

ADD EPH 001
LARVICIDAL AND GROWTH REGULATORY EFFICACIES OF LEAF EXTRACTS
OF *HYPTIS SUAVEOLENS* ON *CULEX QUINQUEFASCIATUS* (DIPTERA:
CULICIDAE)

BIDA, Alhaji Audu¹, SULE, Bright Ugbede¹, UKUBUIWE, Azubuike Christian^{1,3}, OLAYEMI, Isreal Kayode^{1,3}, and EGWIN, Evans Chidi^{2,3}

¹Department of Animal Biology, Federal University of Technology, Minna, Niger State

²Department of Biochemistry, Federal University of Technology, Minna, Niger State

³Center for Genetic Engineering and Biotechnology, Federal University of Technology, Minna, Niger State

Corresponding Author's email: sulebright1109@gmail.com Phone No: 08038251346

ABSTRACT

The need to develop an alternative environmentally-friendly biopesticide informed the present study. *Hyptis Suaveolens* belong to the family Lamiaceae and genus *Hyptis*. The plant is commonly distributed around homes in tropics and subtropics. Leaf extracts (methanol, ethyl acetate, n-hexane and aqueous) of *Hyptis suaveolens* were assayed as larvicides against fourth larval instars of *Culex quinquefasciatus* mosquitos and as growth regulator against first instar larvae of the species following standard procedures. The quantitative phytochemical composition of the extracts of the plant varied significantly ($p < 0.05$). Saponins was the least while phenols were highest in the extracts, ranging from 48.27 ± 0.39 to 366.66 ± 0.34 $\mu\text{g}/\text{mg}$ (for methanol), 27.41 ± 0.46 to 205.25 ± 0.52 $\mu\text{g}/\text{mg}$ (for ethyl acetate), $21.15 \pm 242.30 \pm 0.46$ $\mu\text{g}/\text{mg}$ (for n-hexane) and 32.49 ± 0.35 to 296.94 ± 0.18 $\mu\text{g}/\text{mg}$, respectively. Larvicidal activities of extracts revealed a dose-dependent efficacy, with LC₅₀ of 18.20, 91.32, 32.05 and 21 mg/L for methanol, ethyl acetate, n-hexane and aqueous fractions, respectively, at 24 hours post-exposure. Growth regulatory bioassay revealed that the rate of development were significantly ($p < 0.05$) affected.

Keywords: Larvicidal, Mosquito, Flavonoids, Tannins, Saponins, Alkanoids, Terpenoids, Mortality

HEPATOPROTECTIVE EFFECTS OF ETHANOLIC SEED EXTRACT OF CASSIA
TORA LINN. IN CCL4 -INDUCED LIVER TOXICITY IN WISTAR RATS

¹Adamu Mohammed Warabe, 2Aliyu Daja and 2Yagana Shettima Abba

¹ Department of Biochemistry, Federal Polytechnic Bali, Taraba State

² Department of Biochemistry, University of Maiduguri

ABSTRACT

The study was conducted to evaluate the hepatoprotective effect of ethanolic seed extract of *Cassia tora* Linn. in CCl₄-induced liver toxicity in Wistar rats. Phytochemical screening, acute toxicity and hepatoprotective property of the ethanolic seed extract of *C. tora* Linn in CCl₄-induced liver toxicity in Wistar rats were carried out. The ethanolic seed extract of *C. tora* was found to contain carbohydrates (7.20±0.28%), flavonoids, (0.064±6.15%) anthraquinones (0.45±0.46%) and saponins (0.44±0.21%). Acute toxicity study showed that the LD₅₀ was found to be 2,236 mg/kg body weight. The administration of 200 mg/kg ethanolic seed extract of *C. tora* significantly (p<0.05) decreased the activities of the CCl₄-elevated ALT, AST and ALP, with values of 77.0±9.31 (IU/L), 81.0±3.78 (IU/L) and 29.62±2.68 (IU/L) respectively. A significant (p<0.05) increase in the levels of ALB and TP with values of 3.04±0.07 (g/dl) and 9.30±0.02 (g/dl) respectively was also observed, while administration of 400 mg/kg of *C. tora* seed extract showed the ALT, AST and ALP values of 71.80±7.39 (IU/L), 79.30±10.01 (IU/L) and 28.9±0.48 (IU/L) respectively. There was a significant (p<0.05) increase in the levels of ALB and TP with values of 3.18±0.06 (g/dl) and 8.80±0.61 (g/dl) respectively. The administration of 200 mg/kg *C. tora* seed extract significantly (p<0.05) reduced the levels of both direct bilirubin and total bilirubin with the values of 6.8±0.29 (mmol/l) and 17.42±0.69 (mmol/l) respectively, while administration of 400 mg/kg showed the values of 6.98±0.14 (mmol/l) and 12.06±0.34 (mmol/l) for direct and total respectively. In conclusion, the present study demonstrates that the ethanolic seed extract of *C. tora* possesses hepatoprotective property which might be attributed to the phytochemicals present. Therefore, the seeds of this medicinal plant may be proposed for use against liver toxicity.

Keywords: Hepatoprotective, *Cassia tora*, toxicity, Wistar

ADD EPH 003

TOXICITY ASSESSMENT OF COMBINED CURCUMA LONGA LINN AQUEOUS EXTRACT AND CUCUMIS SATIVUS METHANOL EXTRACT IN ALLOXAN-INDUCED DIABETIC ALBINO RATS

***I. M. Fakai, I. Sani, A. Abdulhamid and S. Sulaiman**

Department of Biochemistry, Faculty of Life Sciences, Kebbi State University of Science and Technology Aliero, P.M.B. 1144, Birnin Kebbi, Kebbi State, Nigeria.

*Corresponding Author: imfakai@gmail.com; Phone no.: +2348038688681

ABSTRACT

Several medicinal plants played significant role in the managements of diabetes, however toxicity assessment of such plants used in traditional medicine were mostly ignored. This research aimed at assessing toxicity of the combined *Curcuma longa* linn aqueous extract and *Cucumis sativus* methanol extract in albino rats. Up and down procedure was employed for acute oral toxicity (LD₅₀) testing, while sub-chronic toxicity studies were carried out using graded doses for 28days. The acute oral toxicity study of combined extracts of *curcuma longa* linn and *cucumis sativum* in albino rats was assumed to be greater than 5000mg/kg b.wt. Sub-chronic toxicity studies revealed a dose dependent significant ($P < 0.05$) decreased AST, ALT and ALP activity in the extract treated groups compared to alloxan-induced non-treated group. Similarly, TB and DB levels significantly ($P < 0.05$) decreased in the extract treated groups compared to alloxan-induced non-treated group. The result also revealed significant ($P < 0.05$) decreased in serum Na⁺ and Cl⁻ ions concentrations in the extract treated groups compared to alloxan-induced non-treated groups. However, K⁺ significantly ($P < 0.05$) increased only at 200mg/kg b. wt compared alloxan-induced non-treated group. In contrast, the treatment does not significantly ($P > 0.05$) affects the levels of both urea and creatinine. Moreover, histological studies revealed relatively normal architecture of liver and kidney tissues. In conclusion, the present study revealed that combined *Curcuma longa* linn aqueous extract and *Cucumis sativus* methanol extract is not toxic at both acute and sub-chronic administration.

Keywords: Toxicity, *Curcuma longa* linn, *Cucumis sativus*, acute, sub-chronic.

ADD IBC 001
**PRODUCTION, OPTIMIZATION AND PARTIAL PURIFICATION OF AN ORGANIC
SOLVENT TOLERANT PROTEASE FROM LOCALLY ISOLATED BACILLUS
PUMILIS-ISA04**

Ogundolie, Frank Abimbola

Enzyme Biotechnology and Environmental Health Unit, Department of Biotechnology, Baze University Abuja, Nigeria.

Corresponding author: fa.ogundolie@gmail.com; frank.ogundolie@bazeuniversity.edu.ng

ABSTRACT

Proteases are a class of important enzymes which account for over 60% of the enzyme market today. Due to the high demand for this enzyme with organic solvent and thermo-tolerant in a wide range of biotechnological applications, this present study aimed to investigate a new source of protease which can meet this industrial need. In this study, an extracellular protease-producing microorganism was isolated on a milk agar plate at 50 °C. The isolate with the highest zone of hydrolysis (isolate-ISA04) was selected for biochemical, morphological, and molecular identification. Optimization of extracellular production of proteases was carried out by varying various intrinsic and nutritional factors. Partially purification was done using 40-70%-ammonium sulfate precipitation and it was biochemically characterized. Isolate-ISA04 was molecularly identified as *Bacillus pumilis*, the optimum condition for extracellular protease production were: temperature of 60°C; pH 8.0; agitation rate of 150 rpm, the preferred nitrogen source was casein and carbon sources were observed to be potato starch and corn starch. The optimal pH and temperature activity of the purified protease were 8.0 and 70°C respectively. At 5mM, the activity of the enzyme was enhanced by divalent cations such as Ca²⁺, Na²⁺, Mg²⁺ and slightly inhibited by Co²⁺ and Cu²⁺. Ethylenediaminetetraacetic acid, EDTA and Sodium dodecyl-sulfate, SDS at 1-2 mM do not affect the enzyme activity but are slightly inhibited in the presence of 5 mM EDTA. The activity of the enzyme in the presence of organic solvents such as ethanol, methanol, propanol, chloroform and benzene at 10% (v/v), was slightly enhanced while varying inhibition rates were observed at 20 % (v/v). The properties observed for this enzyme suggest its use in various biotechnology applications, especially in the fine chemical industries.

Keywords: α -amylase, biotechnological applications, temperature, starch agar, HiCrome Bacillus Agar, agitation rate.

ADD MCB 001

**INFLUENZA A/ H1N1 VIRUS IN CHRONIC KIDNEY DISEASE PATIENTS: A
PERIPHERAL BLOOD SAMPLE APPROACH AND ASSESSMENT OF THE
ASSOCIATED RISK FACTORS**

² H.M Chirwar , ²A.O.Soji 1M.B. Abubakar ., ¹Sajo M. U., 1Hamisu, T. M., ¹Shettima, Y. M.,
¹El-Yuguda, A. D. ^{3*} Z.A. Bello and ⁴H.I .Gambo

¹ Department of Veterinary Microbiology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

² Department of Medical Laboratory Sciences, Faculty of Allied Science, University of Maiduguri, Maiduguri, Nigeria

³ Department of Science Laboratory Technology, Ramat Polytechnic Kano Road Maidduguri, Borno State, Nigeria

⁴ Department of Veterinary Pathology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

*Corresponding author: +2347035708261, abubakar.mb@unimaid.edu.ng

ABSTRACT

Chronic kidney disease (CKD) is a progressive loss of functional nephron characterized by various risk factors. Influenza virus has been found to cause rhabdomyolysis, which is toxic to the kidneys and can initiate or worsen CKD. This study aims to investigate the frequency and molecular detection of Influenza A(H1N1)Pdm09 Virus gene among CKD patients attending University of Maiduguri Teaching Hospital, Nigeria. Peripheral blood samples were collected from 150 CKD patients. One-step RT-PCR was performed for detection of influenza virus using the Centers for Disease Control and Prevention protocol. Relevant clinical data were collected in standardized questionnaires from each patient, and medical history was obtained from their hospital records. The study found that 16% (24/150) of CKD patients were positive for Influenza A(H1N1)Pdm09 Virus. The frequency of Influenza A(H1N1)Pdm09 Virus positivity was highest in stage 5 CKD (45.8%) and lowest in stage 3 CKD (20.8%). The age group 55-64 years had the highest frequency of positivity (37.5%), while the age groups 15-24 years and above 65 years had the lowest frequency of positivity (4.2%). Females had a higher frequency of positivity (70.8%) than males (29.2%). CKD patients with tertiary education had a higher frequency of positivity (66.7%) than those with primary education (4.2%), but the difference was not statistically significant ($p \geq 0.05$). This study provides evidence of an association between Influenza A(H1N1) Pdm09 viraemia and decreased kidney function among CKD patients. The findings highlight the importance of monitoring and preventing influenza infection in CKD patients to prevent further kidney damage.

Keywords: Influenza A/ H1N1 Virus, Chronic Kidney Disease Patients, A Peripheral Blood Sample Approach, Assessment of the Associated Risk Factors

SEROLOGICAL EVIDENCE OF INFLUENZA VIRUS ACTIVITIES AMONG HUMAN POPULATIONS IN MAIDUGURI, BORNO STATE, NIGERIA

¹Z.A. Bello ., ² H.M. Chiwar ³Sajo, M. U., ³Hamisu, T. M., ³Shettima, Y. M., ³El-Yuguda, A. D., ³*Abubakar, M. B. and ⁴H.I.Gambo

¹Department of Science Laboratory Technology, Ramat Polytechnic Kano Road Maiduguri, Borno State, Nigeria

² Department of Medical Laboratory Science, Faculty of Allied Health Sciences, College of Medical Sciences

University of Maiduguri, Maiduguri, Nigeria

³ Department of Veterinary Microbiology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

⁴ Department of Veterinary Pathology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

*Corresponding author: +2347035708261, abubakar.mb@unimaid.edu.ng

ABSTRACT

Influenza viruses are significant pathogens for both humans and animals, with substantial pandemic potentials. There are reported regular epidemics of influenza viruses with a resultant devastating effect on human and animal populations. Before the emergence of acquired immunodeficiency syndrome (AIDs), influenza virus has been considered the highest uncontrolled pandemic killer of humans. In spite of these effects, there is general dearth of information on the prevalence of influenza viruses in the study area. In this research, blood samples were collected from a total of 670 persons: 243 from HIV/AIDs patients; 140 from tuberculosis (TB) patients; and 234 from healthy volunteer donors, and then tested for influenza viruses HI antibodies. The geometric mean titre (GMT) values were determined from the reciprocal of the HI titres of the serum antibody. The statistical difference observed between the independent variables was determined by means of chi-square (X²), while statistical difference in the prevalence of HI antibodies to the influenza virus antigen between the study groups was evaluated using students 't' test. The level of significance was evaluated at $P \leq 0.05$. The results showed that a total of 513 persons (91.2%) had antibody of either or of both flu A and B viruses, out of which 38.1% and 11.1% respectively, reacted monotypically with the two antigens, whereas 50.2% reacted heterologously with both antigens. From the 243 HIV/AID patients, 215 (88.4%) had antibodies to influenza virus of either or of both Flu A and B, out of which 11.6% and 25.1% respectively, reacted monotypically with the two antigens, while 63.2% of the patients had shown evidence of mixed infection. The results of the TB patients showed that 125(89.2%) had antibodies to influenza virus of either or of both Flu A and B, out of which 40% each reacted monotypically with the two antigens, while 56.0% of the patient screened had shown evidence ($P < 0.001$) in the rate of monotypic reactions with Flu A having high percentage prevalence than B. Of the total 234 healthy volunteer donors, 223 (95.2%) had antibodies to influenza virus of either or of both Flu A and B, out of which 63.6% and 1.79% respectively, reacted monotypically with the two antigens, while 34.5% had shown evidence of mixed infections. Therefore, this study revealed considerable activity of influenza A and B viruses in various populations groups in Maiduguri, North-Eastern Nigeria.

Keywords: Influenza viruses; HIV/AIDS patients; TB patients; Volunteer healthy donors; Blood samples; HI test.

**SEROPREVALENCE OF INFLUENZA A/H1N1 VIRAL INFECTION AMONG
CHRONIC KIDNEY DISEASE PATIENTS IN A NORTH-EAST NIGERIAN**

TEACHING HOSPITAL: A CROSS-SECTIONAL STUDY

² H.M Chirwar , ² A.O. Soji ¹ M.B. Abubakar ., ¹ Sajo M. U., ¹ Hamisu, T. M., ¹ Shettima, Y. M.,
¹ El-Yuguda, A. D. ^{3*} Z.A. Bello and ⁴ H.I. Gambo

¹ Department of Veterinary Microbiology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

² Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, College of Medical Sciences, University of Maiduguri, Maiduguri, Nigeria

³ Department of Science Laboratory Technology, Ramat Polytechnic Kano Road Maidduguri, Borno State, Nigeria

⁴ Department of Veterinary Pathology, Faculty of Veterinary Medicine, University of Maiduguri, Maiduguri, Nigeria

*Corresponding author: +2347035708261, abubakar.mb@unimaid.edu.ng

ABSTRACT

Influenza A/H1N1 is a viral infection that can lead to severe health complications, including respiratory and organ failure. Patients with chronic kidney disease are at a higher risk of developing complications from influenza, but little is known about the prevalence of H1N1 in this population. This cross-sectional study was conducted at the University of Maiduguri Teaching Hospital in North-East Nigeria from January to November 2020. Convenient sampling was used to recruit 160 patients with chronic kidney disease, and blood samples were collected and stored for analysis using ELISA technique to detect circulating H1N1 viral IgG antibodies. Of the 160 participants, 47.5% were male and 52.5% were female. The mean age was 47.2 years. The seroprevalence of H1N1 among chronic kidney disease patients was found to be 23.1%. Patients with diabetes were significantly more likely to have H1N1 antibodies (OR=2.59, 95% CI=1.04-6.47, p=0.04). In conclusion, The study found a relatively high seroprevalence of H1N1 antibodies among chronic kidney disease patients in North-East Nigeria. This underscores the importance of including this population in influenza vaccination programs. Patients with diabetes may be particularly vulnerable to H1N1 infection and should be targeted for vaccination. Further studies are needed to better understand the epidemiology and clinical course of H1N1 infection in chronic kidney disease patients.

Keywords: Influenza A/H1N1 , Seroprevalence , Chronic Kidney Disease Patients North-East Nigerian , cross-sectional study

Generic Variance Indicating Mutations in the VP2 Gene of Infectious Bursal Disease Virus (IBDV) Variants.

^{1*}Salisu A, ¹Musa A, ¹Aminu T. M, ²Abubakar, A and ³Ahmed M.N

¹Department of Science Laboratory Technology, Jigawa State Polytechnic, 7040 Dutse, Jigawa State, Nigeria

²Department of General Science, Jigawa State College of Nursing Science, 1013 Birnin Kudu, Jigawa State, Nigeria

³Department of Science Laboratory Technology, Federal Polytechnic Kazaure, 5004 Kazaure Jigawa State, Nigeria

*Email: sahmed@jigpoly.edu.ng

ABSTRACT

Infectious bursal disease (IBD) is a disease caused by infectious bursa virus (IBDV) and was observed for the first time in Delaware (United States) in 1957. This highly contagious disease affects young chickens, representing a serious threat to the poultry industry worldwide. This research is aim to determine the pattern of mutation and the trend of evolutionary relationship among different variants of infectious bursal disease virus (IBDV) using Bioinformatics software's. A total of 26 sequences of VP2 gene of different IBDV variants, was retrieved from the National Centre of Biotechnology Information (NCBI BLAST) Gen Bank. Multiple sequence alignment was carried out with AF248612.1 as reference sequence. The nucleotide sequences were also translated to amino acids and the mutation were observed based on the amino acids substitutions. From the result, mutation was observed at position S-254-G, E-270-A and S-335-V. Phylogenetic analysis categorized the IBDV variants into different geographical continents which comprises Malaysia, China, Finland, Iran, Brazil, Korean, Algeria, Japan, Israel, Russia Germany, and UK Isolates. Understanding the mutation particularly in the VP2 gene may provide insight on the pattern of amino acid substitution. Though, there is no information on the mutation in the VP2 gene.

Keywords: Amino acids, Infectious Bursal Disease (IBD), Mutation, Nucleotide, Sequences