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BOOK OF ABSTRACTS

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BOOK OF ABSTRACTS

ORDER OF SCIENTIFIC PAPER PRESENTATION

GROUP 1: BIOLOGICAL SCIENCES

S/N	TITLES	AUTHORS
1.	Incidence of extended spectrum ßeta-lactamases (ESBL) producing strains of *E.coli* from patient's urine	Mbanisi, Bridget Obianuju, Nwankwo, Chioma Mmaduabuchi, Department of Science Laboratory Technology, Federal Polytechnic, Oko, Anambra State, Nigeria
2.	Acute and sub-acute toxicity studies of the administration of the aqueous extract of zanthoxylum zanthoxyloides on the body and vital organs of albino rats and mice.	[1*]Emmanuel Ola Oshomoh, [2]Macdonald Idu, [1]Augustine Iguma, [1]Department of Science Laboratory Technology, Faculty of Life Sciences, University of Benin, Benin City. Edo State, Nigeria. [2]Department of Plant Biology and Biotechnology, Faculty of Life Sciences, University of Benin, Benin City. Edo State, Nigeria.Corresponding Author: e-mail: Emmanuel.oshomoh@uniben.edu
3.	Comparative Evaluation of Chromatographic Immunoassay And Enzyme-Linked Immunosorbent Assay in the Diagnosis of Hepatitis B Viral infection in Pregnancy	Abulude Olatunji Ayodeji[1]*, Ahmed Ismai'la[2], Sadisu Faruk Umar[2], *[1]Department of Biological Sciences, Faculty of Science, Nigeria Police Academy, Wudil, P. M. B. 3474 Kano State, Nigeria. [2]Department of Microbiology, Kano University of Science and Technology, Wudil, P. M. B. 3244 Kano, Kano State, Nigeria. abuludeolatunji@yahoo.com, +2348067269332.
4.	The Damaging Effect of Type-2 Diabetes on major organs of Wistar Rats: Medicinal Plant (*Hunteria Umbellata*) as Alternative Diabetes Management Recipe.	[*]Okolafor F. I.[1], Udinyiwe O. C.[1], Uanseoje S. O. [2], Ekhaise, F. O. [3], [1]Department of Science Laboratory Technology, Faculty of Life Sciences, University of Benin, Benin City, Edo State, Nigeria. [2]Department of Biochemistry, Faculty of Life Sciences, University of Benin, Benin City, Edo State, Nigeria. [3]Department of Microbiology, Faculty of Life Sciences, University of Benin, Benin City, Edo State, Nigeria. fidelis.okolafor@uniben.edu[1], +2347034191830, +2348156468440
5.	Antibiotic Potency of *Momordica Charantia* (Bitter Melon) Leaves on Five Gram Positive and Negative Pathogenic Bacteria.	[1]Akwarandu, John Okechukwu and [2]Ibe, Colman Chikwem, Department Of Science Laboratory Technology, Imo State Polytechnic, PMB 1472, Owerri, Nigeria, Corresponding Authors: Akwarandu, John Okechukwu, Ibe, Colman Chikwem
6.	Bactenological Screen of Locally Vendored Ow Milk (Case Study Of Damaturu Metropolis).	Dr. Ibrahim Babale Gashua, Ibrahim Adamu Godowoli, and Adamu Usman Abubakar Department of Science Laboratory Technology, Federal Polytechnic, Damaturu, Yobe State.
7.	The Effect of *Piper Guineense* on the Red Blood Cells and Haemoglobin Concentration of Diabetic Female Albino Wistar Rats.	C.O. Wodu[1]* and S.C. Iwuji[2] [1]Department of Biomedical Technology, School of Science Laboratory Technology, University of Port Harcourt, Nigeria.

		Email: chiomawodu@gmail.com [2]Department of Biomedical Technology, School of Health Technology, Federal University of Technology, Owerri, Nigeria.
8.	Current advances and developments in Antimicrobial Finishing of Textiles and Textile Products.	Adedokun A.A Ph.D Department of Science Laboratory Technology, The Federal Polytechnic, Kaura-Namoda. Zamfara State. awaledokun@gmail.com +2347030157201
9.	Application of Microbiological Assay to Determine the Antimicrobial Activities of Oral B and Close Up Toothpaste	[1]Musliu Abdulkadir, Ramatu Lawal Yusuf, [1]Samira Arzika, [1], and [2]Fasiku Oluwafemi O. [1]Department of Science Laboratory Technology, [2]Department of Preliminary Studies, College of Science and Technology, Waziri Umaru Federal Polytechnic, BirninKebbi, Kebbi State. musille2003@yahoo.com
10.	Effect of Fermentation on the Protein Content and Anti-nutritional Factors in Fermenting Soya Bean Flour	[1]Musliu Abdulkadir [1]Samira Arzika, , and [2]Fasiku Oluwafemi O. [1]Department of Science Laboratory Technology, [2]Department of Preliminary Studies, College of Science and Technology, Waziri Umaru Federal Polytechnic, BirninKebbi, Kebbi State. musille2003@yahoo.com
11.	Bacteriological and Mycological Quality Assessments of some Ready-to-Eat Foods sold in Kaduna State University Market, Kaduna, Nigeria.	[*1]Mohammed, S .S .D (F.0274), [1]Gimba, J.Y. and [2]David, A.A.D, [1]Department of Microbiology, Faculty of Science, Kaduna State University, Kaduna, Nigeria, [2]Department of Sciences, College of Nursing and Midwifery, Kafanchan, Kaduna State, Nigeria, *Corresponding author: mosada78@yahoo.com, Tel.:+2348035861774
12.	Keeping Quality of Dawadawa Produced from Fermented Soybean and Locust Beans Seeds.	[1]Lauji A. M., [2]Victoria A.A.,[2]Husaini A., [3]Olutimayin A. T., [1]Agboire S., [1]Ishaq M.N [1]National Cereals Research Institute Badeggi, [3]Federal Polytechnic Bida, [2]Nuhu Bamali Polytechnic, Kaduna
13.	Comparative Nephroprotective Effects of Crude Seed Powder, Aqueous and Methanolic Extracts of *Buccholzia Coreacea* in Carbon Tetrachloride- Induced Liver Damage in Albino Rats (*Rattus Novergicus*).	Ugwu Godwin Chigozie, Eyo Joseph Effiong, Okanya Chinagorom laureta and Egbuji Jude Ifeanyi, Department of Zoology and Environmental Biology, University of Nigeria, Nsukka, Enugu State, Nigeria. Corresponding Author: Email: godwin.ugwu@unn.edu.ng. Phone: +2348064005944
14.	Microbiological Quality of Domestic and Restaurant Wastewater used in the Formulation of Media for the Cultivation of *Chlorella* Spp.	Williams, K.F., Agwa, O.K., and Abu, G.O Department of Microbiology, University of Port Harcourt, Rivers State, Nigeria. williamskayode22@gmail.com, 08164443340.
15.	Uterine Smooth Muscle Effects of a Polyherbal Formulation (*Ajumbise*) used in Southeast Nigeria	[1]Ijioma, S.N., [2]Osim, E.E., [3]Nwankwo, A.A., [1]Nwosu, C.O., [4]Nwagbara, N.D [1]Department of Physiology and Pharmacology, College of Veterinary Medicine, Michael Okpara University of Agriculture, Umudike, Nigeria

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16.	Molecular Docking Studies on a Cysteine Protease, *Falcipain-2* with Pyrrolones as its Inhibitors	Zaharaddeen Shehu[a*] Adamu Uzairu[b] Balarabe Sagagi[c], [a]*Department of Science Laboratory Technology, Jigawa State Polytechnic Dutse, Jigawa State, Nigeria, [b]Department of Chemistry, Ahmadu Bello University Zaria, Kaduna State, Nigeria, [c]Department of Chemistry, Kano University of Science and Technology, Wudil, Kano State, Nigeria
17.	Antimicrobial activity and Features of *Mitracarpus Villosus* (SW) DC.	Ishaya Gandu, Zainab Abdurrahman, Onuorah Ogochukwu Augustina, Dawaki Saleh Idrisa,Isa Yahaya Hassan., National Research Institute for Chemical Technology, P.M.B. 1052 Bassawa-Zaria, Kaduna, Corresponding Author's E-mail: nehnomi1@gmail.com

GROUP 2: CHEMICAL SCIENCES (Chemistry, Biochemistry)

S/N	TITLES	AUTHORS
1.	Proximate Composition of *Jatropha Curcas* Leaves, Phytochemical and Antibacterial Analysis of Its Ethylacetate Fraction.	[a*]AFOLABI, Qasim Olaitan, [A]Shorinmade, Adijat Yetunde, [A]Obero, Ofunami Joy and [A]Salako, Rasaki Alao, [a] Chemistry Unit, Department of Science Laboratory Technology, Federal College of Animal Health and Production Technology, P.M.B. 5029, Moor Plantation, Ibadan. [*]Corresponding author; qasim.afolabi@fcahptib.edu.ng
2.	Extraction, Characterization and Utilization of Oil from the Seed of Moringa Oleifera.	Muoka R.O and Ibeh Grace. U. Science Laboratory Technology Federal Polytechnic, Oko,Anambra State
3.	Utilizaton of *Treculia Africana* (Breadfruit) Seed Hull in the Removal of Inorganic Anions from Abattoir Wastewater.	Okereke, J.N[1], Osah, O.I[1] and Wodu, C.O[2] [1]Department of Biotechnology, School of Biological Sciences, Federal University of Technology Owerri, Nigeria. [2]Department of Biomedical Technology, School of Science Laboratory Technology, University of Port Harcourt, Nigeria.
4.	Heterogeneous Photocatalytic Decolourisation of Red Oxide Pigment in Paint Effluent using Sunlight-Irrdiated Titanium Oxide	*Osarumwense, J. O. and Ijebor, A. O. Department of Science Laboratory Technology, Faculty of Life Sciences, University of Benin, Benin City. judeosarumwense@uniben.edu Phone: +2348023297060

5.	Evaluation of the Dyeing Parameters of Novel Heterocyclic Azo Disperse Dyes on Poly (Lactic Acid) Fibers and Comparison with other Hydrophobic Fibers	Adedokun A.A Ph.D Department of Science Laboratory Technology, The Federal Polytechnic, Kaura-Namoda. Zamfara State. awaledokun@gmail.com +2347030157201
6.	Impact of Lead-Zinc Mining on the Quality of four Dominant Staple Food Materials in the Abakaliki Lead-Zinc Mining Area, Ebonyi State, South Eastern Nigeria.	Aloh Obianuju B. [1, 3], Otuu, Fred C. [2*], Aloh Henry E. [4] Okorie, N. A[5], Agudiegwu Justina N.[6] [1]Dept. of Biology, Ebonyi State College of Education, Ikwo Ebonyi State, Nigeria. gertrudealoh@yahoo.co.uk, hewiedconsultnl@gmail.com. [2]Drug Delivery/Environmental Research Unit, Dept. of Pharmaceutics, University of Nigeria, Nsukka. Otuufc@yahoo.com, Fred.otuu@unn.edu.ng. [3]Dept. of Meteorology/Geography, Faculty of Environmental Sciences, Enugu State University of Science and Technology, Enugu. [4]Federal University,Ndufu-Alike Ikwo, Ebonyi State. hewiedconsultnl@gmail.com. [5]Department of Pharmacology & Toxicology, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka, Enugu State. augustine.okorie@unn.edu.ng [6]Dept. of Home Economics, Queen's school Enugu, Enugu State, Nigeria.
7.	Vehicular Activities and Tailpipe Carbon (Ii) Oxide Emission at Osisioma, Aba, Abia State, Nigeria: A Potential Public Health Hazard to Roadside Traders and Artisans.	Shu E. N.[1], Otuu F. C.[1,2], Maduka IC[1,3], and Okorie, N. A[4], Orjiocha, S[5], Okechukwu C. C.[6] [1]Molecular and Environmental Toxicology Research Group, Department of Pharmacology and Therapeutics, College of Medicine, University of Nigeria, Enugu Campus, Enugu, Nigeria. [2]Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, University of Nigeria Nsukka, Enugu State, Nigeria. [3]Department of Human Biochemistry, Nnamdi Azikiwe University, Awka, Nigeria. [4]Department of Pharmacology & Toxicology, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka, Enugu State. [5]Department of Science Laboratory Technology, University of Nigeria, Nsukka, [6]GreenAfriqueProject, Plot 46, Gana Street, Maitama, Abuja, Nigeria.
8.	Evaluation of Major and Trace Element Present in Different Part of a Plant (Corchorous Olitorous) Family and its use in Soap Production: A Comparative Study.	[a]Owoeye Gbenga , [B]Oke D, and [A]Aiyeisanmi F. [a] Chemistry Department, Federal University of Technology Akure, Ondo State Nigeria. [b] Department of Forestry and Wood Technology, Federal University of Technology Akure Ondo State Nigeria. Owogbenga21@yahoo.com

9.	Comparative Phytochemical and Antioxidant Screening of Crude Seed Powder, Aqueous and Methanolic Seed Extracts of *Buchholzia Coriacea*.	Ugwu Godwin Chigozie [1*], Eyo Joseph Effiong[1], Okanya Chinagorom Laureta [1], Egbuji Jude Ifeanyi[1] and Ezechukwu Chiemekam[1], [1]Department of Zoology and Environmental Biology, University of Nigeria, Nsukka, Enugu State, Nigeria. Email: godwin.ugwu@unn.edu.ng. Phone: +2348064005944
10	Physiochemical and Mycological Evaluation of Auto-mechanic Workshop.	Osayande, A.D[1*] Akomah, O.N[2],Abhulimhen B. I[1], Okengwu,K.O[3] [1]School of Science laboratory Technology, University of Port Harcourt, Geology and Mining Technology, P.M.B 5323, Choba, Port Harcourt, Rivers State. [2]School of Science laboratory Technology, University of Port Harcourt, Microbiology Technology, P.M.B 5323, Choba, Port Harcourt, Rivers State, [3]University of Port Harcourt, Faculty of Science, Department of Geology, P.M.B 5323, Choba Port Harcourt Rivers State * desosayande1@gmail.com; desmond.osayande@uniport.edu.ng
11.	Assessment of Nitrate Levels in underground Water Sources and Selected foods in Gusau Local Government Area of Zamfara State.	Hassan A.B[1], Samaila .I.[2], Alli Abbas[3], Umar Ahmad[4], Tanko O.O[5] and Kutigi .A.[6] , Department of Science Laboratory Technology 1-4, Department of Food Science Technology, Federal Polytechnic, Kaura Namoda, Zamfara State hassanadebayobamidele@gmail.com 08034269002
12.	Synergistic Effects of Essential Oil and Crude Extract Blend Extracted from *Ocimum Gratissimum L.* and *Lantana Camara L.* Leaves in Formulated Mosquito Repellent Cream a Panacea for Diversification.	[1*] Obiora J. O, [2]Chendo M. N. [1]Department of Science Laboratory Technology (Chemistry option) Federal Polytechnic Oko, [2] Chukwuemeka Odumegwu Ojukwu Universities joyezeo@yahoo.com ; 234-8035648874
13	Determination of Calorific Value of Briquettes made from Bagasse and Corn Cob	[1]Isa Yahaya Hassan, [2]Dr. Nasir N. Khalid; [1]National Research Institute for Chemical Technology, P.M.B. 1052 Basawa-Zaria, Kaduna State, [2]Kaduna Polytechnic, Kaduna State. Corresponding author's email: hassanisa5591@gmail.com
14	Micronutrient and Heavy Metal Analysis of Infant Formulae Sold in Makurdi Metropolis, Nigeria.	[1]Onuorah Ogochukwu A., [2]Prof. Sha'ato Rufus, [2]Dr.Nnamonu Lami, [2]Julius Tsaviv; [1]National Research Institute for Chemical Technology, P.M.B. 1052 Basawa-Zaria, Kaduna State, [2]Federal University of Agriculture, Makurdi., ogochukks4real@gmail.com
15	Water Quality and Heavy Metal Sedimentation in Okumeshi River, Ebedei-Uno, Delta State, Nigeria	Ugbome Ify Leonard[1], Ito Edore Edwin[2*] and Orighoyegha Glenn Maruvie[3]

GROUP 3: PHYSICAL SCIENCES (Physics, Electronics/Geology, Geophysics etc).

S/N	TITLES	AUTHORS
1.	Design and Construction of a Microcontroller Based Lux-Meter with a Light Dependent Resistor	Alamuoye I.H; Ewetumo T; Obagade T.A; and Fatile J. A., Department of Physics, Federal University of Technology, P.M.B. 704, Akure, Nigeria
2.	Temperature Monitoring Sensor Device in Enhancement of National Economy.	Ahmed-Ade Fatai Physics Unit, Department of Science School of Preliminary Studies Kogi State Polytechnic, Lokoja. Nigeria Ahmedadefatai@Gmail.Com/08030834363 and Onujagbe Isezuo Paul Physics Unit, Department of Science School of Preliminary Studies Kogi State Polytechnic, Lokoja. Nigeria Paulazionujabe@Gmail.Com
3.	Application of Electrical Resistivity Method for Mapping of Groundwater Potential of Joseph Ayo Babalola University Campus Environment, Ikeji Arakeji, Osun State, Southwestern Nigeria.	Odeyemi O.E.[1] Odeyemi O.M.[2] Salako R.A.[1], [1]Science Laboratory Technology Department, Federal College of Animal Health & Production Technology, Ibadan [2]Physical Science Department, Joseph Ayo Babalola University, Ikeji Arakeji, Corresponding author e-mail: evasanmi2@gmail.com
4.	Assessment of Equivalent Doses Due to Radiation Exposure in X-Ray Waiting Rooms in Some Radiological Centres in Lagos State South-Western Nigeria.	[1]Oluwafisoye, P.A, [2]Alausa, S.K, [3]Ojo .O.A, [4]Bayode .O.P, [5]Ilori .A.O, [6]Adegbile .A.A, [7]Taiwo .T.K. [1,3,4]Department of Physics, Osun State University, Osogbo, Nigeria. [2,3,4]Department of Physics, Olabisi Onabanjo University, Ago-Iwoye, Nigeria. [5]Department of Mathematical Science, Ondo State University of Science and Technology Okitipupa, [6]Department of Computer Technology, Federal College of Animal Health and Production Technology Moor Plantation Ibadan, Nigeria. [7]Ministry of Education, Tescom, Leaf Road, Ibadan Oyo State, Nigeria. Corresponding Author: Oluwafisoye, P.A. *FISLT (0222)* Department of Physics Osun state University, Osogbo. Email: paoluwafisoye@yahoo.com; peter.oluwafisoye@uniosun.edu.ng 07066289848
5.	Investigating the Performance of a Constant Voltage Regulator.	[1]Abdurrahman Zainab; [2]Engrn Dr muhammad Munir Aliyu

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GROUP 4: GENERAL PAPERS (Entrepreneurship).

S/N	TITLES	AUTHORS
1.	Necessity of Science Laboratory Technologists in Senior Secondary School for Effective Science Practical in Selected Secondary Schools in Ilorin-South Local Government Area of Kwara State.	Ekpenyong Ndueso (PU CHEMIST) Department of Production, United Foam Products (Nig.) Limited Asadam Road Ilorin Kwara State. ndueso.ekpenyong@yahoo.com 07064996875
2.	Role of Effective Regulation Of Science Laboratory to Enhance Students' Capacity in Learning Science in Nigeria Secondary Schools.	[1]J. A. Fatile; [2]H.I. Alamuoye Department of Physics, Federal University of Technology University, Akure, Nigeria [3]Williams Abiodun, Department of Physics, Olabisi Onabanjo University, Ago Iwoye Nigeria
3.	Role of Science Laboratories in Providing Export Drive of Kaolin in Katsina State from Nigeria Economic Recovery and Sustainable Development	Mohammed Idris Rumah Idrisrumamohammed@Gmail.Com Primary Health Care Department, Katsina State.
4.	The Role of Science Laboratory Technology Students in the Breeding of Laboratory Experimental Animals for Sustainable Economic Development	Michael Olu-Ajayi,FISLT Zoology & Environmental. Biology. Dept., Ekiti State University, Ado-Ekiti. michaeoluajayi@gmail.com 08066307856

INCIDENCE OF EXTENDED SPECTRUM ßETA-LACTAMASES (ESBL) PRODUCING STRAINS OF *E.COLI* FROM PATIENT'S URINE

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Abstract
The study is designed to detect and evaluate with molecular screening the Extended Spectrum beta-lactamases (ESBL) producing strains of *Escherichia* coli from patients urine, and aimed as to finding solutions to the spread of ESBL producing bacteria which is a matter of great concern in treating infections in hospitals. A total of 250 isolates from urine samples were studied phenotypically with antimicrobial susceptibility testing that was determined by, kirby bauer disk diffusion and double disk diffusion synergy test as recommended by clinical Laboratory Standard Institute (CLSI) The results showed, out of 250 isolates from urine sample, 110 isolates were *E coli* 30(37%) isolates positive On the antibiotics used, the isolates showed (100%) resistance to ampicillin (10ug) and augumentine (30ug); followed by ofloxacin (5ug); cefuroxime(30ug); ciprofloxacin (ug); ceftazidime (30ug) and gentamicine(5ug). The result of ESBL production with double disk diffusion test (DDDT) with ceftazidime and cefotaxime with and without clavulanic acid at a distant of 30mm and a zone clearing difference greater than ≥ 5mm showed 30(45%) positive with isolates of *E coli*. Presence of acquired ESßL-encoding gene by PCR using 16S rRNA region sequencing analysis by standard identify yielded positive. The detection of extended spectrum Beta-lactamase production by *Escherichia coli* and their confirmation with molecular screening requires adequate infection control with antibiotic management to avoid risks of treatment failures.
Keywords: ESßL, Producing strains, E,coli, clinical specimens, ßeta-lactam, antibiotics.

ACUTE AND SUB-ACUTE TOXICITY STUDIES OF THE ADMINISTRATION OF THE AQUEOUS EXTRACT OF ZANTHOXYLUM ZANTHOXYLOIDES ON THE BODY AND VITAL ORGANS OF ALBINO RATS AND MICE.

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Abstract
The *Zanthoxylum zanthoxyloides* plant has been locally used as chew stick in rural and urban areas, most especially in western part of Nigeria. The roots of *Z. zanthoxyloides* were collected, washed, chopped into small pieces, sun dried and milled into powder. The powdered sample was extracted by weighing 650 grammes and soaked in eight liters of distilled water in a plastic vial, agitated at 3 hours intervals for a period of 72 hours, then sieved with clean muslin cloth, and the filtrate concentrated using steam by heating over water bath at a constant temperature of 80 ^{0}C. The stock extract solution of 250 mg/ml was prepared and various concentrations used for administration were prepared from it using the weight of the animals. This study determines the toxicity effect of the plant extract on animal model on consumption. The animals in groups I, II and III have similar signs observed such as itching, writhing, calmness, sedation and pylori erection, excluding group IV and V having additional signs of irregular breathing and reduced motor activity and death. The number of deaths that were recorded in group IV (10,000 mg/kg) for mice and group V (20,000 mg/kg) for rats could be attributed to other physiochemical or environmental factors and not the toxicity of the extracts. The toxicological evaluation reveals insignificant ($P<0.05$) alteration which is dose independent for twenty-eight days administration. In corresponding seven days administration, triglyceride decreased significantly ($P<0.05$) while at ($P<0.01$) the total cholesterol decreased in 2500 mg/kg and 1000 mg/kg but increased in 500mg/kg. But the total protein was insignificantly ($P>0.05$) altered compared to the

control group. This alterations of total protein (TP: 7.87±1.28), triglycerides (TRG: 229.3±177.5) and total cholesterol (TCHOL: 166.3±84.14) as compare to controls (TP: 8.28±2.90; TRG: 60.43±30.93; TCHOL: 188.3±76.62) at 1000 mg/kg indicates hepatotoxicity of the liver and coronary heart disease, hence the liver function should be monitored.

Keywords: Administration, Toxicity, Symptoms, Therapeutics

COMPARATIVE EVALUATION OF CHROMATOGRAPHIC IMMUNOASSAY AND ENZYME-LINKED IMMUNOSORBENT ASSAY IN THE DIAGNOSIS OF HEPATITIS B VIRAL INFECTION IN PREGNANCY

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Abstract
Hepatitis B virus (HBV) is a potentially life-threatening disease. The prenatal transmission of HBV leads to severe long-term sequelae. Early diagnosis of HBV is the most important factor for efficient patient treatment management, therefore it is necessary to use the most sensitive and efficient diagnostic method in the detection of HBV among antenatal patients. The study was conducted to evaluate the performance of chromatographic immunoassay (CIA) against enzyme-linked immunosorbent assay (ELISA); a gold standard, in the detection of HBsAg among pregnant women in Northwestern Nigeria. Out of the 160 samples screened for HBsAg, 5.6% (2.99-10.35) and 6.9% (3.48-11.97) tested positive with CIA and ELISA respectively. Both diagnostic methods have 100% (97.55-100.00) specificity however, the sensitivity of CIA was 81.8% (48.22-97.72) while its positive predictive value, negative predictive value and negative likelihood ratio were 100%, 98.7% (95.51-99.62) and 0.18 (0.05-0.64) respectively at 95% confidence level. The sensitivity of ELISA was 100% (71.51-100.00). The study revealed that ELISA was more sensitive than CIA, therefore rapid test kits are not sensitive enough to confirm hepatitis status among antenatal patients.

Keywords: ELISA, CIA, ICT, HBV, Diagnosis, Pregnancy, Nigeria.

THE DAMAGING EFFECT OF TYPE-2 DIABETES ON MAJOR ORGANS OF WISTAR RATS: MEDICINAL PLANT (*HUNTERIA UMBELLATA*) AS ALTERNATIVE DIABETES MANAGEMENT RECIPE.

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Abstract
Type 2 diabetes (T2D) is a chronic hyperglycemia resulting from decreased insulin secretion and impaired insulin action or both in the absence of autoimmune destruction of the pancreatic beta (β) cell and other organs. The **effect of type-2 diabetes on major organs such as the** liver, kidney and pancreas **was studied. The potency of**

medicinal plant (*Hunteria umbellata*) in the management of diabetes was compared to standard drug (metformin). The phytochemical screening of the seed extracts was determined using standard chemical methods. Twenty five (25) wistar rats weighing between 117g and 170g were shared into five (5) groups of five animals per group for the physiological studies. All treatment groups were administered 500 mg/kg per body weight of *H. umbellata* extracts. Group 1: normal control, group 2: negative or diabetic control, group 3: metformin + streptozotocin (STZ), group 4: aqueous extract of *H. umbellata* + STZ and group 5: methanol extract of *H. umbellata* + STZ. Diabetes was induced with 55mg/kg body weight streptozotocin (STZ). Control and experimental rats was scarified and liver, kidney and pancreas tissues isolated on glass slides and fixed with ten percent (10%) formal-saline and viewed using (x100) magnification light microscope. Qualitative phytochemical screening of aqueous and methanol seed extracts of *H. umbellata* reviewed the presence of secondary metabolites such as, saponins, phytate, oxalate, anthraquinones, Cyanogenic glycoside, phenols and alkaloids. The hypoglycaemic studies of methanol extract revealed significant ($p<0.005$) reduction on the fasting blood glucose levels of experimental animals for group 5 compared to moderate reduction in group 3. Group 4 recorded increase in the blood glucose levels of wistar rats. The histological study reviewed mild vascular dilatation and kupffer cell activation in liver organs. Kidney treated with *H. umbellata* showed the presence of patchy glomerular nodule formation, moderate interstial congestion and normal glomeruli as distinct as that of the normal control. After twenty-one days treatment, pancreas treated with *H. umbellata* reviewed significant resurgent islet of Langerhans. The methanol extract of *H. umbellata* may be used as alternative recipe in the management of typ-2 diabetes.
Keywords: Type-2 diabetes, Hyperglycemia, Phytochemical screening, Streptozotocin, wistar rats, *Hunteria umbellata*, histology, Meforming

ANTIBIOTIC POTENCY OF *MOMORDICA CHARANTIA* (BITTER MELON) LEAVES ON FIVE GRAM POSITIVE AND NEGATIVE PATHOGENIC BACTERIA

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Abstract
The antibiotic potency of Momordica charantia was investigated on some selected Gram negative and Gram positive clinical bacteria species; Salmonella typhi., Proteus mirabilis., Pseudomonas aeruginosa., Escherichia coli, Shigella dysentria., Bacillus cereus., Streptococcus faecalis., Staphylococcus aureus., Enterococcus faecalis., and Micrococcus varians. which were typified at Federal Medical Center (FMC), Owerri. The leaves of M. charantia was collected, dried and milled into powder using sterilized manual grinding machine. The leave extracts with methanol, hot and cold water were tested on the clinical pathogens. The concentrations of the extracts were prepared by weighing 5g of the leave powder, 3.75g, 2.5g and 1.25g in 100ml of the solvents used, representing 100%, 75%, 50% and 25% respectively. The fresh inocula were diluted in 2.5ml of normal saline and poured into the nutrient agar plates and spread evenly on the surface of the plates. The already prepared discs of the various concentrations of the extracts were placed on the inoculated plates and incubated for 18hours at 370C. The zones of inhibition were evaluated by measuring the surface clearance on the plates at different concentrations using transparent rule. The results of zones of inhibition showed that the methanolic extract had more varying zones of inhibition relative to the concentrations when compared with the hot water and cold water extracts. Salmonella sp., Proteus sp., Shigella sp., Staphylococcus sp. and Micrococcus sp. at 100% and 75% concentrations showed susceptibility. However, Bacillus sp. was resistant at all the concentrations. This demonstrates the potentiality of Momordica charantia (Bitter melon) as a source of antibacterial agent that can be harnessed in the health care delivery processes.
Keywords: Antibiotics, Extract, inhibition, Mormodica charantia, Potency, sensitivity

BACTENOLOGICAL SCREEN OF LOCALLY VENDORED OW MILK (CASE STUDY OF DAMATURU METROPOLIS)

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Abstract
The study of Bactenological screening of locally vendored cow milk was comed out between May 2016 to October 2016 in Damaturu metropolitan. Total number of100 samples were purchased randomly at Ajari, Bayan Tasha, Ali Marami Housing Estate and Gwange respectively. These sample were subjected to the standard method of bactenological analysis such as standard plate method, the most probable number (MPN) various screening techniques and Biochemical method. The result obtained indicated about 46% (46 sample) update the colony forming unit of about $1.0*10^5$ to $7.8*10^5$ cfu/ml which was above the standard of food and Agricultural Organization (FAO) of $1*10^5$ The range of MPN value for coli term between > 10 to 2,400 MPN/100ml which was higher than the standard A < 10 MPN/100ml. Staphylococcus spp and E coli were also detected in the sample. Environment where cows are housed and milked, the procedure of milking which include personal hygiene cleaning and sanitization of milking and storage equipment and the temperature of milk storage are considered the factors contributing to the contamination. Sample couple pasteurization is suggested as possible means of reducing contamination of locally Vendor cow milk.

THE EFFECT OF *PIPER GUINEENSE* ON THE RED BLOOD CELLS AND HAEMOGLOBIN CONCENTRATION OF DIABETIC FEMALE ALBINO WISTAR RATS

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Abstract
This study was carried out to investigate the effect of *Piper guineense* on the Red Blood Cells and Haemoglobin concentration of diabetic female albino wistar rats**.** Forty two albino wistar rats were used and divided into six groups of seven animals each. Group 1 served as Normal control and received water and feed *ad libitum*. Groups II to VI were induced with diabetes using Alloxan and diabetes was confirmed after a period of 3 days in animals with Fasting Blood Glucose Level (FBGL) over 200 mg/dl. The diabetic animals in groups II to IV were orally administered with plant extracts for a period of 14days. Group II animals were given 40mg/kg of the extract (Low dose), Group III, 80mg/kg of the extract (medium dose), Group IV, 100mg/kg body weight of the extract while Group V animals served as positive control were treated with 10mg/kg body weight of Gilbenclamide (Anti diabetic drug) for the same period and group VI animals left untreated and served as Diabetic control. Changes in Body weights were monitored. At the end, the animals were sacrificed through cardiac puncture and the blood samples collected for the analysis of their Red Blood Cell and Haemoglobin concentration. The results showed that the oral administration of the methanolic leave extract of *Piper guineense* at 80mg/kg significantly increased the Red Blood Cell and Haemoglobin concentration of the the diabetic animals after an initial reduction. Thus *P. guineense* has positive effect on Red Blood cells and Haemoglobin concentration of diabetic rats and could be of benefits to diabetic and anaemic patients with the medium dose as the optimal dose.
Keywords: Diabetes, *Piper guineense*, Red Blood Cells, Haemoglobin Concentration, Anaemia.

CURRENT ADVANCES AND DEVELOPMENTS IN ANTIMICROBIAL FINISHING OF TEXTILES AND TEXTILE PRODUCTS

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Abstract
Increasing awareness of health and hygiene in our environment has brought about increased demand for bioactive or antimicrobial textiles. The growth of microbes on textiles during use and storage negatively affects the wearer as well as the textile itself. The detrimental effects can be controlled by durable antimicrobial finishing of the textile using broad-spectrum biocides or by incorporating the biocide into synthetic fibers during extrusion. Consumers' attitude towards hygiene and active lifestyle has created a rapidly increasing market for antimicrobial textiles, which in turn has stimulated intensive research and development. This paper reviews the requirements for antimicrobial finishing, and qualitative evaluations of antimicrobial efficacy, the application methods of antimicrobial agents and some of the most recent developments in antimicrobial treatments of textiles using various active agents. It also calls on our government to as a matter of urgency encourage innovative researches in all aspects of textile science and especially those pertaining to the users' safety.

APPLICATION OF MICROBIOLOGICAL ASSAY TO DETERMINE THE ANTIMICROBIAL ACTIVITIES OF ORAL B AND CLOSE UP TOOTHPASTE

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Abstract
The antibacterial effect of Oral B and Close – up on some selected bacteria was carried out. The test organisms used were *Staphylococcus aureus*, *Pseudomonads* spp, *Streptococcus mutants* and *Streptococcus pyogenes*. From the result obtained, Close – up has the highest zone of inhibition 34mm against Pseudomonas spp at 16mg/ml while the lowest zone of inhibition was observed at 10ml at 2mg/ml concentration against *Pseudomonas*. The highest zone of inhibition against *Staphylococcus aureus* and *Streptococcus mutants* was 25mm at 16mg/ml concentration while the lowest zone of inhibition were 11mm and 12mm respectively at 2mg/ml concentration. The highest zone of inhibition of Oral B against *Streptococus mutant* was 34mm at 16mg/ml, while lowest zone of Inhibition was 9mm at 2mg/ml. The highest zone of inhibition for *S. pyogenes* was 20mm at 16mg/ml while the lowest was 7mm at 2mg/ml. the highest zone against *Pseudomonas* spp was at 29mm at 16mg/ml concentration while the lowest was 22mm at 4mg/ml. No zone of inhibition was observed against *Pseudomonas* at 2mg/ml concentration. The highest zone of inhibition against *S. aureus* was 32mm at 16mg/ml concentration while the lowest was 12mm at 10mg/ml no zone of inhibition was observed at 2mg/ml, 4mg/ml and 8mg/ml concentrations.
Keywords: Test organisms, Oral B, Close-up, Zone of Inhibition

EFFECT OF FERMENTATION ON THE PROTEIN CONTENT AND ANTINUTRITIONAL FACTORS IN FERMENTING SOYA BEAN FLOUR

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Abstract
Fermentation has been reported to improve the nutritional value, taste, and aroma and also reduced/eliminate the anti-nutrient content of many legumes seeds. The effect of fermentation and anti-nutrient factors of soy-iru produced from soybean was carried out in this research work. *Lactobacillus fermemtum* and *Leuconostoc mesenteroides* were used as the starter based culture for this study; they were used both singly and in combination. The fermenting soybean was analyzed for protein and the anti-nutrient factor. The combination of *Lactobacillus fermentum* and *Leuconostoc mesenteroides* showed higher percentage protein (49.89%) after 72hrs of fermentation than when they were used singly. The spontaneous fermented soybean (SFSB) had the least protein content of 40.16% which is higher than the percentage protein of the NFSB (non-fermented soybean).There was a significant reduction of phytate and flavonoid among the four samples. These findings showed *Lactobacillus fermentum* and *Leuconostoc mesenteroides* are good candidate for the fermentation of soybean with respect to protein improvement and reduction of anti-nutrient factors.
Keywords: Starter culture, Fermentation, anti-nutritional factor, Soya beans

BACTERIOLOGICAL AND MYCOLOGICAL QUALITY ASSESSMENTS OF SOME READY-TO-EAT FOODS SOLD IN KADUNA STATE UNIVERSITY MARKET, KADUNA, NIGERIA

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Abstract
The bacteriological and mycological quality assessments of selected ready-to-eat foods sold in Kaduna State University market were investigated. A total of one hundred and sixty (160) ready-to-eat food samples: including rice, beans, yam and waina (rice cake) were collected from twelve food vending sites which serves as the major ready to eat food vending centres to the student community. Pour plate methods were used for the isolation of bacteria on different media and the fungi on potato dextrose agar (PDA). The bacteria and fungi isolates were characterized and identified using standard techniques. A total of five (5) species of bacteria and three (3) species of fungi were isolated and identified. These bacteria species include; *Escherichia coli, Staphylococcus* sp, *Salmonella* sp, *Pseudomonas* sp, *Shigella* sp and while the fungi species include; *Aspergillus* sp, *Mucor* sp and *Rhizopus* sp. The mean total aerobic bacteria plate count ranged from 2.3 $x10^1$ to 6.2$x10^9$ and fungal count ranged from 5.3$x10^1$ to 4.5$x10^9$. The level of food contaminations were within acceptable microbiological limits in relation to the specifications by International Commission for Microbiological Specification for Foods (ICMSF), except for waina which constituted about 30 percent of the total microbial isolates having *E. coli* and *Aspergillus* sp as the most predominant and *Shigella* sp as the least predominant. This could be attributed to extensive handling, mixing and processing of the waina. The Hazard analysis critical control point (HACCP) systems should be enforced in foods sold on campus through stringent supervision of the ready-to-eat foods by relevant authorities to prevent possible outbreak of food borne illness.
Keywords: Ready-to-eat foods, bacteria, fungi, species, count, HACCP

KEEPING QUALITY OF DAWADAWA PRODUCED FROM FERMENTED SOYBEAN AND LOCUST BEANS SEEDS

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Abstract
An Experiment was carried out to determine the effect of using traditional and modern methods in fermenting soybean and locust beans seed to produce Dawadawa on its keeping quality for 5 weeks. Fermented seeds, dawadawa (Iru) serve primarily as condiment for seasoning sauces and soups served in various Nigeria meals among the various tribes of Nigeria. The modern method of fermentation employed involved using the incubator

maintained at 36^0C to ferment the seeds, while the tradtional method used was to ferment the seeds at room temperature of 26^0C for 3-5 days. The parameters monitored were; Microbial count, pH, Total Titratable Acidity (TTA), Color development and Moisture content. After 5 weeks the pH of the incubated dawadawa in week 1 droped from 6.45 – 3.51% in week 5, while the naturally fermented one dropped from 6.82 – 3.90%. The Moisture content in week 5 for the modern method increased from 7.8 – 14.5% and that of the natural method from 8.7 – 17.4%. TTA also increased significantly from 0.056 – 0.43% in week 1 for the modern method and 0.098 – 0.65% in the natural method for week 5. Microbial count showed an increase from 1.2 – $4.4x10^3$ cfu in week 5 and 1.7 – 8.5 x 10^3 cfu for the naturally treated samples in week 1. There was however no significant difference (0.05) in the color test. The result showed that the dawadawa fermented using the incubator had better keeping qualities than the one fermented traditionally using room temperature. The use of incubator in fermenting soybean and locust beans seeds to produced dawadawa is highly recommended.

Keywords; dawadawa, soybeans, locust beans, fermentation

COMPARATIVE NEPHROPROTECTIVE EFFECTS OF CRUDE SEED POWDER, AQUEOUS AND METHANOLIC EXTRACTS OF *BUCCHOLZIA COREACEA* IN CARBON TETRACHLORIDE-INDUCED LIVER DAMAGE IN ALBINO RATS (*RATTUS NOVERGICUS*)

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Abstracts

Buchholzia coriacea popularly known as wonderful kola is one of the medicinal plants that have been used in different ways as an alternative medication to promote health for people in Nigeria, Africa and other parts of the world. Immense benefit have been derived by man from using medicinal plants in disease control, because they are relatively safer, more affordable and sometimes give better therapeutic value than synthentic drugs. Comparative nephroprotective effects of crude seed powder, aqueous and methanolic extracts of *Buccholzia coreacea* in carbon tetrachloride-induced rats (*rattus novergicus*) was investigated for 56 days using standard methods. The results showed that the crude seed powder, aqueous and methanolic extracts of *B.coriacea* significantly (P>0.05) reduced the levels of creatinine and uric acid from week 2 to 8 and then decreaed minimally throughout the treatment periods when compared with the CCL4 and normal control while total protein increased significantly (P>0.05). Significant decreases (P>0.05) were also observed only in 200 mg/kg BCAE and BCCP respectively in urea and BUN levels when compared with the control and baseline, an indication that the extracts could be more effective if administered at a low dose. However, the nephroprotective effects could be attributed to the presence of phytochemicals like flavanoids and tannins which act as antioxidants. Thus, the study has demonstrated that *B. coriacea* crude seed powder, methanolic and aqueous extracts is safe for consumption since it does not cause any adverse effect on the rat kidney and could be used in the management of nephrotoxicity.

Key words: Nephroprotective, Crude Seed Powder, Aqueous extracts, Methanolic Extracts, *Buccholzia coreacea*, Albino Rats

MICROBIOLOGICAL QUALITY OF DOMESTIC AND RESTAURANT WASTEWATER USED IN THE FORMULATION OF MEDIA FOR THE CULTIVATION OF *Chlorella* spp.

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Abstract
The need for a sustainable microbiological culture media for production of microalgae has been a source of intense research to biotechnologists all over the world. In this study domestic and restaurant wastewater were obtained from Choba, Rivers State Nigeria. The physicochemical, microbiological and biosafety of the wastewater were ascertained. The stock of axenic culture from the waste was subjected to plasmid profile. The ratio of domestic and restaurant wastewater were selected and optimized for growth condition. Biomass was monitored by cell optical density and dry weight. The result revealed that the range of pH (6.12-6.55), Conductivity (249-240 µS/cm), DO (38.45-62.94ppm), Nitrate (13.6-16.52ppm), phosphate (2.08-3.27ppm) and TOC (2.17-7.18ppm) were obtained for restaurant and domestic wastewater respectively. Total heterotrophic count ranged from $1.06x10^6$-$4.6x10^7$cfu/ml and $1.19x10^6$-$7.8x10^7$cfu/ml for domestic and restaurant wastewater. The coliform analysis revealed that fecal and total coliform had an MPN-index of $2.4x10^5$cfu/100ml. The microflora obtained for the wastewater included *Corynebacterium* sp, *Hafnia* sp, *Klebsiella* sp, *Staphylococcus* sp, *Bacillus* sp, and *Pseudomonas* sp, while the domestic sample contained *Micrococcus* sp, *Aerococcus* sp, *Acinetobacter* sp, *Providencia* sp *and Tatumella* sp. Dominant fungal isolates were *Penicillium* sp, *Mucor* sp, *Rhizopus* sp and *Aspergillus* sp. Biosafety evaluation saw a reduction from 120cfu/ml to 0cfu/ml on the third day. The optimal wavelength selected growth monitoring was 620nm while growth media ratio selected was 60:40 for restaurant domestic wastewater. The optimization revealed pH 6.0, temperature 30^0C, salinity 10ppm and photoperiod 12:12 day: night as optimal condition. Multidrug resistance of the isolates was established to be plasmid borne. Domestic wastewater can be a veritable medium for cultivation of *Chlorella*sp as a means of integrated waste management, the *Chlorella* would be used as a feedstock for biotechnological applications such as source of biochemical, nutraceuticals and for use in biofuel generation.

UTERINE SMOOTH MUSCLE EFFECTS OF A POLYHERBAL FORMULATION (*AJUMBISE*) USED IN SOUTHEAST NIGERIA

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Abstract
Ajumbise is a polyherbal formulation used by women in southeast Nigeria for the enhancement of labour, expulsion of retained placenta and blood clots after delivery, relief of postpartum and menstrual pains and promotion of involution of the uterus. In this study, the formulation was evaluated for smooth muscle functions to scientifically validate its traditionally acclaimed uterotonic property. The formulation was purchased, separated into its component plants and identified. Extracts were prepared for the polyherbal formulation and also for the individual plants components. Matured female albino rats previously primed with stilboesterol (1mg/kg body weight) for 24 hours were used for the study. Uterine horn from each rat was suspended in a 30 ml organ bath containing Dejalon solution, maintained at 37^0C and continuously bubbled with air. Effects of administered drugs were recorded using a digital physiograph by means of an isometric force transducer. Results obtained showed that extract from the polyherbal formulation, like oxytocin, significantly induced contractions of the isolated uterine tissue ($P<0.05$). However separate trials of its six plants components revealed that 2 of the components (*Uvaria chamae* and *Napoleona vogelli*) had contractile effects while the remaining 4 (*Barteria fistulosa*, *Spondias mombine*, *Euphorbia*

convolvuloids and Ceiba pentandra) caused varying degrees of relaxation effects. The contractile effects of both oxytocin and the polyherbal extract were significantly blocked by salbutamol and may have occurred via the same mechanism. *Ajumbise* polyherbal may therefore be a potential source of new uterotonic and tocolytic agents and may provide template for the development of new synthetic ones.
Keywords: *Ajumbise*, contraction, oxytocin, uterus

MOLECULAR DOCKING STUDIES ON A CYSTEINE PROTEASE, *FALCIPAIN-2* WITH PYRROLONES AS ITS INHIBITORS

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Abstract
Molecular docking studies were carried out on a data set of fourty nine (49) Pyrrolone based antimalarial agents against Plasmodium falciparum using AutoDock Vina of PyRx and Discovery Studio Visualizer. The molecules were optimized using Density Functional Theory (DFT) (B3LYP/6-31G**) level of calculation. The result of the docking analysis revealed that the best compound with the docking scores of -11.1 kcal/mol formed hydrophobic interaction and H-bonding with amino acid residues of the targeted falcipain-2 receptor. This research has shown that the binding affinity generated was in agreement with the standard antimalarial drugs. It is envisioned that the wealth of information provided by this study will offer important structural insight for further laboratory experiments in the future design of novel and highly potent anti-malarials from pyrollones.
Keywords: Antimalarials, DFT, pyrrolones, QSAR, Docking Score, Falcipain-2.

ANTIMICROBIAL ACTIVITY AND FEATURES OF MITRACARPUS VILLOSUS (SW) DC

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Abstract
The medicinal plant, mitracarpus villosus (sw) dc. Formerly mitracarpus scarber zuccar family Rubiaceae is a herb occurring in both the savannah and the forest zones (wicken 1976) Microscopial examination of the fresh as well as the powdered root,stem and leaves of M. villosus were carried out and characteristic features like calcium oxalate crystals and paracytic stomata were noted. Chemomicroscopy of the roots, stem leaves and inflorescence of M. villosus revealed the presence of lignis, anthraquinones, oil droplet, starch and calcium pxilate, while the preliminary phythochemical test showed the presence of alkaloids, carbohydrate, flavonoids, saponins and tannis. Paper and thin layer chromatographic analysis carried out also confirmed the presence of these constituents. Alkaloids were estimated and found to be family high in concentration. Chemical analysis indicated the presence of the isoquantine morphine type. The moisture content as well as the extractive and ash values was also determined for the leaf and inflorescence. The identity test suggests the presence of morphine. Extract of the entire plant in different solvents exhibited antimicrobial activity against standard cultures of subtillis. The activities of the hot water extract of the plant are higher than the cold watered alcohol extract on this entire test organism. Similarly, the activities of the secondary metabolites (alkaloids, flavonoids, steroidal alkaloid, slycoside,sprotanol, toiterpennins) present in the plants were tested on test organism. Tannis were found to have higher activity followed by steroids, triterppenes, flavonoids and fixed showed no activity. The secondary metabolite of the plant showed activity against gram negative organism and gram positive to a higher extent.
Keywords: Antimicrobial activities, mitracarpus villosus, economic importance

PROXIMATE COMPOSITION OF *JATROPHA CURCAS* LEAVES, PHYTOCHEMICAL AND ANTIBACTERIAL ANALYSIS OF ITS ETHYLACETATE FRACTION

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Abstract
Resurgence of public interest in the ethnomedical practices in both the developing and developed countries is increasing. Medicinal plants are parts of a plant or the whole plant that possess healing properties. *Jatropha curcas* has been reported severally for its Folkloric uses as herbal remedy for the management of rheumatism, tumor e.t.c. This study was carried out to screen the leaves of *Jatropha curcas* for its proximate composition and also the phytochemicals and antibacterial analysis of the Ethylacetate leaf extract. Proximate composition results showed high percentage moisture content of (89.70) and percentage protein content of (4.35) indicating that *Jatropha curcas* leaves is a good source of dietary protein. Qualitative and quantitative analysis of eight secondary metabolites (alkaloids, tannins, saponins, phenols, flavonoids, steroids, phlobataninns and cardiac glycosides) showed that all secondary metabolites analysed were present in the plant species studied. Alkaloids and Saponins had the high percentage concentration of 0.6280 and 0.4210 respectively, which revealed the presence of bioactive compounds. The antibacterial activity of the ethylacetate leaf extract against *Staphylococcus sp., Bacillus aureus, Clostridium sp., Escherichia coli, Proteus sp.* and *Pseudomonas sp.* showed average zone of inhibition of (17, 31, 33, 52, 37, and 33) respectively. This result confirms the potency of this plant in treating human infections. Overall this study indicate that previously reported antibacterial, anti-inflammatory properties of this herb may be due to their inherent bioactive constituent and the proximate component, thus supporting the claims of the traditional healers.

EXTRACTION, CHARACTERIZATION AND UTILIZATION OF OIL FROM THE SEED OF MORINGA OLEIFERA

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Abstract
This study examined the potential of moringa oleifera seed as an oil seed.Moringa seed was collected from Amichi in Nnewi- South L.G.A of Anambra State. It was dehulled, dried at room temperature, weighed and milled to powdered form. The oil was extracted using soxhlet extraction methods, while petroleum ether as the solvent. White coloured oil was obtained. Oil yields of morings oleifera were 11.5 %. The oil was analyzed for the following parameters; acid value, saponification value, iodine value, peroxides value, specific gravity, density and unsaturation level. The results of the analysis indicated acid value (23.55mg/g). Iodine value (123.0mg/g), saponification value (155.40mg/g), peroxide value (1.14meg/g), specific gravity at 27^0C (0.62), density (0.78ml), and unsaturation level (moderate). These results indicated of low susceptibility to rancidity and high antioxidant levels. The moringa seed oil could be used as vegetable oils and industrial blends for cosmetics, paints, plastics, alkyd resin and formation of black shoe polish which was compared with a commercial one.

UTILIZATON OF *Treculia africana* (BREADFRUIT) SEED HULL IN THE REMOVAL OF INORGANIC ANIONS FROM ABATTOIR WASTEWATER

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Abstract
This study was carried out to investigate the efficiency of using breadfruit seed hull in the removal of inorganic anions (SO_4, NO_3, PO_4 and Cl levels) from abattoir waste water. Abattoir effluents are key contributors to wastewater pollution. They are perceived to contaminate both surface and underground water through stages in meat processing. The fixed-bed adsorption method was adopted in treating the wastewater sample at different flowrate (3, 9 and 15ml/s) while maintaining a constant bed height of 5cm and initial concentration of 50mg/l. Inorganic anion concentrations were determined using standard procedure. The result reveals that the concentration of inorganic ions in the untreated sample dropped when compared to those treated using the breadfruit seed hull. Thus bread fruit seed hull has the efficacy of reducing inorganic anion from waste water.
Keywords: *Treculia africana*, Inorganic Anion, Abattoir, Wastewater,

HETEROGENEOUS PHOTOCATALYTIC DECOLOURISATION OF RED OXIDE PIGMENT IN PAINT EFFLUENT USING SUNLIGHT-IRRDIATED TITANIUM OXIDE

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Abstract
The improper discharge of untreated effluent arising from industrial and domestic activities poses negative effects to the aquatic environment. Heterogeneous photocatalysis is a reliable and low-cost clean energy technology adopted for the abatement of environmental pollutions. In this study, the photocatalytic decolourisation of red oxide pigment in paint effluent was investigated using ultra-violet (UV) rays irradiated titanium oxide (TiO_2). The photocatalysis was carried out in a batch system with and without the presence of sunlight as natural source of UV rays. Spectrophotometric method was adopted to measure the residual colour in the solution. The results ascertained a maximum decolourisation efficiency of 98.6% at optimum catalyst dosage of 1% (w/v) under the sunlight and 59.8% without sunlight. The intra-particle kinetic model described the diffusion mechanism of the photocatalytic decolourisation, and the process was well fitted into the pseudo-first kinetic order model with a rate constant of 0.0229 min^{-1} while the Langmuir isotherm shows adsorption constant of 0.0329 L/mg. Meanwhile, the Langmuir-Hinshelwood (LH) model gave a better description of the process giving the kinetic and adsorption rate constants as 0.1260 mg/L.min and 0.0788 L/mg respectively. These results indicate that TiO_2, which is a basic material in our daily life, has emerged as an excellent UV-aided catalyst for the purification of our environment. However, research on molecular photobiology should be intensified to identify the active UV wavelength appropriate for solar photocatalytic processes.
Keywords: Heterogeneous, photocatalysis, red oxide, titanium oxide, Langmuir-Hinshelwood model, and ultra-violet rays

EVALUATION OF THE DYEING PARAMETERS OF NOVEL HETEROCYCLIC AZO DISPERSE DYES ON POLY (LACTIC ACID) FIBERS AND COMPARISON WITH OTHER HYDROPHOBIC FIBERS

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Abstract
Some novel heterocyclic azo disperse dyes were synthesized and applied to various hydrophobic fibers such as polylactic, polyester and nylon. The dyes gave results comparable to those of conventional disperse dyes. The exhaustion and light fastness and other relevant data were particularly good on the polylactic acid fiber in contrast to some widely reported data. From the results obtained, it was observed that the exhaustion of the dyes was slightly higher on PLA than on polyester. This of course was to be expected in view of the high crystallinity of the polyester compared with PLA and Nylon 6,6. However the wash fastness of the dyes on PLA gave results which are

comparable with that of polyester and in some cases even better. This is encouraging in view of the fact of the limited availability of suitable dye range for PLA. The dyes are therefore well recommended especially for application on PLA and polyester, where it's cost of production from simple and available starting materials are an obvious and attractive advantage.

IMPACT OF LEAD-ZINC MINING ON THE QUALITY OF FOUR DOMINANT STAPLE FOOD MATERIALS IN THE ABAKALIKI LEAD-ZINC MINING AREA, EBONYI STATE, SOUTH EASTERN NIGERIA.

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Abstract
The impacts of Abakaliki lead-zinc mining activities on the food quality were studied following laboratory analysis of four dominant staple food materials (*Talfairia occidentalis, Manihot esculenta, Ipomea sp, Discorea sp*) collected from the mining area for proximate composition (Moisture, Ash, Protein, Carbohydrate, Crude Fiber and Crude Fat), using standard methods. The same food samples were collected from non-mining site within the same geographical location as control. Result showed the moisture range of 8.10% in *T. occidentalis* to 56.15% in *M. esculenta* for test samples, and 7.98% in *T.occidentalis* to 64.98% in *M.esculenta* for control samples. Ash content ranged between 1.80% in *M.esculenta* to 11.65% in *T.occidentalis* for test samples, and 0.42% in *M.esculenta* to 11.15% in *Ipomea* tuber for control. Protein ranged between 0.07% in *Discorea sp* to 19.99% in *T.occidentalis* for test, and between 0.97% in *M.esculenta* to 25.10% in *T.occidentalis* for control. Crude fiber ranged between 0.46% in *M.esculenta* to 3.65% in *Ipomea sp* for test samples and from 0.51% in *M.esculenta* to 3.90% in *Ipomea sp* for control. Crude fat ranged between 0.09% in *M.esculenta* to 7.85% in *T.occidentalis* for test samples, and between 0.31% in *M.esculenta* to 9.10% in *T.occidentalis* for control samples. Available carbohydrate ranged between 20.85% in *Ipomea sp* to 51.36% in *T.occidentalis* for test samples, and between 18.60% in *Ipomea* to 44.46% in *T.occidentalis* to control samples. The changes in proximate values between the control and test samples were indications of negative impacts resulting from mining activities. We advise that inhabitants of the mining communities avoid cultivation of staple food substances within the mining area as this may result to a loss in food quality and introduction of poisonous metals into the user system through food chain.

VEHICULAR ACTIVITIES AND TAILPIPE CARBON (II) OXIDE EMISSION AT OSISIOMA, ABA, ABIA STATE, NIGERIA: A POTENTIAL PUBLIC HEALTH HAZARD TO ROADSIDE TRADERS AND ARTISANS

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Abstract
Vehicular activities have been associated with Carbon (II) Oxide (CO) emission, which inhalation is implicated in the ethiology of a cocktail of debilitating diseases. This study evaluated vehicular activities and the volume of CO emission at Osisioma, Aba,Abia State, Nigeria, to point out the potential public health challenges facing roadside traders and artisans. Vehicular activities and tailpipe CO emission were determined at designated locations (1, 2, 3, 4, 5) along the Osisioma-Port Harcourt Express road following numerical counting of total number of vehicles per hour for eight hours (8am - 4pm) per day for five days, using hand-held digital tally counter and direct reading engineering method (DREM) using Gasman gas monitors respectively. The control location was at Umuelendu in Owerre-Aba about three kilometres away from Osisioma. Each location was clearly marked with Geographical Positioning System (GPS MAP$^{(R)}$ 78). The vehicular activities, evaluated by the average number of vehicles for 8 hours on each day was taken as the vehicular activity for that day, from day 1 to day 5. The gas monitor was continuously exposed all through the day and readings were taken intermittently at 5 minutes interval for 12 readings in an hour. The average of the readings for one hour was taken as the cumulative CO gas emission in an hour and the average of the hourly readings for 8 hours was taken as the cumulative gas emission for the day at each location, from day 1 to day 5. One way Analysis of Variance (ANOVA) was used to compare gaseous emission and vehicular activities among the locations, while correlation analysis was used to determine the relationship between gaseous emission and vehicular activities at each location. The least number of vehicles (246) was recorded at location 3 between 8-9 am, while the highest number of vehicles (2540) was recorded at location 1 between 15:00-16:00 hours, at the study site and between 89 and 244 at the control site. At all times, the total number of vehicles ranged from 1,109 vehicles between 8-9 am, to 9,417 vehicles between 15:00-16:00 hours at the study site**.** The percentage differences between the vehicular load at the study site and that of the control site ranged between 91.98 during the period 8-9am to 97.41 during the period between 15-16pm. The vehicular load showed periodic and location variation with significant difference at $p < 0.0001$. At the control location, the CO volume ranged from 94.30 ppm at location 1 (8-9 am) to 282.30 ppm at location 1 (15-16pm). The highest volume of CO at the control site was recorded during the period between 9-10am (8.56ppm), followed by the periods between 14-15pm, 15-16pm, 13-14pm, 8-9am, 12-13pm, 11am-12pm, and , 10-11am. There were both location and periodic variations of CO volume at the study and control sites with significant difference at p=0.000s1. There were significant correlations between vehicular load and CO emission in day 1 (Pearson r=0.9136 at 95% confidence interval, p=0.0015), in day 2 (Pearson r=0.8413, p=0.0088), in day 3 (Pearson r=0.8505, p=0.0074), and in day 4 (Pearson r=0.9645, p=0.0001). At the control site, there was no significant correlation between the vehicular load and CO emission (Pearson r=0.2166, p=0.6064).The values of tailpipe CO emissions at various points in the study site were above safety level as recommended by National and International regulatory bodies. This observation poses public health challenges to artisans and others who are continuously exposed to tailpipe CO emission at Osisoma.

EVALUATION OF MAJOR AND TRACE ELEMENT PRESENT IN DIFFERENT PART OF A PLANT [Corchorous Olitorous) FAMILY AND ITS USE IN SOAP PRODUCTION: A COMPARATIVE STUDY.

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Abstract
Cochorou olitorous Is widely grow for its vegetable source, its antioxidant properties and it food value. The plant Jute Cochorous Olitorous specie as vegetable plant was processed for evaluation and determination of Mg, Ca, Mn,

Fe and alkali content present in the stem, leaves and stalk. The plant analysis results indicated a high concentration of iron:13.3±0.02mg/kg on the leave, than the stalk 7.40±0.01mg/kg and stem :5.00±0.01mg/kg, The Magnesium and calcium has a value range between 352.36±0.02mg/kg -- 956.06±0.04mg/kg for leave,200.00±0.04mg/kg - 400.08±0.02mg/kg for stalk and 300.06±0.05mg/kg – 526.04±0.02mg/kg for the stem respectively. The manganese varies in all the parts., while the sodium and potassium indicated value :1046.00±0.02mg/kg and 3.20±0.02mg/kg for leave, 2216.00±0.05mg/kg,m 3.70±0.02mg/kg for stalk and 1526.00±0.02mg/kg , 0.50±0.02mg/kg for the stem. respectively, some of the heavy metals present are copper, zinc, chromium while nickel and lead were completely absent, The soap produce from the hydroxide present were also analyzed and not rached to skin when used. The moisture content, chloride, total fatty acid, pH, and insoluble impurity of the produced soap with value: 13.20±0.01%, 0.40±0.02%, 40.20±0.02%, 10.75, and 3.10±0.03% respectively. The hydroxide present was also tested with various indicators. In conclusion the plant olitorous is invaluable not only as food but , for soap and hydroxide production. And that the present of alkali is immense at the stem and talk than the leaves and that trace elements was low in concentration in all the parts.

Key words: Vegetable, Mineral, soap making and hydroxide production.

COMPARATIVE PHYTOCHEMICAL AND ANTIOXIDANT SCREENING OF CRUDE SEED POWDER, AQUEOUS AND METHANOLIC SEED EXTRACTS OF *BUCHHOLZIA CORIACEA*

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Abstract
The increasing discovery of more medicinal plants have trigered increased scientific screening of their bioactivity in order to provide data that will help physicians and patients make wise decision before using them. This study was designed to elucidate comparative phytochemical and antioxidant screening of crude seed powder, aqueous and methanolic seed extracts of *Buchholzia coriacea.* The results showed that crude seed powder has the highest alkaloid and phenol content of 3.98±0.00 % and 0.92±0.00 % while aqueous had the least of 1.00±0.00 % and 0.12±0.00 % respectively. Methanolic extracts showed highest phytochemical components among the three extracts with flavonoids, saponins, terpenoids, tannin and phytate constituents of 12.03±0.0, 1.99±0.01, 2.00±0.00, 0.10±0.00 and 2.02±0.01 respectively while aqueous extracts has the highest hyrogen cyanide (0.30±0.00) and glycoside (0.35±0.00). Antioxidant (DPPH) activities of *B. coriacea* showed that aqueous exctracts and crude seed powder have inhibition concentration (IC_{50}) of 4.65 mg/ml while methanolic extract has 5.85 mg/ml. The result of the LD50 of the extracts showed the each exracts is well tolerated at a dose of 5000 mg/kg, an indication of high safety profile. The study has therefore clearly demonstrated that the presence of some important phytochemicals especially the flavonoid in all the extract showed that the *B. coriacea* have antioxidant properties which could enhance the body's defense systems against pathologically induced free-radical generation as well as modify the body's reactions to allergens and viruses.

Keywords: phytochemical, crude seed powder, aqueous extracts, methanolic extracts, Buccholzia coriacea.

PHYSIOCHEMICAL AND MYCOLOGICAL EVALUATION OF AUTOMECHANIC WORKSHOP

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Abstract
The auto-mechanic workshops are the largest small quantity generator of hazardous waste. The physiochemical and microbial state of auto-mechanic workshop was investigated in the study using standard laboratory techniques. soil samples were collected by random stratified method. The parameters monitored were; pH, conductivity, soil particle size distribution, heavy metals, nitrate, phosphate, calcium, potassium, sodium and total heterotrophic fungi. The result shows that the pH is almost neutral ranges from 6.92 - 7.55 a range suitable for bioremediation. Conductivity ranged from 242 - 490 µs/cm. The soil particle size sieve number ranged from 0.065 - 2.00 mm. Heavy metals analyzed showed vary level in the order iron (Fe) > zinc (Zn) > lead (Pb) > nickel (Ni) > chromium (Cr) > cadmium (Cd) > vanadium (V). The isolated hydrocarbon utilizing fungi belong to the genera *Aspergillus*(15.62 %), *Fusarium* (21.87 %), *Rhizopus* (15.62%), *Saccharomyces* (12.5%), *Geotridium*(12.5 %), *Penicillium* (21.87%). It is imperative the automechanics be educated on solid waste management and the effect of heavy metals. The hydrocarbon degraders isolated can be exploit for their bioremedition potential.
Keywords: Heavy metals, soil particle distribution, Heterotrophic fungi, *Aspergillus*, hydrocarbon degraders, Automechanic

ASSESSMENT OF NITRATE LEVELS IN UNDERGROUND WATER SOURCES AND SELECTED FOODS IN GUSAU LOCAL GOVERNMENT AREA OF ZAMFARA STATE

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Abstract
A study of the concentration of nitrate in underground waters and foods was conducted in Gusau metropolis of Zamfara State between April and June 2016. A total of 10 underground water points (6 boreholes and 4 dug wells) and 3 types of food were sampled. The samples were collected and analyzed using Phenoldisulphonic acid method for water analysis and modified microkjedahl methods for foods. The depth of the boreholes and dug wells were obtained from the locations and they varied in depth from 15.35 to 58.40 metres. The distance from pollution sources of nitrates varied between 8.00 to 15.40 metres. The results showed that the average nitrate values of dug wells ranged from 21.9mg/I to 36.5mg/I while the boreholes ranged from 14.0mg/I to 21.3mg/I. However, these values did not exceed the World Health Organisation (WHO) normal value of 45mg/I for nitrate (NO_3) or 10mg/I for Nitrate-Nitrogen. There are statistically significant correlations between nitrate values and (a) depth of dug wells and boreholes and (b) distance of dug wells and boreholes from the septic tank. Of the three types of food (Green beans, Garbage, and Carrot) studied, green beans had the highest nitrate value of 0.98/100g and carrot has the least value of 0.1/100g. The public health implications of nitrates in waters and foods are discussed.

SYNERGISTIC EFFECTS OF ESSENTIAL OIL AND CRUDE EXTRACT BLEND EXTRACTED FROM *Ocimum gratissimum L.* And *Lantana camara L.* LEAVES IN FORMULATED MOSQUITO REPELLENT CREAM A PANACEA FOR DIVERSIFICATION.

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Environmental issues as a result of viruses, bacteria, protozoans, and nematodes transmitted by different species of mosquitoes leads to high mortality rate in the world. Therefore to remediate this problem through revitalization in a sustainable way is the way forward. In this present study, locally harnessed plants; *Ocimium gratissimum L.* and *Lantana camara L.* leaves essential oils and crude extracts obtained through steam distillation method using

Clevenger and cold extraction method using 80 percent methanol were used as bioactive agent in the formulation of environmentally friendly mosquito repellent product. The extract blends (crude and essential oils) in different ratios (2:8, 4:6, 6:4, 8:2. 0:5, 5:0 and 5:5) were used. The products were evaluated in the laboratory bioassay for repellent activity against host seeking female *Aedes Aegypt*i mosquito using liquid paraffin negative control and 13% DEET standard formulation (N, N-diethyl 3 –methyl benzamide). Human volunteers and animal (rat) with test samples (cream) was rubbed at the exposed area of the hand starting from wrist to finger. The result of the combined (ratios 8:2 and 5:5) dose bioassay gave highest repellence protection of 100% at landing time of 165 minutes which conformed to the standard whereas the negative control response tests with female *Aedes agypti* mosquito showed no activity in repellency and product analysis results were: pH 6.1±0.01, Specific gravity 0.9545 ± 0.02; and shelf life 3.5 years. Therefore, through revitalization of science laboratories for diversification locally affordable low cost plants *Ocimititum gratissimum L.* and *Lantana camara L.* biodegradable and cheap mosquito repellent products were explored. It was observed that increase in percentage repellence of the product was high in combined (blended) ones than in single dose which brought about decrease in the number of bites and delay of landing of female *Aedes agypti* mosquito aon tested animals and human volunteers.

Keywords: Diversification; Revitalization; Synergistic effects; Bio active agent; Female *Aedes agypti* mosquito and Doses.

DETERMINATION OF CALORIFIC VALUE OF BRIQUETTES MADE FROM BAGASSE AND CORN COB

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Abstract
Corn cob and bagasse are waste biomasses that are relatively abundant in the environment contributing to environmental pollution. In this study an effort was made to convert this waste to wealth processing these waste materials into briquettes using different binding agents (Gum Arabic, Top Bond and Cassava Starch) as well as to determine the heat or calorific value in (Kj/g) of the briquettes produced. The study also attempts to assess the effect of the binder type on the calorific value and the effect of mixing the two biomasses in different proportions on the calorific value. The results obtained showed that the binders could be arranged in increasing order in terms of potential for giving better calorific value thus: Gum Arabic<Cassava Starch<Top Bond. Corn cob bonded with Top Bond as a biomass produced the highest calorific values (23.4560 Kj/g) while sugarcane bagasse bonded with corn cob having the lowest (17.1595 Kj/g) and the mixture of biomass with the higher proportion of corn cob produced the highest calorific values.

Keywords: corn cob, bagasse, calorific value

MICRONUTRIENT AND HEAVY METAL ANALYSIS OF INFANT FORMULAE SOLD IN MAKURDI METROPOLIS, NIGERIA

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Abstract
The concentrations of five essential metals (Zn, Fe, Co, Mn, Cu) and five toxic metals (Pb, Cd, Hg, As, Cr), in six selected (Nan, Cowbell, My boy, Cerelac, Friso gold and Nutrend) infant formulae sold in Makurdi metropolis, were determined using Atomic Absorption Spectrophotometer. From the results of the essential metals, Fe has the highest concentration of 74.775 ±0.001 mg/kg (Cerelac) when compared to other nutritional metals analysed, which varies in concentration in all the infant formulae. The results of the toxic trace metals shows that Cr has the highest concentration of 6.175 ±0.001 mg/kg (Cowbell), when compared to other toxic trace metals analysed. Mercury (Hg)

was not detected in any of the infant formulae analysed while some of the toxic metals were not detected in some of the sample. However the result of the proximate analysis reveals that Cowbell and My boy infant formulae have the highest concentration of Crude protein (15.48±0.01%), while friso gold has the lowest (11.91±0.03%). Whereas, Friso gold (70.34%) has the highest concentration of carbohydrate and cowbell (47.12%) with the lowest concentration. These results validate and in some cases counter earlier reports on the composition of infant formula found in our local markets but most significantly educate and equip the regulatory bodies on possible channels of some observed infant health issues as it concerns absence or presence of causative agents.

Keywords: AAS, Cowbell, Cerelac, Nan, My Boy, Friso gold and Nutrend.

WATER QUALITY AND HEAVY METAL SEDIMENTATION IN OKUMESHI RIVER, EBEDEI-UNO, DELTA STATE, NIGERIA

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Abstract
This research was carried out at Okumeshi River to assess the heavy metal concentration in sediment in relation to water quality between the months of February - June, 2017. Three sampling stations were selected and the mean and standard error values of the parameters determine were as followed: Air temperature (30.38±0.25; 30.06 ±0.570 and 27.86±0.45^{0}C), water temperature (29.78±0.42, 25±0.63, 26.32±0.39^{0}C), Dissolved Oxygen (7.34±0.85, 3.92±0.90 and 8.78±0.57 mg/l), BOD (2.60±0.37, 7.41±2.19 and 1.69±0.54 mg/l), pH (6.46±0.06, 4.45±0.42 and 5.77±0.40), conductivity (17.43±2.26, 16.91±0.74 and 11.22±1.20 µs/cm), phosphate (0.03 ± 0.00, 0.29±0.22 and 0.58±0.32), nitrate (0.23±0.03, 1.95±0.58 and 0.94±0.47), alkalinity (5.64±0.30, 13.76±4.22 and 10.59±3.98), TDS (6.61±0.45, 25.31±9.12 and 22.25±7.91). Among the physiochemical parameters in the stations, only temperature, DO, BOD, pH and TSS were significantly different ($P<0.05$). The mean values obtained for station 1, 2 and 3 for the respective heavy metals measured in mg/kg were: Zn (25.68, 21.78 and 24.59), Pb (6.20, 5.79 and 5.63), Cu (21.86, 17.04 and 23.38), Ni (10.74, 10.69 and 9.27), and Fe (38.80, 43.20 and 50.11). The concentration of Fe and Zn were significantly different in the station but not the monthly variations. t-test analysis showed no significant difference (P<0.05) between the stations station 1 versus 2, 2 versus 3 and 1 versus 3. Pearson (r) and Spearman (r^2) correlation were significant and positively correlated between the stations. However, all heavy metal analyzed were within the WHO recommended standard for the sediment criteria except for Nickel which was above the WHO sediment quality criteria. Intensive research should be carried out to ascertain the level of these metals in the aquatic organisms and to monitor the level of these heavy metals in water and sediment at regular interval.

Keywords: Heavy metal, sediment, water quality, Okumeshi, Delta State

TERMITICIDAL EFFICACY OF CITRUS PEEL EXTRACTS AGAINST TERMITES (*Macrotermes Bellicosus*)

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Abstract
Termiticidal efficacy of *Citrus sinensis*, *Citrus limon* and *Citrus aurantifolia* peels extracts against termites (*Macrotermes bellicocus*) was carried out in an attempt to ascertain the mortality and LC_{50}, of the termites using 0.21% of distilled water as a negative control. The experiment was replicated trice with distilled water as an untreated control respectively. The termiticidal effects (mortality) of the *Citrus* plant extracts on the termites showed no significant difference ($p>0.05$; F = 1.57) as the concentration increased from 10 - 30%. Also there was significant difference ($p<0.05$; F = 29.39) in the mortality of the termites as the time of exposure increased from 24 - 72 hrs. Extract of *C. aurantifolia* caused more mortality that *C. sinensis* and *C. limon*. *C. aurantifolia*, *C. sinensis* and *C. limon* exhibited an LC_{50} of 17.50, 17.50 and 12.90 mgL^{-1}. These plant extracts could serve as alternatives to synthetic insecticides in termite management practices because they are biodegradable, cost effective and non-toxic to environment and human health, easy to prepare and readily available in local markets in Delta State, Nigeria.
Key words: Termiticide, Citrus, Termites, *Macrotermes bellicocus,* Mortality and LC_{50}

INSECTICIDAL ACTIVITY OF *XYLOPIA AETHIOPICA* (FAMILY; ANNONACEAE) ON *CALLOSOBRUCHUS MACULATUS* (F) AND *SITOPHILUS ORYZAE*

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Abstract
This study seeks to evaluate the insecticidal efficacy of Negropepper (*X. aethiopica*) as grain protectant of stored cowpea (*Vigna unguiculata*) and rice (*Oryza sativa*) in the laboratory.
The efficacy of *X. aethiopica* leaf dust and extract on *C. maculatus* and *S. oryzae* was evaluated at different doses (1.0 – 3.0 g and 50.0-100 mg^{-ml}) with 10 unsexed adults' weevils per 10 g of substrate per replicate. All treatments were triplicated and mortality of the insects was recorded after every 24 hours (h) for 96 h exposure to powder and extract respectively. The parameter compared was the mortality rate of the adult pests.
The negropepper was an active biopesticide against *C. maculatus* and *S. oryzae*. However, the plant products gave higher mortality on *S. oryzae* with mean of mean mortality and LD_{50} of 82.2% and 1.06g respectively than on *C. maculatus* whose mean mortality and LD_{50} was 79.9% and 1.12g respectively over 96 hours exposure. Statistical analysis showed significant difference (*P<0.05*) in pest mortality between treated and control samples.
The results suggested that *X. aethiopica* is more promising botanical insecticides on *S. oryzae* than *C. maculatus*.
Keywords: Pest Management, Insecticidal, toxicity, *Callosobruchus maculatus, Sitophilus oryzae, Xylopia aethiopica.*

SENSORY EVALUATION OF FERMENTED AND NON-FERMENTEDBEETROOT-GINGER AND GARLIC DRINK

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Abstract
The study was carried out to produce beetroot-ginger and garlic drink. The production of the drinks was carried out in the Nutrition and Dietetics Laboratory of Anambra State Polytechnic, Mgbakwu. The drink was produced with the mixture of beetroot, ginger and garlic at the ratio of 4:2:1 respectively. Two different drinks were produced, one was fermented for 24hrs while the other was not fermented, it was soaked in water for 2hrs. the fermented and non-fermented drinks were divided into two in which they were separately poured into four different 75cl container . 4g of sugar was added in 75cl one fermented and one of non-fermented while no sugar was added in the others. Sensory evaluations of the four samples were determined. Proximate analysis and Micro-nutrient of the two different

samples were determined. The results obtained were analyzed statistically using degree of freedom. The result of proximate analysis showed that there is a significance difference between fermented and non-fermented beetroot-ginger and garlic drink and the statistical analysis of the anti-nutrient indicated that there is a significance difference between fermented and non-fermented beetroot-ginger and garlic drink. The sensory showed that fermented beetroot-ginger and garlic drink with sweetener have highest overall acceptability followed by fermented beetroot-ginger and garlic drink without sweetener and non-fermented beetroot-ginger and garlic drink without sweetener have the list overall acceptability. Beetroot-ginger and garlic drink contain high nutrition and micronutrient, and the drink is better fermented before drinking.
Key words: Fermented and Non-fermented, Mirco-nutrient, Beetroot-ginger, anti-nutrient.

ASSESSMENT OF EFFECTS OF DISULFIRAM AND COPPER SULPHATE COMBINATION ON FEMALE REPRODUCTIVE FUNCTIONS ON WISTAR RATS

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Abstract

Many drugs are repurposed for cancer treatment. Recently, disulfiram an anti-alcohol drug has been repurposed for cancer treatment. This work was centered on assessment of effects of disulfiram and copper sulphate combination on the female reproductive function of Wistar rats. A total of forty-eight adult rats were used in two studies, 1 and 2 respectively. Study 1: comprises of 24 female rats divided into 4 groups of 6 rats per group. The animals received the following: group 1 (0.2ml distilled water), group 2 (0.02ml DMSO), group 3 (DSF=18.65mg/kg, $CuS0_4$=3.75mg/kg), and group 4 (DSF=74.6mg/kg, $CuS0_4$=15mg/kg), orally once daily. Blood samples were collected on days 14, 21, and 28 for assay of luteinizing hormone, prolactin, follicle stimulating hormone, and progesterone hormones. The uterus was excised for histopathological studies. Study 2: comprises of 12 males and 12female rats divided into 4 groups of 3male, 3female per-group. Thereafter, group A received (0.2ml distilled water), group B received (0.02ml DMSO), group C received (DSF=18.65mg/kg, CuS04=3.75mg/kg), and group D received (DSF=74.6mg/kg, $CuS0_4$=15mg/kg), orally once daily. Pregnancy rate and number of pups were assessed in this study. Results of study 1: revealed the following: on day 28 for LH group 1: 1.08±0.03, group 2: 0.88±0.03, group 3: 0.96±0.06, and group 4: 1.47±0.65. However, these results were found not to be statistically significant ($P< 0.05$). For FSH group1: 0.42±0.03, group 2: 0.35±0.05, group 3: 0.38±0.02, and group 4: 0.70±0.33. this results were not statistically significant. For Prolactin group 1: 1.20±0.00, group 2: 1.25±0.05, group 3: 1.25±0.05, and group 4: 1.25±0.05. However, these results were found not to be statistically significant ($P< 0.05$). For Progesterone group 1: 33.55±0.55, group 2: 26.40±21.50, group 3: 24.25±3.45 and group 4: 34.20±13.70. However, these results were found not to be statistically significant ($P< 0.05$). Histopathology of the uterus of all the groups revealed normal uterine architecture. The results of the study on pregnancy rates and average number of pups littered revealed the following: group A: 33% and 3 pups, group B: 66% and 4 pups, group C: 100% and 11 pups, and group D: 100% and 16 pups. These results showed a significant ($P< 0.05$) increase in the rate of pregnancy and number of pup littered by the test groups when compared to the control. The results of the two studies suggests that DSF and $CuSO_4$ combination may have a good reproductive safety profile as they do not produce significant deleterious effects on the reproductive hormones studied. The normal uterine architecture and the observed significant increase in pregnancy rate, and number of pup littered would in fact point to possible pro-fertility or fertility enhancing effect of this combination. However, recommendation of its possible usage as fertility enhancing combination would require further studies.

DESIGN AND CONSTRUCTION OF A MICROCONTROLLER BASED LUX-METER WITH A LIGHT DEPENDENT RESISTOR

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Abstract
A digital Photometer / Lux meter was designed and constructed using Arduino Uno micro-controller and the code of design used for the construction of the Equipment is also stated in the body of this paper. The Light Dependent Resistor (LDR) used for the work is LDR OR12. This resistor was used as the transducer or sensor and its resistance changes with either increase or decrease in light intensity within the limit of 80Ω to 1M Ω in the dark room and high intensity environments. The Equipment's measuring capacity covers the electromagnetic spectrum from Ultraviolet region to the visible region, the degree of accuracy of the equipment after calibration is ± 2 % at high intensity. The Equipment can be used in the Laboratory for demonstration and research purposes. It can also be used in the Photographic and allied Industries.
Keywords: Lux-meter, light illuminance, microcontroller and sensor.

TEMPERATURE MONITORING SENSOR DEVICE IN ENHANCEMENT OF NATIONAL ECONOMY

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Abstract
The temperature monitoring sensor device is a microcontroller designed electronic circuit system capable of monitoring and controlling the temperature of thermal enclosure to avoid other environmental effects. This is achieved with the aid of temperature sensor LM35, Microcontroller programmable interface controllers PIC16F877A, Analogue-to-Digital-Converter (ADC), Liquid Crystal Display (LCD) units and some other essential components. The device is used to track the temperature of soil, water and plants to maximize output of the agricultural produce to avoid unproductively and increase the national economy.

APPLICATION OF ELECTRICAL RESISTIVITY METHOD FOR MAPPING OF GROUNDWATER POTENTIAL OF JOSEPH AYO BABALOLA UNIVERSITY CAMPUS ENVIRONMENT, IKEJI ARAKEJI, OSUN STATE, SOUTHWESTERN NIGERIA

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Abstract
Owing to fast increase in number of staff and students of Joseph Ayo Babalola University, Ikeji Arakeji, Southwestern Nigeria, it is therefore imperative to carry out this research in order to recommend the actual locations where boreholes can be sunk for good potential yields of groundwater when the time comes. The aim of this research is to carry out vertical electrical sounding geophysical survey at study area with a view to determining good aquifers that are good for the accumulation of groundwater. The study area is located between latitude 0820225 to 0820345 (UTM) Northings and longitude 717320 to 717450 (UTM) Eastings. Schlumberger electrode array was employed for the study using R 50 Resistivity meter for the data acquisition. The geoelectric survey comprised of twelve vertical electrical soundings, with maximum current electrode spacing (AB) of 100m. The modeled curves are mainly KH, KA and HA-type. The geoelectric sections obtained from the sounding curves revealed 4 major layers earth models. The topsoil is made up of clay, clayey sand/lateritic sand with resistivity and thicknesses varying from 54.7 – 210.1 ohm-m and 0.2 –0.8m respectively. The second layer is the lateritic clay with resistivities and thicknesses varying from 334 – 963 ohm-m and 1.5 – 10.8m respectively. The third layer constitutes the clay / sandy fractured quartzite and it serves as the aquifer unit. The resistivity values lie between 71.7 and 498 ohm-m while the thicknesses vary from 2.1 – 76.3 meters. The fourth layer is the fractured/presumably fresh basement bedrock with the resistivity varying from 1879 – 13991.8 ohm-m. Areas characterized with fractured basement of low resistivity with appreciable thickness are therefore recommended for the siting of boreholes while areas with fractured basement. It is concluded that the vertical electrical sounding points of the study area are good aquifer for groundwater accumulation.
Keywords*:* Groundwater potential, Resistivity, Aquifer, Vertical Electrical Sounding (VES), Geoelectric section

ASSESSMENT OF EQUIVALENT DOSES DUE TO RADIATION EXPOSURE IN X-RAY WAITING ROOMS IN SOME RADIOLOGICAL CENTRES IN LAGOS STATE SOUTH-WESTERN NIGERIA

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Abstract
Human exposure to artificial and/or natural ionizing radiation is hazardous to human health. Its effect could be deleterious if the radiation received is beyond recommended values. This study is to assess the partial distribution of the equivalent dose in x-ray waiting rooms in some radiological Centres in Lagos state, Nigeria. Descriptive analytical study was carried out in the waiting rooms of four (4) public and six (6) private radiological centers in Lagos state Nigeria using Radiation Survey Meter RDS-30. The lowest radiation dose was measured in a public centre with 0.2±0.01 μSv/hr which is below the permissible limit. The highest scattered radiation was measured in a privately owned radiological centre with 7.6±0.03 μSv/hr which is above the ICRP maximum permissible limit of 0.57 μSv/hr and may pose danger to patient and visitor in the waiting room. This study showed that the high dose measured (higher that 2.5 μSv/hr) in some of the centres can be related to inadequate facility shielding and non-compliancy with international standards. It is therefore recommended that adequate protective shielding mechanism be provided to prevent workers, patients and visitors from receiving unwarranted radiation doses.
Keywords: Equivalent dose, radiation exposure, radiological centres, waiting room, Lagos

INVESTIGATING THE PERFORMANCE OF A CONSTANT VOLTAGE REGULATOR

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Abstract
Voltage regulator is an electromechanical component used to maintain a steady output of volts in a circuit. It does this by generating a precise output voltage of a present magnitude that stays constant despite changes to its load condition or input voltage. In the first place voltage regulator monitors the output voltage and controls the input voltage for the exciter of the generator. By increasing or decreasing the generator control voltage, the output voltage of the generator increases or decreases accordingly. Voltage regulator calculates how much voltage has to be sent to the exciter numerous times a second, therefore stabilizing the output voltage to a predetermined set point. When two or more generators are powering the same system (parallel operation) the voltage regulator receives information from more generators to match all output. From the result obtained as presented in the tables indicated that the circuit constructed is a steady state constant voltage regulator, and there was no significant difference of the result from the datasheet also the result were not high.
Keywords: voltage regulator, electrochemical component.

GROUP 4: GENERAL PAPERS (Entrepreneurship).

NECESSITY OF SCIENCE LABORATORY TECHNOLOGISTS IN SENIOR SECONDARY SCHOOL FOR EFFECTIVE SCIENCE PRACTICAL IN SELECTED SECONDARY SCHOOLS IN ILORIN-SOUTH LOCAL GOVERNMENT AREA OF KWARA STATE

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Abstract
This study focused on necessity of science laboratory technologists in senior secondary school for effective science practicals in Ilorin south local government area in kwara state. The sample for the study consists of 100 science teachers randomly selected from fifteen (15) secondary schools at the rural area and 15 from urban area making a total of 30 schools. Questionnaire on necessity of science laboratory technologists in senior secondary school for effective science practical was designed and validated by the researcher. Its reliability co-efficient, determined through a Pearson product movement correlation coefficient method was 86%. One hundred and twenty copies of the instrument were distributed and only one hundred was completed and returned. The data was analyzed using both the descriptive and inferential statistic; while the hypotheses were tested using the chi-square statistic at 5% level of significance were employed. Findings from the study revealed that most schools across the area have laboratories that are not adequately and partially equipped. The rural area was not adequately staffed with laboratory technologist as the urban area. In the rural schools, there was a fewer personnel in the laboratories who were just technicians (not technologist) and the **credentials of these technicians were not known**. Meanwhile, across the local government, there were only two (2) professional's science laboratory personnel certified by Nigeria Institutes of Science Laboratory Technology (NISLT) in the urban area. Science teacher's perception on the duty of this professional technologist was fair in the rural and very good in the urban area. In view of this finding, the null hypotheses were all rejected which revealed that there was significance different in necessity of science laboratory technologists in old and young schools across the two areas in Ilorin south local government area.
Keywords: Necessity, science laboratory technologists and practical class

ROLE OF EFFECTIVE REGULATION OF SCIENCE LABORATORY TO ENHANCE STUDENTS' CAPACITY IN LEARNING SCIENCE IN NIGERIA SECONDARY SCHOOLS

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Abstract
The paper centered on the important role regulation of Laboratories at Secondary Schools can play in the learning of science beyond only classroom activities where students are exposed to theories only. It is pertinent to note that good laboratory practices involving appropriate equipment, materials and qualified professionals at Secondary level of our Nation's Educational sector will enhance student interest in learning Science and boost their capacity too. It was observed in the course of this research that there are no professional Laboratory Technologist/Scientist to man Secondary Laboratories. The Science Teachers alone cannot do the job of exposing Students to Science Practical. There are Secondary Schools most especially privately owned ones without functional Laboratory. The Institute should play its roles in collaboration with Examination Councils like WAEC and NECO and Ministry of Education so as to ensure that Secondary Schools meet the minimum bench mark for Laboratories work before candidates are presented for public examinations.

ROLE OF SCIENCE LABORATORIES IN PROVIDING EXPORT DRIVE OF KAOLIN IN KATSINA STATE FROM NIGERIA ECONOMIC RECOVERY AND SUSTAINABLE DEVELOPMENT.

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Abstract
This paper examines the mineral resources in Nigeria and Katsina State and the role of science laboratories in providing export drive of Kaolin in Katsina State from Nigeria for economic recovery and sustainable development. The development of these solid mineral resources if properly exploited, evaluated and harnessed would definitely promote industrial development, general wealth, create employments, skill acquisition as well as provide additional revenue base to the local government. Indeed, the exploitation of industrial mineral would encourage the establishment of primary industries by private sector through many ways like in manufacturing of paints, detergents, chalk, pharmaceutical, rubber, plastics, paper, textile, cosmetics, soaps, plastics, fabricating oils, fertilizers and talc using Kaolin which are available abundant in Kankara, Batsari, Dutsinma, Charanchi, Safana Local Government in Katsina State, only in Kankara local government there is an estimated 3.4 metric tons Kaolin deposit which was identified by Techno economics survey of resources conducted in the country by the Raw Material Research and Development Council (RMRDC) in 1987 which reviewed a good quality of kaolin existed in Katsina State. The laboratory is the key to proper exploitation of solid mineral resources and need for researches on the availability and quality of specification, as of great importance to kaolin for pharmaceutical and industrial grade production and application processes as well as comprehensive analytical capabilities that will help to understand the links of its uniqueness between physical, physiochemical and chemical properties of kaolin, how they responds to processing and how they influence the performance in end use application.

THE ROLE OF SCIENCE LABORATORY TECHNOLOGY STUDENTS IN THE BREEDING OF LABORATORY EXPERIMENTAL ANIMALS FOR SUSTAINABLE ECONOMIC DEVELOPMENT

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Abstract
Animal experimentation refers to the scientific study carried out using laboratory animals, usually in the laboratory for the purpose of gaining new biological knowledge or insight into a specific medical, veterinary, dental, nutritional or general biological problem. Animals used for breeding for laboratory practical, experiments, research and museum studies include majorly the mouse, rat, guinea pig and rabbit. The procedure of laboratory experimental animal breeding is usually faced with both human and technical problems. This paper provides the basic information on laboratory experimental animal breeding and its prospects in Nigeria education system. The paper attempts to equip students of science laboratory technology with the simple methods of laboratory experimental animal breeding for sustainable economic development and the future prospects of this sector in research establishments in Nigeria.