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Effects of Low-Volume, High-Intensity Interval Exercise on BDNF isoforms levels in Sedentary Healthy Men

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Exercise and dietary modifications help improve energy balance and glucose control. High-intensity interval exercise (HIIE) induces an increase in serum brain-derived neurotrophic factor (BDNF) with a corresponding decrease in its precursor (proBDNF). ProBDNF possesses biological activities opposite those of BDNF. However, only a few reports on the effect of HIIE on proBDNF compared to extensive studies on the BDNF. Normal, healthy, male adults performed six sessions of HIIE in 2 weeks. Venous blood was collected, from which fasting blood sugar, glycated haemoglobin, serum insulin, BDNF and proBDNF were measured using ELISA. Marked decrease in markers of glycemic control was recorded following the intervention. A reduction in proBDNF and an increase in BDNF were also observed post-exercise. We found a strong negative relationship between BDNF and FBS post-exercise. HIIE causes an increase in serum BDNF and a reduction in serum proBDNF among sedentary male subjects.

Gastric Acid Secretion and Pump Activities in Healthy and Streptozotocin-induced Diabetic Rats Treated with Sodium Metavanadate

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Gastrointestinal tract (GIT) functions have been described as one of the mechanisms the body receives beneficiary or toxic agents. Exposure to vanadium, a heavy metal has been linked to modulate GIT functions in healthy and diabetic state. However, mechanisms underlying this modulatory role of vanadium, remain vague. This study investigates the effect of vanadium treatment on gastric acid secretion in healthy and diabetic conditions. Fifty male Wistar rats (100-130g) were randomized into 2 experimental conditions (healthy and diseased) with 5 major groups (n=5) each. Healthy condition composed of control and varying-doses of sodium-metavanadate (20mg/kg/p.o, 40mg/kg/p.o, 60mg/kg/p.o and 80mg/kg/p.o) and disease condition include diabetes(DM)-induced (65mg/kg/i.p Streptozotocin-STZ) and groups concomitantly treated with doses of sodium-metavanadate listed above. After 8weeks, Gastric acid secretion-GAS (continuous perfusion method), Gastric tissue H^+K^+ATPase and Na^+K^+ATPase pump activities were assessed spectrophotometrically. Body weight and blood glucose level were measured daily. Data were analyzed using descriptive statistics and ANOVA α 0.05. Body weight significantly increased in vanadium-treated diabetic groups. Blood glucose level was significantly reduced in 20 and 40mg/kg/p.o as well as in 20, 40, 60 and 80mg/kg/p.o vanadium-treated groups in healthy and DM-induced conditions respectively. Basal and stimulated GAS was significantly reduced in DM-induced condition but only in stimulated GAS in healthy condition vanadium-treated groups. Interestingly, Gastric H^+K^+ATPase and Na^+K^+ATPase activities were mitigated in 20, 40 and 60mg/kg/p.o vanadium-treated groups in DM-induced conditions. Vanadium treatment at 20, 40 and 60 mg/kg/p.o in healthy and Streptozotocin-induced diabetes caused a decreased gastric acid secretion due to inhibition of the H^+/K^+ATPase activities.

HbA1c Associated *G6PD* G202A Polymorphism in Type II Diabetes Mellitus Patients Attending Murtala Muhammad Specialist Hospital, Kano.

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Diabetes mellitus is a metabolic disorder characterized by chronic hyperglycemia. In hyperglycemic cases, haemoglobin binds irreversibly with glucose to form glycated haemoglobin (HbA1c), an accepted diagnostic test for type 2 diabetes mellitus (T2DM) used for monitoring glycaemic control in patients with diabetes. Some genetic variants influence HbA1c levels, by acting via the erythrocytic pathway (erythrocytic variants) or through the glycemic pathway (glycemic variants). Glycemic variants

increase the risk of developing diabetes, while erythrocytic variants have no association with the risk of diabetes. *G6PD* G202A is a single nucleotide polymorphism (SNP) associated with HbA1c, which lowers HbA1c levels irrespective of blood glucose levels. Alterations in HbA1c caused by this variant lead to massive under-diagnosis of T2DM. There is no study on the association between this SNP and HbA1c in diabetic Nigerians, hence the need for this study. Thirty-two non-diabetic and 54 diabetic male adult subjects were recruited after signing informed consent. Venous blood was collected from which fasting blood glucose and glycated haemoglobin were measured. DNA was extracted from whole blood, amplified and amplicons digested using the PCR-RFLP. These were visualised using a UV transilluminator. Data were analyzed using SPSS version 20 and SHEsis online software. The genotypes of *G6PD* G202A in diabetics were statistically significant (HWE $p<0.05$), with a minor allele frequency of 20%. *G6PD* G202A polymorphism showed association with HbA1c in diabetic subjects. *G6PD* G202A SNP is associated with HbA1c diabetic Nigerians.

Effect of Vanadium Treatment on Some Hematological and Serum Biochemical Variables in Normal and Diabetic Rats

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Vanadium, a trace element, has been known as a building material for bones and teeth. Its promising usefulness in the management of diabetes has also been reported. However, there are conflicting reports on the toxicity of Vanadium in its various forms. In this study, the effect of vanadium treatment on hematological parameters and serum biochemical variables were studied in normal and Streptozotocin-induced diabetic (STZ-DM) rats. FiftyMale Wistar rats (100-130g) were divided into 5 groups, (n=5): Control, 20mg/kg/p.o, 40mg/kg/p.o, 60mg/kg/p.o and 80mg/kg/p.o sodium metavanadate exposed for 2weeks. In another experiment, diabetes was induced with 65mg/kg Streptozotocini.p. and exposed to sodium metavanadate for 2week with groups as in the first experiment. Body weight gain and blood glucose levels were determined daily. Blood was obtained through retro-orbital puncture for hematological and serum biochemical assay and were assessed spectrophotometrically. Data were analyzed using descriptive statistics and ANOVA at α 0.005. Significant decrease in Body weight and Blood glucose level was observed in vanadium treated groups in both experiments. Packed Cell Volume, Hemoglobin and Red Blood Cell levels decreased significantly in the normal+vanadium 40-mg/kg/p.ogroupand diabetic+vanadium 80mg/kg/p.o treated groupscompared with control. Blood total protein values were significantly increased in the diabetic control and diabetic+vanadium treated groups compared with control. There was decrease in serum Alanine transferase, Alanine phosphatase and Aspartate aminotransferase of diabetic+vanadium treated groups compared with diabetic control. Orally administered Vanadium (at lower doses) proved useful in reduction of Blood glucose level in health/disease and improved serum biochemical variables of diabetic rats.

EFFECT OF *CURCUMA LONGA* SUPPLEMENTS ON COGNITIVE FUNCTION IN SWISS ALBINO MICE

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Dementia is an age-related mental disorder and a characteristic symptom of various neurodegenerative disorders. *Curcuma longa (C. longa)* contains many pharmacological and chemical important compounds which have shown many beneficial effects. This study aimed at evaluating the effect of *Curcuma longa* on cognitive function of Swiss albino mice. A total of sixteen (16) mice of both sexes weighing between 24 – 30 grams were used for the study. The mice were divided into four groups of four mice each (n=4). Groups I served as control and received 10 ml/kg distilled water; groups II, III and IV were given 5%, 10% and 20 % of *Curcuma longa* for 14 days respectively. Y maze and novel object recognition task were used to assess spatial working memory and social memory respectively. We observed that the 5% *C. longa* (77.60 ± 10.15) group showed significant ($p < 0.05$) improvement in percentage alternation compared to control group (64.40 ± 5.99). We also found out that the 5% *C. longa* supplemented group showed significant ($p < 0.05$) increase in both short term memory (-14.08 ± 3.26) and discriminative index (-0.26 ± 0.07) when compared to control group (-31.55 ± 2.65) and (-0.33 ± 0.07) respectively. Thus, *C. longa* supplement at 5% improves spatial working memory, short term memory and discriminative index of Swiss albino mice.

Showcasing Diversification of Physiology arouse Students Interest in the Field of Science

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“Scientific Literacy” defined as the ability of the society to understand science and its applications to their daily activities, can only be achieved through effective science communication. The present study is a science outreach focused on school children and first-year undergraduate physiology students, to imbibe in them the fundamentals of physiology as a course of study and clarifying its diversifications. Professors of different specializations in physiology were invited to share their experiences in the

field and expatiate on the various opportunities available for trained physiologists. Data were collected with the aid of questionnaires, which were designed so that we could evaluate the physiological knowledge of the participants before and after the orientation exercise by the professors. The results obtained from the analyzed data supported the aim of the research being fulfilled. Specifically, the interest of the school children was observed to be escalated after they had learned about the diversifications of physiology as a field of study. Moreover, the undergraduate students demonstrated an enhanced understanding of the basics of physiology. Conclusively, effective communication of science should be encouraged among prospective young scientists, to promote the awareness of scientific research in our society.

Antidepressant Activity of Methanol Leaf Extract of *Ziziphus Mauritiana* Lam: Involvement of Inflammatory Mechanism

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The leaves of *Ziziphus mauritiana* have been reported to be used in the management of depressive illnesses in traditional medicine in Northern Nigeria. However, due to little scientific proof the present study therefore attempts to establish the involvement of inflammatory system in the antidepressant activity of the extract using *Bacillus Calmette Guérin* (BCG) induced depressive like behaviour model. Mice were administered with BCG (0.2 mg/kg, i.p) followed by administration of the graded doses of the extract (25, 50, 100 and 200 mg/kg) for 21 days. Body weight and temperature were measured on daily basis. Exploration behaviour at 4th, 8th 24th and 48th hours, immobility time at 7th, 14th and 21st day, were all assessed using open field test, and tail suspension test, decrease in immobility time ($p<0.001$), increase in body weight ($p < 0.004$), decrease in body temperature ($p<0.001$), increase in number of line crossing ($p<0.001$) in the extract treated groups were observed in a dose non-dependent manner. It may be concluded therefore that the anti-depressant activity of methanol leaf extract of *Ziziphus mauritiana* may possibly involve an anti-inflammatory mechanism.

Effect of Acute Cocoa (*Theobroma Cacao*) Consumption on Blood Pressure and Pulse Rate During Cold Pressor Test

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Studies have shown that cocoa (*Theobroma cacao*) possesses the potential to lower blood pressure (BP) in man through a number of mechanisms. However, the role of autonomic mechanisms in the BP-lowering effect of cocoa is unknown. This study was designed to investigate the BP lowering effect of acute administration of cocoa through the modulation of the Autonomic Nervous System (ANS). Following ethical approval and informed consent, a randomized double-blind placebo-controlled study was conducted using 45 apparently healthy subjects, aged 20-28years. The overall effect of cocoa was assessed using the Cold Pressor Test (CPT), a standard test used to stimulate the ANS. The test was performed before and after oral administration of either 28g of cocoa powder dissolved in boiled water (198ml) or the placebos. Digital sphygmomanometer was used in obtaining values. One way ANOVA with a post-hoc Tukey test was used to analyze differences between the groups while Paired t-test was used for analysis within the groups. Results were expressed as Mean±SEM and $P<0.05$ was considered significant. It was observed that the CPT activated ANS. CPT caused significant rise in SBP, DBP, MAP from the basal values to the peak values ($P<0.05$, $P<0.01$, $P<0.01$ respectively) but not in pulse pressure and PR. However, cocoa beverage was not able to dampen the change (Δ) that occurred within the respective test-groups ($P>0.05$). The result therefore suggests that acute cocoa administration does not lower BP and pulse rate through modulation of the ANS.

Cardiovascular Response to Acute Exercise in Young Adults under Varying Environmental Conditions

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Prolong moderate intensity exercise in hot environment has been reported as an efficient way for athletes to acclimatize to heat, however, little effort is paid on how these environmental phenomena could impact on cardiovascular responses to exercise. The present study therefore, aimed to assess the difference in cardiovascular parameters at various environmental temperature conditions at rest and after exercise. Seventy three Male and female students from the Department of Human Physiology, Bayero University Kano were recruited for the study. Subjects' body temperature and cardiovascular parameters were examined, using appropriate instruments, in warm room (33ºC±1ºC) and then in cold room (22ºC±1ºC), before and after a modified Harvard step test. Data were analyzed using SPSS V20.0 with paired samples t-test as comparative statistic, and summarized using mean±SEM. From the findings, pre-exercise body temperature, systolic blood pressure, pulse pressure, mean arterial pressure and heart rate were observed to be higher in hot environment while diastolic blood pressure appeared higher in the cold environment. Following exercise, cardiovascular parameters significantly increased in cold environment, but not in hot environment, also, we found no significant effect of gender on cardiovascular response to acute exercise in the various environmental conditions. In conclusion, the present study has demonstrated that cold environment provides better cardiovascular responses to acute exercise.

Dietary zinc deficiency induces oxidative stress and alters development in fruit flies: a preliminary study

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Zinc is an important micronutrient whose dietary deficiency has been associated with later life diseases. Due to the probable epigenetic influence, this preliminary study was carried out to assess the developmental changes in wild type (w^{1118}) *Drosophila melanogaster* (fruit flies) nurtured on a zinc-chelated diet. Graded doses (50,100,150, and 200µmol/L) of N,N,N',N'-tetrakis (2-pyridylmethyl)-ethylenedidiamine (TPEN), were added to the diets of the fruit flies to induce zinc deficiency. Gravid female flies were transferred onto the graded TPEN supplemented diets for 24hrs and laid eggs were allowed to develop on the diet until adulthood. Adult flies were transferred and cultured on a standard cornmeal diet for seven days. After three days on a standard diet, three female flies were randomly selected per group and transferred to the egg chamber for fecundity assay. Flies were removed after 4hrs and eggs were counted under a stereomicroscope. This was repeated for three consecutive days. No eclosion was observed in vials of 200µmol/L TPEN. Metal analyses showed reduced zinc levels in flies fed 50, 100, and 150µmol/L TPEN compared to control in both males and females. The Fecundity rate was significantly reduced in flies fed on 100 and 150µmol/L TPEN compared to control. There was a significant reduction in the levels of catalase and total antioxidant capacity at 50, 100, and 150µmol/L compared to control. Moreover, TPEN fed flies showed elevated malondialdehyde levels compared to control counterparts. Collectively, findings from this study buttress the importance of zinc in development, the implication of dietary zinc deficiency on oxidative stress, and the suitability of the Drosophila model to study the developmental and metabolic role of zinc.

Exposure to Light-at-Night is Associated with Metabolic and Haematological Impairments in Sleep-Restricted Male Wistar Rats

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While shift work model researches had shed light regarding the health implications of light-at-night (LAN) exposure, extrapolation onto general population will be unreliable. Our study therefore aimed at evaluating the independent effect of LAN exposure on metabolic and haematological parameters in male Wistar rats. Sixteen male Wistar rats (aged 8-10 weeks), weighing 100g±12g were randomly, but equally, divided into control and LAN exposure groups. Gentle handling was used to induce SR while LAN was instituted using a customized light rack system for six weeks. Fasting weight and blood sugar were obtained using a digital weighing scale and Glucometer respectively. Lipids were analyzed using their respective Randox kits and chemistry Autoanalyser. Malondialdehyde, catalase and superoxide dismutase activities were assayed while Full blood counts and CD 4^+ T-cells were determined using automated analyzers. Data were analyzed using SPSS $V_{20.0}$ and summarized using Mean±SEM. Student's t-test was used to investigate differences between the groups and $p \leq 0.05$ was considered as statistically significant. Our findings have demonstrated that although LAN exposed rats eat less feeds (1296g vs. 1347g), they are observed to have gained body weight significantly (p=.010) higher than controls (65g vs. 37g). LAN exposed rats also have statistically higher (p=.019) fasting blood sugar levels than controls (122 mg/dl vs. 111 mg/dl). In contrast, TriG index, HDL, AIP and markers of oxidative stress are found to be statistically similar between the groups. In conclusion, LAN exposure have demonstrated tendencies to cause obesity, diabetes and increased risk of adverse cardiovascular events.

Effects of Fruit Pulp Methanolic Extract of *Azanza Garckeana* (Goron Tula) on Isolated Rabbit Ileum and Normal Defaecation of Adult Male Wistar Rats

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This study investigated the effect of fruit pulp methanolic extract of *Azanza garckeana* on normal defaecation of adult male Wistar rats and isolated rabbit ileum. Twenty rats were grouped into four: Group I (control) received the vehicle (10% Tweene 80), while Groups II-IV received 300, 600 and 1,200 mg/kg of the extract orally, respectively. The rats were then placed in individual cages lined with clean white papers and observed for four hours. Also, with the aid of an electronic transducer connected to a microdynamometer, the effect of the extract was tested on spontaneous contractions of the isolated rabbit ileum. The results show that the extract caused no significant changes in total stool weight, frequency and diarrhoeal scores of the rats at the end of the four hours period. However, there was a significant increase in the stool weight and frequency among the 300 mg/kg extract-treated rats at the end of the first hour, which significantly phased out therafter. No significant changes were observed in all the parameters among the other groups. However, the extract (especially at 3.4 mg/mL) caused a marked reduction in strength of contractions of the isolated ileum, which was not blocked by atropine or propranolol. These results indicate that the extract may not have any significant effect in normal defecation or diarrhoea, rather, it could have a potential benefit of decreasing it in diarrhoeic states.

Urinalysis as an Adjunct in Assessing Malaria Severity

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Malaria diagnoses is based on microscopy and RDT, with RDT being the only option in some settings. Healthcare providers rely on their clinical acumen in determining severity of the infection in the absence of microscopy. This study correlated urinary abnormalities to parasite density in malaria using Dipstick. Pregnant women (n = 150) attending Murtala Muhammed Specialist Hospital Kano, comprising 100 women with positive Giemsa-stained blood films for malaria and 50 healthy controls were recruited. Malaria was classified into mild, moderate and severe, based on parasite density. Biochemical components of their urine were assessed using Medi-Test Combi 10 dipstick. The results showed significantly higher urine parameters in the case than in control groups ($P < 0.05$). However, Bilirubin, Urobilinogen, Blood, Ketones and Protein were positively correlated with malaria parasite density. Proteinuria was highest in severe malaria, then moderate, then mild (310.16 ± 10.03mg/dl), (190.96 ± 8.0mg/dl) (170.19 ± 7.8 mg/dl). Bilirubinuria was also highest, in severe malaria, (3.96 ± 0.31) moderate (1.95 ± 1.2) then mild (1.07 ± 0.63). Similarly, highest Urobilinogenuria was found in severe (9.10 ± 3.03mg/dl), then moderate (6.60 ± 1.0mg/dl) then mild malaria parasitaemia (3.19 ± 1.8 mg/dl). Ketones also followed similar pattern (3.16 ± 0.03), (1.90 ± 2.0) and (1.0 ± 0.8) for severe, moderate and mild parasitaemia respectively. Haematuria in severe malaria parasitaemia was also highest in (170.16 ± 5.03 Ery/µl), then moderate (30.96 ± 4.0 Ery/µl) and lowest in mild (9.02 ± 0.8 Ery/µl). Alongside RDT, urinalysis may serve as adjunct in identifying severe malaria parasitaemia, especially in resource constrained settings

The Effects of L-Citrulline on the Relaxation of Acetylcholine Induced Contraction on Intestinal Smooth Muscle

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When bowel motility is affected, digestion and absorption of nutrients is compromised and movements of the intestinal contents are impeded. These results in a host of signs and symptoms such as nausea, reflux, regurgitating, bloating and diarrhea. L-Citrulline is a non-protein amino acid compound that is important in the urea cycle in the liver and kidneys. It is mainly metabolized in the kidney and converted into arginine. This study examined interventions that can be used to displace the uncoordinated contractions of the intestinal smooth muscle by bringing about relaxation using L-citrulline. Adult wistar rats (n= 10) weighing between 200-250 g were euthanized and the abdomen was opened, a segment of the small intestine (ileum) were excised and placed in Tyrode solution. The tissues were cut into segments of 2 cm each and then suspended in organ baths. The tissue segments were suspended from a stationary hook within the organ bath and connected to a force transducer that measured the tension generated by the tissues. The contractions and relaxations were recorded with the use of the data acquisition software power lab. L-citrulline caused a relaxation in Ach induced vessels. There was no significant difference in the rate of relaxation of atropine and L-citrulline in both administration of 1.0 ml ($p= 0.237$) and 2.0 ml ($p= 0.136$). These results therefore suggest that L-citrulline when supplemented will bring about a relaxation in the same way as atropine.

Modulatory Role of Antioxidant Vitamins (A and E) in Cyanide Induced Liver and Brain Damage in Adult Male Albino Mice

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Cyanide is a potent neurotoxic substance that can initiate series of intracellular reactions leading to oxidative stress. To evaluate the effect of sub lethal administration of potassium cyanide (KCN)on lipid peroxidation and some antioxidant enzymes in adult male albino mice and possible ameliorative role of vitamins A and E. Thirty five adult male mice weighing between 18-22 g were used. An acute toxicity study was carried out to determine LD_{50} using Locke method. The animals were randomly divided into five groups (n = 7) as follows; group I (control, received deionized water), group II (1.5 mg/kg KCN), group III (1.5mg/kg KCN + 25 mg/kg vitamin A), group IV (1.5 mg/kg KCN + 50 mg/kg vitamin E) and group V (1.5 mg/kg KCN + 25 mg/kg vitamin A + 50 mg/kg vitamin E). Treatment groups was carried out daily through oral gavage for administration of potassium cyanide while vitamins A and E were administered intraperitoneal (IP) for 28 days and on the last day, the animals were sacrificed and isolation of tissues for biochemical assays of malondialdehyde, superoxide dismutase, catalase, acetyl cholinesterase and serum liver enzymes. From acute toxicity studies, LD_{50} was calculated to be 15 mg/kg. The results obtained indicated significant ($p < 0.05$) increase in MDA levels, indicating lipid peroxidation in the cyanide group (3.30±0.19 nMol/mg) compared to the vitamin treated group V (1.82±0.21 nMol/mg). There was a significant ($p < 0.05$) decrease in inhibition of superoxide dismutase in group II (1.30±0.07 µ/mg). Furthermore, a decrease in catalase inhibition was recorded in group II (30.81±1.43 mmol/min/µ/mg) in comparison to group III (41.60±1.96 mmol/min/µ/mg). Acetylcholinesterase enzyme activity was significantly increased in group II (32.10±0.90 nmol/min/mg) as compared to the vitamin treated group V (16.20±0.90 nmol/min/mg). Liver enzymes AST recorded high levels in the potassium cyanide treated group

(155.20±6.44 U/L) when compared to control (45.80±1.77U/L). Antioxidant vitamins (A and E) played an important role in ameliorating the oxidative stress poised by cyanide through stimulating the antioxidant defence system.

Assessment of Respiratory Function Parameters Among Suya Sellers In Gwale Local Government, Kano, Nigeria

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Wood smoke has been associated with a wide range of health effects including lung dysfunction leading to respiratory symptoms and diseases. Suya sellers are often exposed to high levels of wood smoke and oil fumes in the course of their job and hence are at risk of lung dysfunction. The aim of this study was to assess lung volumes and capacities of Suya sellers in Gwale LGA Kano using Wet spirometry. Twenty participants consisting of 10 Suya sellers and 10 healthy controls were recruited for the study. Wet spirometry was performed following standard protocol. Data were analyzed on SPSS version 23.0 and results presented as mean±SD. P value ≤ 0.05 was considered statistically significant. The mean age of the Suya sellers and that of controls were 30.0±6.38 and 29.20±2.09 (p = 0.725) years respectively. The Suya sellers had significantly lower respiratory rate compared to the controls (13.20 ± 1.14 vs 13.20 ± 1.14, p = 0.025), though both were within normal limits. However, there was no statistically significant difference in lung volumes and capacities between the Suya sellers and controls. In conclusion, the Suya sellers had significantly lower respiratory rate but there was no difference in lung volumes and capacities between the two groups.

Evaluation of Renal and Liver Functions in Pregnant Women with Malaria Parasitemia Attending Gombe Specialist Hospital, Gombe State, Nigeria

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Malaria, a vector-borne disease is an ancient disease and is now regarded as a life threatening disease. A study to evaluate the renal and liver function parameters in pregnant women with malaria parasitemia attending Gombe specialist hospital, Gombe State, Nigeria May-July, 2019 was conducted to determine the prevalence malaria parasite in pregnant women, assess the interaction between malaria parasitaemia and kidney function in pregnant women, and assess the interaction between malaria parasitaemia and liver function in pregnant women. A cross-sectional study involved a sample size of 384 (284 with gestational malaria as cases and 100 healthy pregnant women as controls) was carried out among volunteering consented pregnant women. Data analysis was carried out using Statistical Package for Social Sciences version 20.0. Bivariate and multivariate analyses were performed and P-value of < 0.05 was considered significant. Biochemical parameters revealed significant decrease in the levels of serum urea, sodium and bicarbonate. Furthermore, the study found significant increase (P < 0.05) in the activities of the enzymes Alanine transaminase (152.62± 12.5) and alkaline phosphatase (66.88+ 6.29) for the pregnant women with malaria parasitaemia. Similarly, urea (20.66+6.12) and creatinine, decrease significantly (p < 0.05) among the pregnant women with malaria parasitaemia. In conclusion, the prevalent species of the parasite is plasmodium faciparium result in the renal and liver functions parameters changes.

Effects of the interaction between Age, Trimester and Malaria Parasitemia on Haematological Parameters of Pregnant Women Attending Gombe Specialist Hospital

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Malaria is major public health problem in Sub-Saharan Africa. Most of the infections are affect mainly pregnant women and children. Blood sample was collected from 384 pregnant women. 284 were tested positive and 100 as controls, effects of malaria on the following haematological parameters were determined which includes WBC, RBC and PLTC, PCV, Haematocrit, Differential Leucocyte Count, MCV, MCH and MCHC. A period of 3 months was used for blood sample collection. Data analysis was done using statistical package for social science version 20.0. Bivariate and Multivariate analysis were performed P-value < 0.05 was considered significant. 284 (74%) pregnant women infected with malaria, age 21-25 (40.8%) had the highest rate of infection, the lowest was ≥ 31 years (9.9%). First trimester had the highest rate (41.9%) and third trimester had the lowest rate of infection (20.1%). In some of the Haematological parameter, the total WBC, absolute Lynphocytes and monocytes were significant higher in the malaria infected patients than in non-infected pregnant women (P < 0.05). There was no significant difference in the basophil count between the malaria positive and the controls (P > 0.05). There was a significant difference in the levels of WBC, PLTC and MCV, MCH and MCHC; insignificant difference between the first, second and third trimester of the positive cases and negative. In conclusion, malaria infection during pregnancy has adverse effects on maternal haematological parameters, and anaemia is the most common consequence of *P. falciparum* malaria infection in pregnant women

Some Haematological Parameters of Aqueous Stem Extract of *Anisopus Mannii* in Alloxan-induced Diabetic Wistar Rats

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The financial burden of management of diabetes has become globalized and this has become paramount for developing countries to search for diabetic drugs which are cost effective with minimal side effects. The aim of this study is to determine the effects of aqueous stem extract of anisopus

mannii on some haematological indices on alloxan induced diabetic wistar rats. This study was carried out on twenty five wistar rats of both sexes weighing 150 to 300g (8-10 weeks old). They were randomly divided into five groups of five rats each. Diabetes mellitus was induced by a single intraperitoneal injection of Alloxan monohydrate at 150mg/kg. The LD50 for the aqueous stem extract was > 5000 mg/ dL. The results showed no statistical significance ($p < 0.05$) in RBC; Hb and PCV at the various doses of aqueous stem extract of Anisopus *mannii* compared to the diabetic control respectively. However, the results showed a significant ($p < 0.05$) increase of total white blood cell count at the dosage of 100 mg/ Kg and 400 mg/ Kg of Anisopus *mannii* stem extract respectively. In addition, there was a significant ($p < 0.05$) increase in the level of monocytes at 200 mg/ kg and 400 mg/ Kg compared to the diabetic control; with associated significant ($p < 0.05$) increase in the level of lymphocytes at all doses of stem extract compared to the diabetic control respectively. In conclusion, Anisopus *mannii*, has no effect on haematological indices in alloxan induced diabetic wistar rats.

Anti-Ulcerogenic Activities of *Zea Mays* (Corn) Diet in Male Wistar Rats

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Gastric ulcer caused by imbalance between protective and aggressive factors is one of the most common disorders of the gastrointestinal tract. *Zea mays* L. (Corn) is a source of nutrition with natural phytochemical compounds. Previous study reported that the methanolic extract of *Zea mays* (Zm) decreases gastric acidity and inhibited percentage gastric ulceration. This study therefore investigated the underlying gastroprotective mechanisms of the Zm diet. Sixty male wistar rats were used, randomly grouped into 6; 1(Control), 2(Ulcerated), 3, 4, 5 (prefed with Zm diet -55%, 65%, 75%) and 6 (cimetidine- 40mg/kg) for 28 days. Gastric ulcer was induced by oral administration of indomethacin (40mg/kg) and animals were sacrificed after 4 hours. Hematological variables and gastric blood flow was determined prior induction of ulcer. The stomach was excised and cleaned, it was then homogenized and centrifuged for biochemical assays. Increased PCV, HBconc, RBC and gastric blood flow was observed in Zm diet group. There is a significant reduction in gastric ulcer area in all treated groups. Significant increase in gastric tissue mucin content and gastric mucosal SOD, NO and PGE2 levels and significant reduction in the MDA was observed in the Zm diet and cimetidine group. Results were buttressed with histological analysis. Results obtained from this study suggests that Zm diet may have anti-ulcerogenic properties by enhancing antioxidant enzymes as well as mucosal blood flow via increased hematological variables, nitric oxide and prostaglandin E2 mechanisms.

Effect of Bevi-mix (Artificial Sweetener) and its Major Constituent Aspartame on the Integrity of Gastric Mucosa in Male Wistar Rats.

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Bevi mix (BM) is a powdered drink consisting of artificial sweetener of which aspartame (ASP) its major constituent. Aspartame consumption has been associated with a risk factor for diseases due to the formation of its metabolites. The effect of BM and ASP on the integrity of gastric mucosa in male Wistar rat were investigated. Forty-two male Wistar rats were divided into 6 groups (n = 7). Group 1 (1 ml/kg distilled water), Group 2 and 3 (BM at 330 and 660 mg/kg bw), Groups 4-6 (ASP at 20, 40 and 80mg/kg bw). Gastric juice was collected via pyloric ligation, gastric acid, pepsin, mucus component (total sialic acid content) and mucus gel were evaluated. Administration of BM at 660 mg/kg and ASP at 80 mg/kg caused a significant ($P < 0.05$) increase in volume of gastric juice but the titratable acidity and total acid output were significantly ($P < 0.05$) increased. The groups given aspartame showed significant ($P < 0.05$) increases in titratable acidity and total acid output. There was significant ($p <0.05$) increase in pepsin concentration in all groups given BM and ASP. Mucus secretion was significantly ($p<0.05$) decrease with BM at 660mg/kg, aspartame 40 mg/kg or 80 mg/kg. Bevi mix at 660 mg/kg and ASP at 80 mg/kg caused a significant ($P < 0.05$) increase in free sialic acid and bound sialic acid. In conclusion, BM at higher doses and all doses of ASP increases gastric acid secretion, pepsin concentration, free sialic acid and decreased mucus secretion which may decrease the integrity of the gastric mucosa.

Effect of Bevi-mix (Artificial Sweetener) and its Major Constituent Aspartame on Oxidative stress parameters, Kidney electrolyte and Liver enzymes in Male Wistar Rats.

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Bevi mix (BM) is a powdered drink consisting of artificial sweetener of which aspartame (ASP) its major constituent. The effect of BM and ASP on oxidative stress biomarkers, liver enzymes and kidney electrolytes in male Wistar rat were investigated. Forty-two Wistar were divided into 6 groups (n = 7). Group 1 (1 ml/kg distilled water), Group 2 and 3 (BM at 330 and 660 mg/kg bw), Groups 4-6 (ASP at 20, 40 and 80mg/kg bw). Blood sample, kidney and the liver homogenate were analyzed. Serum SOD and GSH were decreased by BM (660mg/kg) and ASP significantly ($P \leq 0.05$), BM 330 mg/kg caused a significant ($P \leq 0.05$) increase in GSH. The activity of ALT was increased by BM at 330 mg/kg but all the doses of aspartame significantly ($P < 0.05$) decreased it; while the activity of AST was not affected by BM groups however both doses of BM increase the activity of ALP level. The ASP groups showed a significant ($p< 0.05$) increase in AST and ALT. BM 330 or 660 mg/kg caused a significant ($p < 0.05$) increase in the kidney Na^+ but no significant ($p < 0.05$) change in kidney K^+ level. ASP at 20, 40 or 80 mg/kg caused a significant ($p < 0.05$) increase in kidney Na^+ and K^+ levels. The BM 1and

ASP groups showed a significant ($p < 0.05$) increase in kidney bicarbonate ion level. In conclusion, higher doses of BM and ASP increases increases Na^+ and H_2CO^- ion levels and causes oxidative stress and decreasing serum antioxidant enzymes in the rats.

Evaluation of Effects of Hexane and Methanol Extracts Of *Trigonella Foenum-gaecum* L. in Isolated Rabbits Heart

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Trigonella Foenum-gaecum L. contains a broad spectrum of therapeutic properties and it's use as galactagogue and antidiabetic among others is recoded in traditional medicine practice. Experiment shows that Methanol and Hexane extracts' affect blood pressure and myocardial relaxation which may be either by the combined effects of myocardial depression, restorative function of the plant high vitamin C content or/ and muscarinic receptor mediated vascular smooth muscle relaxation. Atropine (25 mg/ml) at all tolerable doses did not block the hypotensive effect of both extracts but rather potentiated the effect of the extracts. The methanol and hexane extracts of the seeds of Trigonella Foenum-gaecum L. decreases both the force and rate of myocardial contraction in a concentration dependent manner. The result of this experiment on Isolated Rabbit Prefused Heart indicated that the plant Trigonella Foenum-gaecum L. has vascular smooth muscle relaxation with potent blood pressure lowering properties, and therefore, could lead the pharmaco-physiological credence to folkloric, as well as ethnomedical use of the plant in management and/or control of high blood pressure.

Pathophysiology and Histological Effect Of Spitting Cobra's Venom *(Naja Naja)* In The Eyes

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Snakebite is associated with diverse Pathophysiology due to the magnitude of variation in venom compositions that is observed Worldwide. Spitting cobra can spit venom towards the eyes of the predator as a defense mechanism, causing painful and potentially blinding ocular envenoming. Six albino mice were used for the study which were divided in to two per group, venom of *naja naja* were exposed at different range of 2-5cm length same concentration. The eyes were rinsed with normal saline and analgesic administered to reduce the pain, and corneal thickness was assessed. The effect of the venom on selected enzymes activity in the serum/liver of albino rats induced with the snake venom was studied and the histopathology. The result shows elevated AST (75%) and ALT(60%) level on experimental animals significant change was observed as compared with the control group ($P>0.05$). Naja naja venom induced significant corneal edema and epithelial necrosis. In this experiment Naja naja venom was capable of inducing a high rate of vascular permeability or pathophysiological effect in the eyes, hepatic and cardiac tissues alterations.

Cinnamon Reverses Depressive-Like Symptoms of Mice In Open-Space Forced Swim Test Model

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Depression is a mental disorder characterized by depressive episodes, such as low mood, low self-esteem, feeling of guilt, and poor concentration. Depression has a high comorbidity with cognitive impairments. Studies have shown that cinnamon has anti-inflammatory and anti-diabetic potentials. Therefore, the aim of the research was to assess the antidepressant effect of cinnamon on open-space forced swim-induced depression in mice. Twenty-five (25) Swiss albino mice were grouped into five groups (n=5). Group 1: control (negative control), Groups 2, 3 and 4 received graded doses of Cinnamon 12.5, 25, and 50 mg/kg, group 5 received fluoxetine 20 mg/kg orally. The animals were subjected to Open Space Forced Swim Test (OSFST), Open Field Test (OFT), Y-maze test, and Novel Object Recognition Test (NORT). Administration of cinnamon showed decrease immobility time (behavioural despair) in OSFST compared to control and fluoxetine groups ($p < 0.05$). Similarly, Cinnamon 12.5, 25 and 50 mg/kg showed statistically significant decrease in the number of entries into the Y-maze arms compared to control and fluoxetine groups ($p < 0.05$). Furthermore, cinnamon improved spatial short-term memory as observed by an increase in the spontaneous alternation and percent alternation in Y-maze test compared to the control and fluoxetine groups ($p < 0.05$). Also, cinnamon 25 mg/kg showed a significant increase in rearing in OFT compared to control and fluoxetine groups ($p < 0.05$). However, no statistically significant effect was observed in the discrimination ratio of NORT between cinnamon administered groups and the control group. In conclusion, cinnamon has shown antidepressant-like effect in open-space forced swim-induced depression in mice.

Cinnamon Improves Spatial Short-Term Memory and Attenuates Anxiety-Like Symptoms of Mice Exposed To Chronic Unpredictable Mild Stress

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Depression is a state of low mood and aversion to activity. Studies have shown that cinnamon has antioxidant, anti-diabetic and anti-inflammatory potentials showing its possible anti-depressant effects. This study is aimed at evaluating the antidepressant like effect of cinnamon in

mice exposed to chronic unpredictable mild stress (CUMS) model of depression. Thirty (30) Swiss albino mice were grouped into six groups (n=5). Group 1: received distilled water (DW) 10 ml/kg, Group 2: exposed to chronic unpredictable mild stress (CUMS). Group 3, 4, and 5 received graded doses of cinnamon extract 12.5, 25, and 50 mg/kg, respectively. Group 6 received fluoxetine 20 mg/kg orally. Groups 2,3,4,5 and 6 were subjected to tail suspension test (TST) 24 hours before, after 2-weeks and at the end of CUMS, respectively. Thereafter the mice were subjected to open field test (OFT), Y-maze, and novel object recognition test (NORT). This study revealed no statistically significant difference in the TST. However, a statistically significant increase was observed in line crossing of OFT between fluoxetine and DW group (p<0.05). Similarly, comparison between fluoxetine and cinnamon treated groups showed significant difference in the line crossing (p<0.05). Cinnamon 12.5 mg/kg showed significant increase in rearing of OFT when compared with CUMS and fluoxetine groups at p<0.05. In number of entries in to the arms in Y-maze, a significant effect was observed in cinnamon 12.5 and 50 mg/kg compared to DW group (p<0.05). More so, significant effect was also seen in spontaneous alternation ratio in Y-maze in cinnamon 50 mg/kg as compared to CUMS group (p<0.05). In NORT, no significant effect was observed. In conclusion, cinnamon showed antidepressant-like effect in mice exposed to CUMS.

Correlation between Body Mass Index (BMI) and Cognitive Function among 400 level Students of

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Obesity affects our body in different manner and considered as an important public health problem. As documented by some previous studies that Various cognitive functions of brain might get affected by high body mass index (BMI > 30 Kg/m2), previous researches has found that height is correlated with cognitive function at older ages, and also that there is correlation between weight and cognitive function. This study aims to study the correlation of BMI, height and weight with cognitive performance of 400 level Students, Department of Human Physiology, Ahmadu Bello University Zaria. A total of 69 400 level Physiology Students were selected in random manner in the medical college. All study subjects were informed about tests to be performed. The subjects height and weight were taken and the BMI was calculated. Digit Symbol Substitution Test (DSST) and Montreal Cognition Assessment Test (MoCA) were used to check cognitive functions in the subjects. There was no statistically significant relation between BMI and cognitive function score of the subjects (p > 0.05). DSST showed a slight but insignificant negative correlation with height (p = 0.12), while MoCA showed positive and statistically significant correlation with height (p = 0.03). **:** There was no statistically significant relation between weight and cognitive function score of the subjects (p > 0.05). This study showed that height is associated with cognitive function, that taller people have higher cognitive function than the shorter one, whereas BMI and weight have no relation with cognitive function.

Effects of Melatonin on Gastric Ulcer Parameters, Gastric Mucus Secretion and Oxidative Stress Induced by Water Immersion Restraint Stress in Male Wistar Rats.

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The effects of melatonin on gastric ulcer parameters, gastric mucus secretion and stomach oxidative stress markers induced by water immersion restraint stress in Wistar rats. Male Wistar rats, restrain cages, thermostatically controlled water bath, Ketamine, Alcian Blue, Sucrose Solution, Sodium Acetate, Magnesium Chloride, Diethylether, 10% Formalin, Eosin, 2%Phenolphthalein, 0.01 NaoH Solution. The rats experimented on were kept fasting for 48hrs starting from the 3rd day of administration in separate restrain cages to ensure complete emptying of the stomach. During sacrifice the rats were first made unconscious through the intra-peritoneal administration of ketamine hydrochloride to immobilize them on the restraint board. The water immersion restraint-stress was then achieved by restraining the rats on a board and lowering the restraint board into a thermostatically-controlled water bath at a temperature of 23 ± 0.5ºC, to the levels of xiphoid process with the head vertically up which lasted for 3.5 hours. Data were processed using IBM SPSS statistics version 20.0. All results obtained are expressed as the mean ±SEM. The significance level was set at P < 0.05. Melatonin produced a significant (p<0.05) decrease in gastric ulcer score with the active group 64.26±78.54 and pretreated group 32.75±27.54 with preventive indices of 100% respectively. Gastric mucus secretion on the active group with 0.1±0.02 and pretreated group with 0.1±0.23. Histologically the gastric mucosa of animals in the study showed a severe necrosis of the epithelial cells of the active group than observed in the pretreated study. The administration of melatonin did increase the stomach tissue MDA and SOD while it decreased Catalase activity in the pretreated group more than the active group. This study concluded that melatonin showed protective effects on ulcer parameters, mucus secretion.

Age-Related Peculiarities of the Effect of Oxidative Stress on Expression of Fibroblast Growth Factor-2(FGF-B) in Indomethacin-Induced Peptic Ulcer in Wistar Rats

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Peptic ulcer is an acid-induced lesion of the digestive tract, which occurs due to imbalance between protective and aggressive factors. Fibroblast growth factor-β(FGF-β), being a member of Fibroblast Growth Factors (FGFs), plays a pivotal role in repair processes of many organ systems, including the gastrointestinal tract (GIT), which has highcell turnover; along the length of the GIT, FGFsmediate cell proliferation, differentiation, epithelial cell restitution, and stem cell maintenance. The aim of this study was to determine the effect of age and oxidativestress on fibroblast growth factor in Indomethacin-induced gastric ulcer in Wistar rats. Three (3) groups of Wistar *Rats* (n=10) of aged 5, 8 and 12 months were used; peptic ulcer was induced after a 24-hours fasting, prior to administration of Indomethacin. After animals were sacrificed using ketamine as anesthesia, stomach was removed, stored in phosphate buffer for histology studies. The FGF-β was assessed using enzyme-linked immunoassay, while SOD was assessed using spectrophotometry. There was no significant statistical difference in Mean FGF-β concentration in groups 1, 2 and 3. It was concluded that, age and oxidative stress had no effect in the expression of FGF-β in Indomethacin-induced peptic ulcer in Wistar rats.

Alpha-Lipoic Acid Attenuates Depressive Symptoms in Mice Exposed to Chronic Unpredictable Mild Stress

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Depression is the most common psychiatric illness that involves mood disturbances affecting many brain regions. Alpha-lipoic acid (ALA) is an antioxidant that plays an essential role in mitochondrial energy metabolism and neurotransmitter modulation. Hence, this research was aimed at assessing a possible antidepressant effect of ALA in mice exposed to chronic unpredictable mild stress (CUMS). Twenty-five **(**25) Swiss albino mice weighing between 20-26 g were grouped into five groups (n=5). Group 1: which served as control received normal saline (NS) and was exposed to CUMS, Groups 2, 3, and 4 received graded doses of ALA (100, 200, and 400 mg/kg respectively), Group 5 received fluoxetine (20 mg/kg). Daily administration was done through oral gavage. The animals were subjected to open field (OF) and staircase (SC) tests after induction of depression using CUMS. Thereafter, brain and blood samples of the mice were collected for serotonin, brain-derived neurotrophic factor (BDNF), catalase, superoxide dismutase (SOD), and malondialdehyde (MDA) analysis. Treatment with ALA 200 mg/kg significantly decreased immobility time compared to CUMS + NS group ($p \leq 0.05$) in the tail suspension test. Similarly, fluoxetine 20 mg/kg significantly increased brain serotonin level and decreased BDNF level compared to CUMS + NS group ($p \leq 0.05$). However, ALA did not significantly affect brain serotonin and BDNF levels ($p > 0.05$). In the OF test, a significant decrease was observed in the number of line crossings in ALA 100, 200, and 400 mg/kg and fluoxetine 20 mg/kg administered groups when compared with CUMS + NS group ($p \leq 0.05$). However, in SC test and oxidative stress biomarkers, no significant effect was observed ($p > 0.05$). In conclusion, ALA showed a promising antidepressant-like effect in mice subjected to CUMS murine model of depression by decreasing immobility time.

Effects of Hydro-Ethanol Leaf Extract of *Cissus Aralioides* on Prolactin and Thyroid Stimulating Hormone in Female Wistar Rats.

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One option that have been employed to tackle the situation is the use of herbs. *Cissus aralioides* leaves are well known and mostly used by women who are expecting fruitfulness. The aim of this study is to ascertain the effects of hydro-ethanol leaf extract of *cissus aralioides* on prolactin and thyroid stimulating hormone in female wistar rats. A total of 20 rats weighing between 150mg to 190mg were used for the study. The animals were divided into four groups with five animals per group. Group 1 (control) were administered 5mls of distil water for 30days, group to received 150mg/kg of *C. arlioides,* group 2 received 300mg/kg of extract and 3 received 600mg/kg of extract. Statistical analysis was done using SPSS version 24 with ANOVA. $P < 0.05$ was said to be significant. The study revealed that there is significant increase in prolactin when 150mg/kg of extract was given and significant decreased when extract of 600mg/kg was administered when compared with control. Also, for TSH, there is significant decreased in TSH when 150mg/kg of extract was administered and significant increase in TSH when extract of 300mg/kg and 600mg/kg when administered compare to the control. *Cissus aralioides* leaves are well known and mostly used by women who are expecting fruitfulness. The study shows significant increase in prolactin at low dose and significant decreased at high

dose. Again, there is significant decreased in TSH at low dose and significant increase at high dose.

Effect of Aqueous Extract of *Allium Sativum* on Some Red-Blood Cell Indices in Phenyhydrazine-Induced Anemic Wistar Rats

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Phenylhydrazine is a drug known to cause hemolysis in rats. *Allium sativum*a widely consumed plant has been used in traditional medicine to cure several illnesses. The aim of the study was to evaluate the effect of aqueous extract of *Allium sativum* on packed cell volume (PCV), hemoglobin (Hb), red blood cell (RBC) count, mean corpuscular volume (MCV), mean corpuscular hemoglobin(MCH) andmean corpuscular hemoglobin concentration (MCHC) in phenylhydrazine-induced anemic rats. A total of 20 Wistar rats weighing 120±10grams were used for the study. 15 out of the animals were administered with phenylhydrazine to induce anemia which was confirmed on the third day.All animals were then divided into four groups (n=5)and received treatments orally and daily for 14days. Group 1 (control group): Normal rats treated with distilled water, group 2: Anemic rats treated with distilled water, group 3: Anemic rats treated with 200mg/kg of extract, group 4: Anemic rats treated with 400mg/kg of extract.At the end of the study, blood sample was collected and placed in EDTA bottles. Level of PCV and RBCcountof group 2 animals were significantly lower than the control group while the level PCV and RBC count of group 3 and group 4 were significantly higher compared to group 2. Other parameters were not significantly different in all groups. It was concluded that administration of *Allium sativum*ameliorated the negative effect of phenylhydrazine on PCV and RBC count.

Effect of Acute Cocoa Consumption on the Sympathetic Nervous System during Hand Grip Exercise

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It has been shown that cocoa (*Theobroma cacao*) lowers blood pressure (BP) in man through a number of mechanisms (Corti et al., 2009). However, the role of the autonomic nervous system (ANS) in the BP-lowering effect of cocoa is yet to be investigated. This study was aimed to address this gap in knowledge. A randomized double-blind placebo-controlled study was conducted using 45 apparently healthy subjects aged 20-28years after obtaining informed consent and ethical clearance. The effect of cocoa was investigated using the hand grip exercise (HGE) which is a standard test used in activating the ANS. The HGE was done before and after the oral consumption of either 28g of cocoa powder as beverage (198ml) or the placebos. A digital sphygmomanometer was used to measure the BP. Paired t-test was used to analyze the effect within groups (before and after administrations) while One-way ANOVA with a post-hoc Tukey test was used to analyze differences between the groups. Results were expressed as Mean±SEM. $P<0.05$ was considered significant. The HGE induced ANS activation. HGE caused significant increases in systolic BP (SBP), diastolic BP (DBP), mean arterial pressure (MAP) and pulse rate (PR) from basal to peak levels ($P<0.001$ respectively) but not in pulse pressure. Cocoa beverage could only dampen the change (Δ) in the SBP ($P<0.05$). The result therefore suggests that cocoa beverage administered acutely could hold some potential in the management of SBP through the modulation of the ANS.

Effects of Different Doses of Lipopolysaccharide on Tail Suspension, Forced Swimming and Open Field Tests in Mice

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Lipopolysaccharides (LPS) is the major outer membrane constituent of Gram-negative bacteria Lipid A part is known to be responsible for the toxic effects of infections with Gram-negative bacteria (Wang and Quinn, 2010). Several evidence point to the involvement of Gram-negative bacteria in the pathophysiology of depression. It stimulates production of pro-inflammatory cytokines, immune mediators and oxidative stress in various cell types (Park *et al.*, 2017; Gomes *et al.*, 2017). Mice were randomly divided into four groups (n = 5). Group I received normal saline, group II received LPS (0.5 mg/kg), group III received LPS (1 mg/kg), group IV received LPS (2 mg/kg), all intraperitoneally once, 24 h later the depressant-like effects of LPS was evaluated using tail suspension test (TST), forced swimming test (FST) and open field test (OFT) at 24 h interval. A single administration of LPS (0.5 mg/kg, i.p.) significantly increased the immobility time in TST and FST (*$P<0.05$).* It also decreased frequency of rearing, line crossing and centre crossing in OFT. Single administration of LPS (1 mg/kg and 2 mg/kg i.p.) significantly increased immobility time in TST. LPS (1 mg/kg and 2 mg/kg i.p.) significantly decreased frequency of Rearing, line crossing and centre crossing in OFT (*$P<0.05$).* These results demonstrated that 0.5 mg/kg, i.p. LPS is the most suitable dose for acute induction of depression in LPS model.

Antitrypanosomal Activities and Haematological Profile Of Crude Extract of the Stem Bark of *Acacia Nilotica* Plants Against *Trypanosoma Brucei* Infected Wistar Rats.

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This study was aimed at investigating antitrypanosomal activities and haematological profile of crude extract of the stem bark of *Acacia nilotica* plants against *Trypanosoma brucei brucei* infected Wistar rats with a view to determining the; antitrypanosomal activities of crude extract of *Acacia nilotica* against *Trypanosoma brucei brucei* infected Wistar rats and haematological profile of *Trypanosoma brucei brucei* infected Wistar rats, before and after administration of crude extract. The methanolic extracts of the plants was administered to the Wistar rats intraperitoneally daily and the parasitaemia count was determined using the rapid matching method. PCV, WBC and differential counts were determined before and after the administration to ascertain any significant differences. The findings show that the stem barks of *Acacia nilotica* crude extracts (100, 200, 300 and 400mg/kg body weight) had antitrypanosomal activity. Parasites were cleared from circulation within 12 days of treatment. Haematological indices of *Acacia nilotica* in *Trypanosoma brucei brucei* infected Wistar rats showed that there was no statistical significant change in the packed cell volume, white blood cells and differential counts before and after treatment with all doses of the crude extracts. The crude extracts of the stem bark of *Acacia nilotica* exhibits trypanocidal effect at various doses which is often associated with reduction in experimental African trypanosomiasis, and the lack of statistical significance in the Haematological indices may be due to some degree of maintenance of blood value parameters by the extracts since trypanosomiasis is associated with a rapid decline in PCV, haemoglobin concentration.

Protective Effects of Hydro-Ethanolic Extract of *Nigella Sativa* (Black Seed) on Some Haematological Parameters of Lead-Induced Poisoning in Albino Rats.

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Heavy metal toxicity such as Lead(Pb) has been proved to be a major threat due to several health risk associated with it, including RBC destruction. This present study investigated the protective effects of *Nigella sativa* on some haematological parameters of Lead induced poisoning in Albino rats. Twenty five adult Albino rats were divided and treated as follows; Group I (Control): 2ml/kg of distilled water, Group II (Negative control): 60mg/kg of Lead acetate only, Group III, IV and V: 200 mg/kg, 400 mg/kg and 800 mg/kg of *Nigella sativa* seed extract together with 60 mg/kg of Lead acetate solution respectively for 36days, Blood samples were collected and analysed for hematological parameters which included Red blood cell count(RBC), packed cell volume(PCV), Haemoglobin(Hb) concentration, platelet count, white blood cell(WBC) profile and haematological indices using an automated digital blood analyser. The study revealed that *Nigella sativa* prevented a significant ($P<0.05$) decrease in RBC count, Hb concentration, PCV while WBC, Lymphocyte and platelet count were significantly ($P<0.05$) increased in the treated group when compared with the negative control. In conclusion, *Nigella sativa* offers protective effects on hematological parameters against Lead poisoning in albino rats.

Evaluation of Oxidative Stress Biomarkers in Male Wistar Rats Treated With Indomie Instant Noodle Seasoning

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Small amounts of reactive oxygen species are necessary for spermatozoa to acquire fertilizing capabilities; however, oxidative stress has a negative effect on male reproductive capacity. Therefore this study was designed to evaluate the effects of indomie instant noodle seasoning (INS) on oxidative stress biomarkers in Wistar rats. Fifteen (15) male Wistar rats were used for this study. The animals were randomly divided into three groups of five animals each (n=5) and treated as follows via oral gavage for 8 weeks. Group 1 (control) was given distilled water (1ml/kg), group 2 was given INS (3083mg/kg) while group 3nreceived INS (6170mg/kg). At the end of the experiment, animals were euthanized and sera from blood sample obtained and used for biochemical analysis using ELISA kits for the antioxidant enzymes and spectrophotometric method for MDA. Serum malondialdehyde (MDA) concentration was significantly higher ($P<0.0.5$) in group 3 compared to control; 37.00±1.71 vs 32.92±1.86. There was also a significant decrease ($P<0.05$) in level of superoxide dismutase (SOD) in group 3 compared to control; 13.02±0.73 vs 17.95±0.58. Serum glutathione peroxidase (GPx) was significantly higher ($P<0.05$) in group 3 compare to control; 31.35±0.71 vs 21.90±0.39. However, there was a significant decrease ($P<0.05$) in the level of serum catalase (CAT) in group 2 and 3 compared to the control; 15.95±1.01 and 12.97±0.60 vs 19.75±0.66 respectively. In conclusion, treatment with INS significantly increased serum MDA concentration and GPx level with consequent decrease in endogenous SOD and CAT level in male Wistar rats.

Serum Testosterone Level, Sperm Analysis and Testicular Histomorphological Evaluation in Male Wistar Rats Treated With Indomie Instant Noodle Seasoning

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Fear has increased in recent years over the possible deleterious effects of fast food condiments on fertility. Therefore, this study was designed to evaluate the effects of Indomie Instant Noodle Seasoning (INS) on male reproductive functions in Wistar rats. Fifteen (15) male Wistar rats were used for this study. The animals were randomly divided into three groups of five animals each (n=5) and treated as follows via oral gavage for 4 weeks: Group 1 served as the control and was given distilled water (1 ml/kg), Group 2 was given INS (3085mg/kg) while Group 3 received INS (6170 mg/kg). At the end of the experiment, animals were euthanized and sera from blood sample obtained and used for biochemical analysis while testicular tissues were excised and used for histological studies. Although serum testosterone levels were lower in INS treated groups compared to the control, it was however not significant. Percentage of active cells was significantly lower (P) in group 2 and 3 compared to control. Percentage of viable cells was significantly lower (P) in group 3 compared to control; 32.00±2.35 vs 60.75±3.93. There was a significant decrease (P) in total sperm count in the treated groups compared to control; 36.50±2.63 and 11.50±0.87 vs 46.05±3.16.Testicular histology showed that the treated groups had irregular seminiferous tubules with epithelial sloughing, cellular degeneration and fibrosis relative to the control. In conclusion, INS reduced serum testosterone with declining sperm characteristics in male Wistar rats.

Effect of Sleep Restriction on Cardiometabolic and Haemoinflammatory parameters in Adult Male Wistar Rats

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While insufficient sleep remains an under-recognized public health issue across the globe, there have been paucity and heterogeneity of data regarding its cardiometabolic and haemoinflammatory implications. We therefore aimed at evaluating the impact of chronic sleep restriction on cardiometabolic and haemoinflammatory parameters in male Wistar rats. Sixteen (16) male Wistar rats (aged 8-10 weeks) were randomly assigned into control or sleep restriction (SR) groups (n=8). Gentle handling was used to induce SR for six weeks. Fasting weight and blood sugar were obtained and lipids were analyzed using their respective Randox kits. Malondialdehyde levels, catalase and superoxide dismutase activities were assayed. Full blood counts and CD 4^+ T-cells counts were determined using automated analyzer. Data were analyzed using SPSS $V_{20.0}$ and compared using Student's t-test, with level of significance set at $p \leq 0.05$. Our findings have demonstrated that chronic sleep restriction cause significant initial weight loss, increase in feeds consumption and percentage increase in FBS (32% vs 15%). We also noted the TriG index of SR rats to be significantly higher (6.22) than that of controls (5.62). In addition, a significant reduction in monocytic counts, MLR and absolute CD4+ cell counts among the sleep restricted rats was observed. Our findings have provided objective evidence that, over the course of 6 weeks, 5 hours of sleep restriction had caused body weight gain, hyperglycaemia, insulin resistance, and impairment in immunoinflammatory status, hence, could be a risk factor for developing cardiometabolic syndrome and immune related disorders.

Hepatotoxicity and Hematological Assessment in Adult Male Wistar Rats Following the Administration of Indomie Instant Noodle Seasoning

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The liver is a site where waste products of metabolism are detoxified through processes such as amino acid deamination. Measurement of liver enzymes remains the most practical tool to diagnose liver damage. Therefore, this study was designed to evaluate the effects of indomie instant noodle seasoning (INS) on serum levels of liver enzymes and some haematological parameters in wistar rats. Fifteen (15) male Wistar rats were used for the study. The animals were ramdomly divided into three groups of five animals each (n=5) and treated orally for eight weeks: Group 1 (control) was given distilled water (1 ml/kg). Group 2 was given INS (3083 mg/kg) while group 3 received INS (6170 mg/kg). At the end of the experiment, animals were euthanized and sera from blood samples were obtained and used for biochemical analysis. Serum analine aminotransferase (ALT) was significantly higher ($p<0.05$) in group 3 compared to control. There was significant increase ($p<0.05$) in serum alkaline phosphatase level in group 2 and 3 compared to control. Serum aspartate aminotransferase was also significantly higher ($p<0.05$) in group 2 and 3 compared to control. Red blood cells (RBC) and platelets counts were significantly higher ($P<0.05$) in group 3 compared to control. In conclusion, INS increased serum liver enzymes alongside RBC, WBC and platelets counts in adult male wistar rats.

Assesment of Effect of Repeated Cold Exposure on Some Cardio-Respiratory Parameters and Two Points Threshold among Frozen Fish Workers at Kofar Nasarawa Kano Municipal.

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People who live and work in cold areas have a higher incidence of respiratory disease, hypertension and related cardiovascular diseases. People working in frozen fish processing and storage centers as in Kofar Nassarawa Kano, have repeated and prolong exposure to cold. However, there is paucity of researches that assess physiological parameters among these group of workers especially in Kano. This is a cross sectional that assessed some cardiorespiratory parameters and two point threshold among frozen fish

workers at Kofar Nassarawa, Kano State compared with controls. Systolic and diastolic blood pressure were assessed using sphygmomanometer and stethoscope by auscultatory method, Peak expiratory flow Rate (PEFR) using Peak flow meter, Oxygen Saturation and Pulse rate using fingertip Oximeter, and two points threshold using weber compass and meter rule. The result indicated that the frozen fish workers have significantly lower (P = 0.01) PEFR (359.04 ± 55.14) and SPO_2 (88.00 ± 18) compared to Controls with PEFR and SPO2 values of (409.63 ± 53.27) and (97.00 ± 9.00) respectively. They were also found to have significantly higher (P = 0.01) diastolic blood pressure (75.00 ± 27) and two point threshold (20.00 ± 25.00) compared to control group with DBP of (70.01 ± 30) and two point threshold of (10.00 ± 9.01). A significant (P = 0.03) negative correlation (r = -0.31) between hours of exposure and PEFR was also established. In conclusion, Exposure to cold among frozen fish workers may cause a decrease in PEFR, SPO2, increase in DBP and altered tactile discrimination.

Two Weeks Fasting Improved Anthropometric and Serum Lipid Parameters in Obese Women in Kano, Nigeria

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Obesity is a leading risk factor for many cardiovascular diseases. Fasting is believed to improve indices of obesity; however, reports on effects of fasting on indices of obesity and serum lipid have been inconsistent. The aim of this study was to determine the effects of two weeks fasting on anthropometric and lipid parameters in obese women in Kano, Nigeria. Twenty participants consisting of ten each of obese and normal weight women were recruited for this cross sectional analytical study. All participants were assessed for anthropometric and lipid parameters at the end of the first two weeks of 2021 Ramadan fasting and same were repeated four weeks thereafter. Participants abstained from all forms of food and water from 5:15am to 6:15pm daily during the fasting period. All measurements were done using standard protocols. Data were analyzed on SPSS version 23.0, student independent t test was used to determine mean values of quantitative variables between obese and non-obese participants while paired t test was used for before and after fasting comparison, and p value ≤ 0.05 was considered significant. Obese participants were significantly older than the normal weights (p = 0.048). Obese participants had significant improvement in weight (p = 0.001), body mass index (p = 0.001), waist circumference (p = 0.005), hip circumference (p = 0.001), systolic blood pressure (p = 0.001), diastolic blood pressure (p = 0.001), mean arterial pressure (p = 0.001), and triglycerides (p = 0.02) after two weeks fasting period. Similar changes were observed among normal weight participants with regards to weight (p = 0.001), body mass index (p = 0.001), waist circumference (p = 0.004), triglycerides (p = 0.030), and total cholesterol (p = 0.001). In conclusion, two weeks fasting improved anthropometric and some lipid parameters in obese and normal weight women. Modified fasting regimen can therefore be used as a non-pharmacological treatment of obesity.

Hematological Profile of Obese Male Wistar Rats Fed With Medium Chain Triglyceride- Ketogenic Diet

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Obesity which is characterized by elevated body mass index has been positively correlated with haematological indices. Medium chain triglyceride-ketogenic diet (MCT-KD) is a ketogenic diet containing medium chain fatty acid with numerous potentials. The aim of the study was to evaluate the level of haematological indices in obese Wistar rats fed with MCT-KD. Twenty male Wistar rats were divided into four groups of five animals each. Group I animals were fed with normal diet feed (NDF; fat 17%, protein 26%, Carbs 57%), Group II were fed with MCT-KD only (fats 71%, protein 18%, Carbs 11%) Group III were fed with high fat diet only (HFD; fat 54%, protein 19% Carbs 27%) while Group IV were fed with both HFD and MCT-KD on alternate days for 3 weeks. The results showed a significant increase ($p \leq 0.05$) in total white blood cell (WBC) count in MCT-KD and HFD+MCT-KD groups when compared with NDF group. The total WBC count in HFD only group was reduced significantly ($p \leq 0.05$) when compared with MCT-KD+HFD group. However, differential WBC count did not show significant difference ($p > 0.05$) in all the groups. There was also no significant difference ($p > 0.05$) in RBC count, platelet count, PCV and haemoglobin concentration in all the groups. It can be concluded from this study that MCT-KD causes total leucocytosis in obese male Wistar rats.

Body Weight and Blood Glucose Dysregulation in Wistar Rats Fed With High Fat Diet And Medium Chain Triglyceride- Ketogenic Diet

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Medium chain triglyceride-ketogenic diet (MCT-KD) is a diet of high fat and low-carbohydrate, formulated with medium chain triglyceride as the major fat component, which posses' plethora of therapeutic effects. This study was design to evaluate the protective effect of MCT-KD against obesity-induced body weight and blood glucose dysregulation in Wistar rats. Twenty male Wistar rats were divided into four groups of five animals each. Group I animals were fed with normal diet feed (NDF; fat 17%, protein 26%, Carbs 57%), Group II were fed with MCT-KD only (fats 71%, protein 18%, Carbs 11%) Group III were fed with high fat diet only (HFD; fat 54%, protein 19% Carbs 27%) while Group IV were fed with both HFD and MCT-KD on alternate days for 3 weeks. The results showed a significant increase ($p \leq 0.05$) in body weight in the groups fed with MCT-KD only and HFD only when compared to the animals fed with NDF. However, the animals fed with

both MCT-KD and HFD on alternate days did not show any change in body weight ($p > 0.05$). There was a significant increase ($p \leq 0.05$) in blood glucose level in MCT-KD only group compared to other groups. MCT-KD and HFD fed animals however did not show any change ($p > 0.05$ in blood glucose level when compared to NDF and HFD group. It can be concluded from this study that MCT-KD prevents HFD-induced increase in body weight and blood glucose, but it increases them by itself when given alone.

Association of Micro-albuminuria with Retinopathy and Glycaeted Haemoglobin among Type 2 Diabetes Patients attending a Hospital in Bauchi, Nigeria

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Type 2 diabetes is associated with microvascular complications, which can be detected early using specific biomarkers such as micro-albuminuria to detect early stages of renal impairment. Little research was done in this environment to evaluate micro-albuminuria among type 2 diabetes patients. This study aimed to determine the prevalence of micro-albuminuria among patients with type 2 diabetes and evaluate its relationship with some selected diabetic complications. A total of 643 male and female subjects were recruited into this cross-sectional study, comprising of 314 diabetics and 329 non-diabetics matched for age and sex as controls. Socio-demographic and clinical information was obtained during an interview. Microalbuminuria and glycaeted haemoglobin were determined using Micro-albustistics and Quo lab HbA1c analyser, respectively. Data were expressed as mean ± S.E.M. or proportion, compared using t- test or Mann-Whitney u test, using IBM SPSS Statistics version 20.0. Association was determined using Chi-square; *P* values < 0.05 were considered significant. Micro-albuminuria was detected among 30.9% and 17.6% of diabetics and controls, while elevated glycaeted haemoglobin (> 6.5%) was seen in 68.5%, and 4.9% of the diabetics and controls, respectively. Prevalence of retinopathy, visual disturbance and decreased urine volume was significantly higher among the diabetics compared to the controls. Among the diabetics, micro-albuminuria was associated with abnormal glycaeted haemoglobin, retinopathy and decreased urine volume. Prevalence of microalbuminuria is high (30.9 %) among subjects with type 2 diabetes. Microalbuminuria, a consequence of renal microvasculopathy, occurs concurrently with other microvascular complications elsewhere in the body.

Dromedary Camel DNA and its Downstream Applications as Affected by Anticoagulants and Short-term Storage

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Precision in molecular research and diagnosis relies heavily on the quality, quantity, purity, reproducibility, and scalability of DNA extraction across the world. In the current study, blood samples were collected from 10 male dromedary camels brought to the Kano Main Abattoir during the early hours of the sampling day. They were collected in containers with EDTA, heparin, fluoride, citrate or no anticoagulant. Genomic DNA was extracted from the samples and assessed for quality and quantity using UV-V is spectrophotometer and agarose gel electrophoresis. PCR and RFLP were conducted. Trials were conducted on sampling day (fresh samples) and three days after storage at ambient, refrigerated and frozen conditions. The highest DNA yield was observed in the frozen samples across all the anticoagulants and lowest in those under ambient condition except for citrate which had the lowest yield in the refrigerated samples. In terms of purity, citrate-treated samples had the highest DNA purity under refrigeration (A_{260}/A_{280} =1.99) followed by heparin in fresh samples (A_{260}/A_{280} =2.0), and frozen fluoride- and refrigerated EDTA-treated samples (A_{260}/A_{280} =2.16 each). DNA and amplicons were visible on agarose gel electrophoresis image across anticoagulant type on Day 1 and only visible for EDTA- and citrate-treated samples after 3 days. Restriction digestion was successful only for EDTA and citrate treatments. Citrate was considered the best anticoagulant for PCR and RFLP in frozen samples. Therefore, the present study revealed, for the first time in dromedary camel in Nigeria, the effects of anticoagulants and storage on downstream applications.

Exogenous Nicotinamide Administration Modulates some Neurobehavioural Outcomes in Animal Model of Diabetic Neuropathy.

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Nicotinamide, the water-soluble amide form of vitamin B3, is a key component of the metabolic pathway involved in the production of Nicotinamide adenine dinucleotide (NAD+). Interest of the scientific community on nicotinamide has grown over time due to its suspected effect in preventing the progress of diabetic neuropathy. Based on the presented antidiabetic effect of nicotinamide, this study was designed to test the hypothesis that exogenous nicotinamide administration does not modulate neurobehavioural outcomes in animal model of neuropathic

pain. Thirty six (36) apparently healthy male Wistar rats weighing 100-150g were divided into six experimental groups (n = 6). Groups IV, V and VI were administered oral nicotinamide (250mg/Kg, 500mg/Kg and 1000mg/Kg respectively), while the other groups served as controls. Neuropathy was induced by single IP injection of 150mg/Kg of Alloxan and maintained for six weeks. Result of the study showed that there was no statistically significant effect on hot plate pain and mechanical pain, formalin induced inflammation and motor coordination, but the effects on blood glucose level, tail flick pain, depression, oxidative stress, lipid profile and serum electrolytes were statistically significant. In conclusion, the present study showed that nicotinamide may be useful in improving some of the neurobehavioural biochemical deficits induced by diabetic neuropathy.

Assessment of stress perception among students of Faculty of Basic Medical Sciences, Bayero University, Kano, Nigeria

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In pursuit of education, students are vulnerable to problems associated with personal, social and academic spheres, and these problems predispose them to academic stress. Self-reported academic stress has been reported to be influenced by sex of the students among other characteristics. However, studies of this kind are scarce in this environment. This study, therefore, investigated stress perception among students of Basic Medical Sciences, Bayero University, Kano, and determined its gender difference. Perceived stress was determined using the perceived stress scale (PSS) questionnaire; socio-demographic and anthropometric data was also collected. Using IBM, SPSS, statistics version 20.0, categorical variables were summarized using frequencies and percentages while numerical data was expressed as mean standard deviation. Gender difference in stress perception was compared using students t-test, were $P < 0.05$ was considered significant. A total of 383 students participated in the study, among which 41.0% were males and 59.0% were females; with 72.3% of them aged between 20 – 25 years. Majority of the students (89.8%) were single, and lived in urban areas (72.1%). About 49.9%, 23.0% and 37.2% were in their second, third and fourth years of study; and 67.9% had normal BMI. Most of the students (71.8%) had moderate perceived stress, while the others had low (25.1%) or high (3.1%). There was no difference ($P = 0.37$) in PSS scores of males (16.70 ± 5.36) and females (17.21 ± 5.70) students. It was concluded that majority of the students experience moderate stress in similar measure among males and females.

Modulatory Role of N-Acetyl-Cysteine on Gastric Mucosal Lesion and Haemato-Biochemical Changes in Albino Wistar Rats Subjected to Indomethacin Treatment

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Gastric ulcer is caused by multifaceted etiological factors such as environmental and indiscriminate use of non-steroidal anti-inflammatory drugs (NSAIDs) such as Indomethacin. N-acetyl-cysteine (NAC) is an antioxidant that protects the lipid bio-membrane against oxidative stress. This study investigated the Effect of NAC on Gastric Mucosal Lesion and Haemato-Biochemical Changes in Albino Wistar Rats Subjected to indomethacin treatment. Twenty (20) adult male rats, were divided into five (5) groups; Group I (Control): Received distilled water/kg/Bdw, Group II: Indomethacin 40 mg/kg in 0.5 % carboxymethylcellulose (Ulcer group), Group III: Received 2.5 ml/kg of 0.5% CMC, Group IV: Received NAC 500 mg/kg/Bdw orally + Indomethacin (500 mg/kg), Group V: Received Ranitidine 50 mg/kg/Bdw + Indomethacin (40 mg/kg). All treatment lasted for 7 days. Three hours after last treatment, rats were humanely sacrificed. The stomach and blood samples were collected for physical and biochemical analysis. Data was analysed using ANOVA and $p < 0.05$ was considered significant. The P index of NAC in indomethacin induced ulcer is found to be 75 %. A significant increase ($p < 0.05$) in final body weight was observed in Indomethacin group, when compared to the control, CMC and Ranitidine + Indomethacin groups. A significant ($p < 0.05$) increase in INOS concentration was observed in all treatment group, when compared to the control. In conclusion, we surmise that acute administration of Indomethacin increased body weight of rats, which was decreased by CMC and Ranitidine treatments, while NAC treatment failed to improve haemato-biochemical changes in adult Wister rats.

Evaluation of Chronic Shisha Smoke Inhalation on Some Long-Term Memory Assessment in Adult Male Mice

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Shisha is a flavoured tobacco designed to be smoked in a water-pipe. There is paucity of information on the effects of *Shisha* smoke on the different forms of long-term memory. The aim of the study was to evaluate the effect of *Shisha* smoke inhalation on some long-term memory models in adult male mice. Twenty male mice were divided into 4 groups of five mice each. Group I (control): fresh air; group II: exposed to bonged *Shisha*; group III: exposed to unbonged *Shisha*; group IV: exposed to activated charcoal smoke only. Each group was exposed for thirty minutes daily for seven weeks. Long-term memory was assessed using elevated plus maze (EPM), novel object recognition test (NORT) and Barnes maze (BM). Bonged Shisha significant decrease (0.03) percentage preference when

compared to control in NORT. There was a significant (0.02) increase in number of entries to incorrect holes in the bonged *Shisha* group (7.80 ± 0.86) when compared with control (5.20 ± 0.86) in BM, and there was statistically significant (0.01) decrease in acetycholinesterase level activity in the bonged *Shisha* group (62.21 ± 1.22) when compared with control (79.37 ± 2.39). There was no statistically significant difference in anxiety related spatial memory in EPM when compared with the control. The outcomes of this study suggest that bonged *Shisha* smoke may be neurotoxic to the brain as a result of combined effect of various toxicants emanating from different *Shisha* smoke constituents used in the set-up that may lead to potential memory impairment.

Effects of acute and chronic citric acid ingestion on serum malodialdehyde (MDA), lipid profile and haematological parameters of adult male mice

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Citric acid (DanTsami) is a flavoring agent and preservative which is widely used to give sour taste to food and soft drinks. Over the years, numerous studies have been conducted into possible links between soft drink intake and medical problems, the results of which however remain highly contested. Eighteen (18) adult male Wister rats were randomly divided into three groups of six (6) animals each; Control group, acute treatment group (ATG) and chronic treatment group (CTG). ATG and CTG were administered 10mg/kg body weight of citric acid for one week and four weeks respectively. The data collected was analysed using SPSS Version 23. Our study revealed significant decrease in MDA, Total cholesterol, HDL and LDL in both ATG and CTG treatment groups compared with the control group. The result shows statistical significant decrease in MCH, and MCHC and significant increase in platelet count. Citric acid has both hypolipidemic and anti-oxidant effects on the body.

Oral Acute Toxicity Studies on Stem Bark Extract of *Bombax Costatum* on Wistar Albino Rats

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Bombax costatum is mostly found in grassland areas of West Africa. In Nigeria and other countries, it is usually consumed as food or for the treatment of different ailments such as epileptic seizures (Oyen, 2011) and wound healing (Oyen, 2011). Although *Bombax costatum* is frequently consumed as food or as traditional medicine, there is dearth of data on the toxicological effect of the plant and thus the need for this studies. The stem bark of *Bombax costatum* was collected from Jere LGA, Borno State and extracted using three different solvents; chloroform, ethanol and n-Hexane. The up-and-down procedure as explained by the Organization for Economic Co-operation and Development (OECD, 2008) guideline 425 was employed to determine the acute oral toxicity profile of *Bombax costatum* stem bark extracts. Twelve rats were divided into 4 groups (n=3). Group 1 was administered with distilled water, Group 2 5000mg/kg of chloroform extract, Group 3 5000mg/kg of ethanolic extract and Group 4 5000mg/kg of n-Hexane extract of *Bombax costatum* respectively. All administrations were done orally once and the rats were monitored for 14 days for any sign of toxicity and euthanized on day 15. Blood samples was collected and evaluated for biochemical and hematological parameters. No mortality was recorded, though mild weakness and lack of appetite was observed in the first hour of administration. No statistically significant differences was observed in the serum concentration of sodium, potassium, chloride, creatinine and hematological parameters among all the groups of rats when compared to the control. There is also no statistically significant difference in concentration of liver enzymes. However, a statistically significant decrease in the levels of bicarbonate and increases in the levels of urea was observed in chloroform extract treated group when compared to the control group of rats. There is also increase in urea concentration in n-Hexane extract treated rats compared with the control rats while the concentration of total bilirubin shows a statistically significant decrease in the chloroform and n-Hexane extract treated rats compared with the control. This study shows that chloroform, ethanol and n-Hexane extracts of *Bombax costatum* have high degree of safety and the LD_{50} is greater than 5000mg/kg body weight.

Effect of Methanol Extract of Goron Tula (*Azanza Garckeana*) Fruit Pulp on Some Neurobehavioural Assessment in Male Wistar Rats

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GORON TULA (*Azanza garckeana*) is an edible fruit used as a fertility enhancer contains phenol, alkaloid, saponin, ethylacetate, flavonoid, tannin. *A. garckeana* possesses high mineral content. The study evaluated the effect of methanol extract of *A. garckeana* fruit pulp on some neurobehavioural assessment in male Wistar rats. A total of twenty adult Wistar rats divided into four groups (n=5): Group I (Control); 10% tween 80 only; group II: *A. garckeana* 300 mg only; group III: *A. garckeana* 600 mg only; group IV: *A. garckeana* 1200 mg only. At the end 21th day (3 weeks), neurobehavioural assessment were performed. Data obtained were analyzed using Graphpad prism 5.03 for windows using ANOVA followed by tukey's *post-hoc* test. Values of $p < 0.05$ were considered statistically significant. *A. garckeana* (300 mg/kg) significantly ($p < 0.05$) improved motor endurance and significantly ($p < 0.05$) alleviated

anxiety-like behaviour in male Wistar rats when compared to control group. A significant ($p < 0.05$) improvement in learning acquisition was observed in *A. garckeana* (1200 mg/kg) when compared to control group. The finding in this present study concludes that *A. garckeana* improves motor endurance, learning acquisition and alleviates anxiety-like behaviour in adult male Wistar rats.

Antioxidant Effects of Fermented Ginger Rhizome in High Fat Diet Induced Type 2 Diabetes in Rabbits

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Type 2 diabetes is one of the most distressful metabolic disease in the world, its onset and advancement is strongly associated with oxidative stress among other clinical indicators. The aim of this work is to evaluate the antioxidant effects of fermented ginger supplementation in high fat diet induced type 2 diabetes in rabbits. Twenty (15) male rabbits (5 weeks of age) divided into four groups (n=5) were used; Group I (Normal control) was treated with standard animal feed (SAF). Group II and III comprises of diabetic animal model (DAM) groups treated as follows: Group II; treated with SAF only, Group III; treated with SAF + fermented ginger (12.5%) supplements. High fat diet (SAF = 69% + Cholesterol = 1% + Ground nut meal = 20% + ground nut oil = 10%) was fed to rabbits for eleven weeks to ascertain diabetic animal model (DAM), Thereafter experimental treatment protocol last for six weeks. At completion of the treatments, animals were sacrifice and serum was used for laboratory assessments of superoxide dismutase (SOD), catalase (CAT) and malondialdehyde (MDA) concentrations, data obtained were statistically analyzed. The results revealed a significant increase in catalase activity and a decreased MDA concentration in the supplement treated group when compared to that of group II. This results indicate a suppressed lipidperoxidation activity and a triggered antioxidant status. This experiment strongly revealed antioxidant-like activity of the supplement, this could be attributed to secondary metabolites of certain phytochemicals such as phenolic, saponins, trypsin and flavonoids among other bioactive compounds found in the supplement as revealed in the results of its preliminary phytochemical screening. Further work to validate these effects could facilitate the use of the supplement as a composite in formulating diet for type 2 diabetic patients.