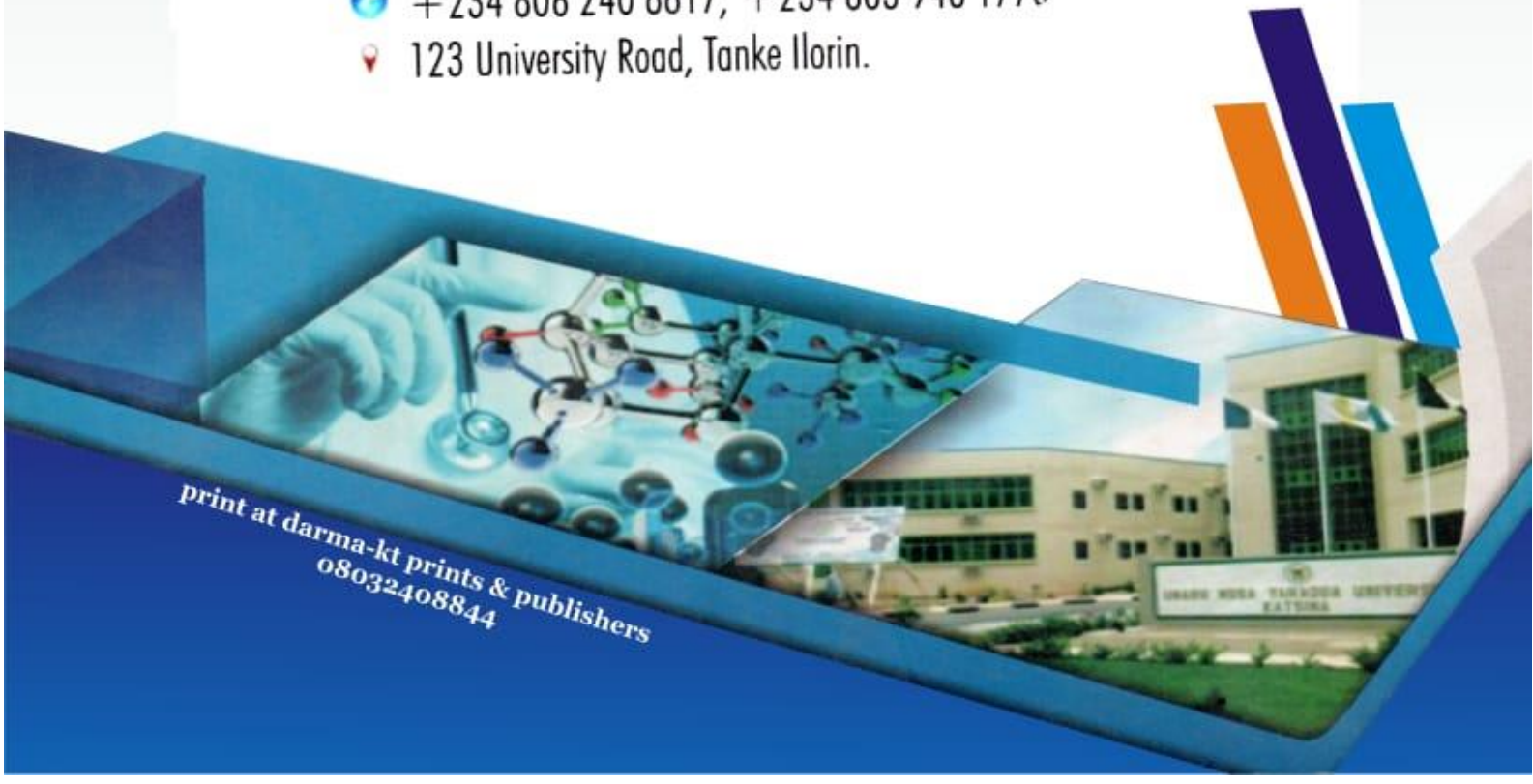
"Making life better through research"

Our Services include:

- Analytical Chemistry
- Clinical Analysis
- Environmental Testing
- Food and Beverages Analysis
- Cosmetics Analysis
- Life Science research
- Material Charateractersation
- Petrochemical Analysis
- Contract research
- and more...

+234 806 240 8817, +234 803 946 1770

123 University Road, Tanke Ilorin.



print at darma-kt prints & publishers
08032408844