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Effects of Sub-chronic Sodium Metabisulphite Exposure on the Hippocampus and Prefrontal Cortex in Wistar Rats: A Cognitive, Neurochemical and Histological Study

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Sodium metabisulphite is a commonly used food preservative. Although sodium metabisulphite is generally considered safe, some concerns have been raised about its potential effects on some brain activities including memory. The study aimed to investigate the possible impact of sub-chronic exposure to sodium metabisulphite on the hippocampus and prefrontal cortex in Wistar rats. A total of 24 adolescent female Wistar rats were randomly divided into four groups (6 rats each) as follows: Group 1 (control) was administered 0.2 ml of normal saline; Group 2 was administered 100 mg/kg of sodium metabisulphite (NaMBS); Group 3 was administered 300 mg/kg of NaMBS; Group 4 was administered 500 mg/kg of sodium metabisulphite. The route of administration was oral and administration lasted for 28 days. After completing the administration phase, Y-maze and open field tests were conducted. Subsequently, the rats were euthanized, and tissue samples from the prefrontal cortex and hippocampus were collected for biochemical assays, specifically measuring malondialdehyde (MDA) and acetylcholinesterase (AChE) levels, as well as histological stains such as hematoxylin and eosin, cresyl fast violet, glial fibrillary acidic protein. A neuronal count was done.

A one-way ANOVA with Tukey's multiple comparison test was employed to analyze the data. The cognitive function and anxiety activity levels of rats in the treated and control groups appeared to be the same ($p>0.05$). Furthermore, there was no discernible impact of sub-chronic exposure to sodium metabisulphite on the hippocampus and prefrontal cortex. The level of immunoreactivity was the same in all the groups. Also, levels of MDA and AChE were not different ($p>0.05$) when comparisons were made between treated and control groups. Based on the general outcome of the study, sub-chronic exposure to sodium metabisulphite does not significantly induce a neurotoxic effect on the hippocampus and prefrontal cortex in Wistar rats.

Keywords: sodium metabisulphite, preservative, neurotoxic, hippocampus, prefrontal cortex, memory

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Comparative Therapeutic Effects of Ginseng Root Extracts and Doxorubicin on Nephrotoxicity Induced by 7,12-dimethylbenz(A)anthracene in Wistar Rat Model

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The use of doxorubicin in the treatment of cancers has been an effective form of cancer chemotherapy. However, the chemotherapeutic drug has presented various organ-specific side effects that make it toxic. The toxicity of doxorubicin has been examined in major organs such as the heart, liver, and kidneys. Doxorubicin-induced kidney impairment is a serious problem in cancer treatment. However, medicinal plants such as ginseng represent a rich source of cancer drugs and have been used as natural remedies in the treatment of drug-induced toxicities. This study was carried out to investigate the effects of ginseng (GIN) and doxorubicin (DOX) on nephrotoxicity induced by 7, 12 Dimethybenz(a)anthracene (DMBA) in adult Wistar rats. Twenty-five Wistar rats weighing between 150 and 180 g were divided into five groups (n=5).

Group A was designated as control (received physiological saline and feed only), Group B was induced with 50mg/kg of 7,12-Dimethylbenz(a)anthracene and post-treated with 50mg/kg of Ginseng only, Group C was induced with 50 mg/kg of 7,12-dimethylbenz(a)anthracene and post-treated with 25mg/kg of Doxorubicin only, Group D was induced with 50 mg/kg of 7,12-Dimethylbenz(a)anthracene and post-treated with 25mg/kg of Doxorubicin and 50 mg/kg of Ginseng while Group E received 50 mg/kg of 7,12 Dimethyl Benz(a)Anthracene only. Post-treatment was done orally for 28 days, while DMBA was induced intramuscularly for 3 days. Results from this revealed a highly significant increase ($p<0.001$) in serum creatinine and a decrease in serum albumin concentration in the DMBA-only treated group, while only a slight significant increase ($p<0.05$) and decrease were observed in serum creatinine and albumin concentration, respectively, in group C. No significant difference among groups A, B, and D. Histologically, degeneration of renal tissue was observed in groups C and E, while in groups post-treated with Ginseng, the effects of DMBA were attenuated. Ginseng is a better therapy than doxorubicin in treating nephrotoxicity induced by DMBA.

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Evaluation of the Therapeutic Effects of *Moringa oleifera* Seed Oil on Cadmium and Herbal Alcoholic Beverage–induced Prefrontal Cortex Damage in Wistar Rats

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The use of *Moringa oleifera* seed oil in the prevention of neurodegenerative diseases is an increasing trend. Cadmium is one of the most toxic environmental pollutants causing many known damage to the brain, the consumption of herbal alcoholic beverages is known to cause neurodegeneration. This study aimed to investigate the ameliorative effects of *Moringa oleifera* seed oil on cadmium and herbal alcoholic beverage-induced damage to the frontal cortex of Wistar rats. Eighty Wistar rats were divided into eight groups of 10 rats each. Group A served as a control which received 2.5 mg/kgbw phosphate buffer intra-peritoneally, while group F served as a *Moringa*-treated control and received oral administration of 2.0 mg/kgbw *Moringa oleifera* oil. Groups B_1, B_2, D, and E were injected intra-peritoneally with a 3.5 mg/kgbw $CdSO_4.8H_2O$ single dose.

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Groups C_1, C_2, and D received oral administration of 0.5 ml Herbal Alcoholic Beverage (HAB), and groups B_2, and E were administered orally with 2.0 mg/kgbw *Moringa oleifera* oil for four weeks followed by sacrifice. Quantitative enzymes and biochemical antioxidant markers showed that cadmium and HAB administration caused a significant increase in acetylcholinesterase, SDH, catalase, glutathione peroxidase, and malondialdehyde levels and a decrease in superoxide dismutase levels. Conversely, there were significant decreases in acetylcholinesterase, SDH, catalase, glutathione peroxidase, and malondialdehyde levels and increased superoxide dismutase levels upon administration of *Moringa oleifera* oil. *Moringa oleifera* seed oil has natural antioxidant constituents that ameliorate the damage caused by Cadmium and HAB.

Keywords: Cadmium, herbal alcoholic beverages, *Moringa oleifera* seed, frontal cortex

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Analytical Study of Ancestral Relationship between Ikwerre, Bini, and Igbo Ethnic Groups Using Digit Ratio (2D:4D)

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This study investigated gender variation in digit ratios of the Bini ethnic group. The study had an analytical cross-sectional design with the volunteers' age ranging from 18-60 years. For this study, an individual was considered a Nigerian of a particular ethnic group if the parents and four grandparents were of the same ethnic group. A purposive sampling method was used for the study—the selection and collection of required parameters relied on the informed consent of volunteers. A total of 1,200 subjects (Ikwerre 400, Bini 400, Igbo 400) were recruited for the study. The fingerprints were obtained using a print scanner (HP G3110 Photo scanner). The mean digit ratio across the three ethnic groups indicated that the Ikwerre had the following on the left 0.99±0.03; Bini 0.98±0.05 while the Igbos had 0.88±0.02. On the right hand, the mean digit ratio showed that the Ikwerre had 0.98±0.04; Bini 0.98±0.04 while the Igbos had 0.87±0.04. The Ikwerre ethnic group was shown to have a digit ratio closer to the Bini ethnic group than the Igbos and there was no statistical significance ($p>0.05$) in the comparison of the digit ratio between Bini and Ikwerre ethnic groups. There was statistical significance ($p<0.05$) in the comparison of the digit ratio between the Igbos and Ikwerres. The mean of the digit ratios for the Bini people is closer to that of the Ikwerre people than the Igbos. Statistical comparison of the ethnic groups showed that the difference between the Ikwerre and Bini people was not significant meaning that they possibly have an ancestral relationship, whereas that of the Igbos and Ikwerre people was statistically significant showing that they have a reasonable difference which ultimately may translate to them not having an ancestral relationship.

Keywords: Ancestry, Ikwerre, Bini, Igbo, Digit Ratio

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Anthropometric Study of Craniofacial Dimensions in Skeletonized Skulls of Nigerian Origin

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Anthropometric characteristics have a direct relationship with the sex, shape, and form of an individual and these factors are intimately linked with each other and are manifestations of the internal structure and tissue components. The study aimed to investigate the anthropometry of craniofacial parameters of skeletonized skulls of Nigerian origin and to verify the presence of sexual dimorphism among them. A total of 64 specimens (31 males and 33 females) were used in the study. Craniofacial measurements were taken which include; Maximum cranial length (MCL), Maximum cranial breadth (MCB), Total cranial height (TCH), Anterior Facial height (AFH), Bizygomatic breadth (BB), Nasal height (NH) Nasal Width (NW), Orbital breadth (OB), and Orbital height (OH). Cephalic Index (CI), Nasal Index (NI), Facial Index (FI), and Orbital Index (OI) were determined. The values were analyzed using the statistical package for social sciences (SPSS) version 25 software for Microsoft® Windows.

The mean ± SD values craniofacial measurements of MCL, MCB, AFH, BB, NH, NW, TCH, OH, OB, NI, OI, CI, and FI,

for males, were

19.24±1.01, 14.16±166, 13.25±1.83, 11.40±0.90, 5.07±0.33, 2.75±0.43, 21.90±1.01, 3.67±0.25, 4.23±0.31, 54.67±10.19, 84.82±7.34, 72.5±7.26, 86.83±6.92

respectively; while the female values were

17.84±0.49, 14.20±0.19, 12.22±0.75, 10.78±1.21, 4.80±0.14, 2.56±0.20, 21.12±0.77, 3.44±0.14, 3.89±0.16, 53.44±4.55, 88.35±3.32, 79.64±2.25, 88.07±6.42 respectively. Higher mean values were observed for male subjects in the following variables as compared to the female subjects. The results suggest the presence of statistically significant sexual dimorphism between the male and female variables in this study sample, with males being significantly larger for all measurements.

Keywords: craniofacial dimensions, skeletonized skulls, sexual dimorphism, Nigerian origin

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Effect of *Chrysophyllum albidum* in Streptozotocin-induced Gestational Diabetic Rats

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The purpose of this study was to determine the effect of ethanolic leaf extract of *Chrysophyllum albidum*on on maternal outcomes in pregnant rats with diabetes. Thirty female rats weighing between 140-160 g were mated with mature male rats and divided into 6 groups. The coupling time was recorded as gestation day GD0. On the 5th day of gestation, diabetes was induced using 60 mg/kg streptozotocin (STZ). The blood glucose level was checked 72 hours later. Group I (diabetic control); Groups II, III, and IV received orally, daily doses of 250, 500, and 1000 mg/kgbw of ethanolic leaf extract of *Chrysophyllum albidum* respectively from GD8-19 of gestation, while Group V had 0.3 IU kg/bw of humulin. Group VI was pregnant control. On day GD19, samples of blood were withdrawn from the retro-orbital sinus under light ether anesthesia for biochemical analysis. Blood glucose levels were improved significantly ($P < 0.05$) on consumption of the extract, with the effect being dose-dependent. All the extract groups had an increase in superoxide dismutase and a decrease in malondialdehyde levels than the diabetic pregnant group after treatment. There was a decrease in low-density lipoprotein, total cholesterol, and triglycerides and an increase in high-density lipoprotein in the treated groups. There was also a decrease in alkaline phosphatase, aspartate transaminase, and alanine transaminase. There was a significant increase ($P< 0.05$) in albumin and total protein, and a decrease in creatinine and bilirubin concentrations in the extract-treated groups when compared to the diabetic pregnant group. Treatment with *C. albidum* extract did not interfere with RBC, lymphocytes, and neutrophil levels while WBC and monocytes decreased. However, an increase in PVC and HB was observed. *C. albidum* appears to be safe for use during pregnancy with probably no toxic effects on the biochemical parameters of the rats.

Keywords: *Chrysophyllum albidum*; medicinal plant, pregnancy; antioxidant; diabetes

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Administration of Red Wine Modulates Brewed Beer Alterations in Rat Brain and Serum Electrolyte Parameters

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There is an existing controversy over the role of alcoholic substances in the health system. However, a surge in the availability and marketing of various brands of alcoholic products has been accompanied by a high rate of consumption. The study aimed to determine the effects of regular intake of beer and red wine on the microstructure of the cerebral cortex and hippocampus, brain weight, and sodium-potassium ions in male experimental models. Twenty albino Wistar rats were assigned to four groups; Group A was regarded as the control and given distilled water; Group B was administered 5 mL/kg of brewed beer (alcohol 5% volume); Group C received 5 ml/kg of red wine (alcohol 12% volume); while Group D administered 5 ml/kg of beer and immediately followed with 5 ml/kg of red wine. Treatments via gavage lasted 15 days, and subjects were euthanized on the 16th day. The cranial cavity was exposed, brains were collected and weighed with an electronic scale afterward dissected to excise tissue samples from the cerebral cortex and hippocampus, samples were immediately fixed in 10% formalin for histological investigation, while sections were stained with hematoxylin and eosin.

Blood samples were also collected through cardiac puncture and centrifuged to obtain serum used for the assessment of the electrolyte parameter. Graph pad prism software was used with analysis of variance as a statistical tool to determine differences in the weight of the brain and concentration of serum electrolytes. Evaluation of group D samples demonstrates red wine significantly mitigates intracerebral hemorrhage, loss of pyramidal neurons, and curbs brain weight loss, as well as counteract alterations in Na^+/K^+ ions when compared to samples administered brewed beer only. The findings indicate that red wine though being an alcoholic beverage, could modulate ethyl alcohol-induced toxicity possibly due to anti-oxidant compounds present in it.

Keywords: red wine, counteract, brewed beer, ethanol, distortion

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Buccholzia coriacea Mitigates Cadmium Chloride-induced Toxicity in the Male Gonad of Wistar Rats

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Buchholzia coriacea commonly called wonderful kola is the seed of a forest tree widely distributed in West Africa and its environs. It has various medicinal benefits. It is called Uke (Ibo), Uworo (Yoruba), Owi (Edo), and Owu. It is Antimicrobial, anti-inflammatory, and antimalarial, and corrects sexual impotency in males. Literature has conflicting reports on the activity of extracts of wonderful kola on the male reproductive system. Hence this Study aimed to investigate the action of ethanolic extract of Buchholzia coriacea on the male gonad and semen parameters in Wistar rats. Seeds of wonderful kola were obtained from Watts market in Calabar and identified by a taxonomist. It was extracted by cold extraction using Ethanol. Twenty adult male Wistar rats obtained from the animal house of the faculty of Basic Medical Sciences were divided into four groups A-D of five rats each. They were fed rats' pellets and given water freely. Groups A, B, C, and D received distilled water, 5 mg/kgw of cadmium chloride, 1000 mg/kg extract + 5 mg/kg cadmium chloride, and 1000 mg/kgw of extract respectively. Administration was orally by orogastric tube once daily for eight weeks. Cadmium chloride distorted testicular cytology while administration of extract reinvigorated the testis and increased the values of semen parameters. Effects attributed to phytochemical constituents. *Bulcchozia coriacea* has an ameliorating effect on cadmium chloride-induced testicular toxicity.

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Flavonoids fractions of *Adansonia digitata* L. fruits protect adult Wistar rats from mercury chloride-induced hepatorenal toxicity: histopathological and biochemical studies

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Mercury chloride is a common heavy metal found in the environment, and it endangers both the environment and living organisms. The study aimed to show whether flavonoid fractions of *Adansonia digitata* (FAD) could protect rats from $HgCl_2$-induced hepatorenal toxicity. Thirty (30) rats were randomly assigned to one of six groups. The first group was given no $HgCl_2$ as a control, while the second group was given a single daily dose of $HgCl_2$ (0.5 mg/kg). The treatment groups (III, IV, and V) received a single daily dose of $HgCl_2$ (0.5 mg/kg) along with 25 mg/kg, 50 mg/kg, and 75 mg/kg of FAD, respectively. $HgCl_2$ (0.5 mg/kg) was given to Group VI, along with ascorbic acid (200 mg/kg) as a standard control. After the administration, the blood serum of the experimental rats was used for biochemical analysis. The liver and kidney samples were obtained for histological examination.

Aspartate transferase (AST), alkaline phosphatase (ALP), alanine transferase (ALT), urea, creatinine, and malondialdehyde levels all increased in rats given $HgCl_2$ (group II), with decreased superoxide dismutase (SOD), catalase, and reduced glutathione (GSH) levels ($p < 0.001$), whereas FAD was able to prevent the upsurge of ALT, AST, ALP, creatinine, Urea, and malondialdehyde. It also increased SOD, catalase, and GSH levels in the body. FAD protected the glomerulus from degeneration and prevented histological liver steatosis.

Keywords: flavonoids; mercury chloride; ascorbic acid; liver; kidney

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Camel Milk Ameliorates Diabetes in Pigs by Preventing Oxidative Stress, and Inflammation and Enhancing Beta Cell Function.

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Diabetes mellitus is a common endocrine disorder characterized by the loss of pancreatic β-cell function, which has prompted researchers to look for potential replacement sources. In diabetic patients, hyperglycemia is a significant issue that, if not addressed, can lead to complications such as neuropathy, inflammation, oxidative stress, severe depletion of pancreatic β-cell function, and nephropathy. The purpose of the study was to determine how camel milk affects hyperglycemia, beta-cell function, oxidative stress, and inflammatory markers in type 2 diabetic pigs. Twenty-five (25) pigs were separated into five (5) groups of five pigs each, with five (5) non-diabetic pigs in group 1 and twenty (20) diabetic pigs in groups 2-5. Groups 1 and 2 received distilled water as the standard control and diabetic control groups, respectively, while Groups 3 and 4 received camel milk at 250 mL/day and 500 mL/day, respectively, and Group 5 received metformin at 500 mg/day. The experiment lasted ten weeks. At the end of the ten weeks, all the pigs were euthanized. Treatments with camel milk substantially enhanced glucose fasting levels by reducing hyperglycemia in diabetic pigs, significant level at ($p < 0.05$). When pigs given camel milk were compared with untreated diabetic pigs, there was a substantial rise ($p < 0.05$) in superoxide dismutase, catalase, and reduced glutathione levels. Also, camel milk substantially lowered the levels of interleukin 1β and tumor necrosis factor-alpha in diabetic pig serum. Similarly, immunohistochemical analysis of islet cells revealed an increase in insulin production, implying improved glycemic control and the eventual commitment of glucose to glycolysis.

Keywords: hyperglycemia, camel milk, pancreas, oxidative stress, inflammatory markers

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Cross-Sectional Study of Minutiae Patterns in Bin Ethnic Group of Southern Nigeria

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This study was aimed at evaluating the minutiae patterns in of Bini ethnic group of Southern Nigeria. The study was descriptive and cross-sectional with the volunteers' ages ranging from 18-60 years. For this study, an individual was considered a Nigerian of a particular ethnic group if the parents and four grandparents were of the same ethnic group. A purposive sampling method was used for the study. A total of 400 subjects (Males 225, Females 175) were recruited for the study. The fingerprints were obtained using a print scanner (HP G3110 Photo scanner). Distribution of total digital patterns in Bini showed that on the left hand, they had the following: Ridge Ending 4399 (17.1%), Ridge Crossing 2335 (9.0%), Bridge 1979 (7.7%), Lake 2077 (8.1%), Bifurcation 5283(20.5%), Double Bifurcation 2021 (7.8%), Dot 2015 (7.8%), Trifurcation 1938(7.5%), Opposed Bifurcation 2029 (7.9%), Island 1723 (6.6%), while on the right hand, the distributions were: Ridge Ending 4415 (17.2%), Ridge Crossing 2323 (9.0%), Bridge 1999(7.7%), Lake 2065(8.0%), Bifurcation 5303(20.6%), Double Bifurcation 2005 (7.7%), Dot 2025 (7.8%), Trifurcation 1915 (7.4%), Opposed Bifurcation 2044 (7.9%), Island 1709 (6.7%).

The descriptive cross-sectional study of minutiae pattern has revealed the following trend of patterns: Bifurcation 5283 (20.5%) > Ridge ending 4399(17.1%) > Ridge crossing 2335(9.0%) on the left whereas on the right hand: Bifurcation 5303(20.6%) > Ridge ending 4415 (17.2%) > Ridge crossing 2323(9.0%). This trend is in line with the stated trends for Africa, this study provides baseline data on level 2 patterns or minutiae for the Bini people of Southern Nigeria.

Keywords: Bini, Southern Nigeria, bifurcation, ridge ending, ridge crossing

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Determination of Level 2 Dermatoglyphic Details and the Paul's Index in Uterine Leiomyoma

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Uterine fibroids, also known as uterine leiomyomas or fibroids, are benign smooth muscle tumors of the uterus. Most women have no symptoms while others may have painful or heavy periods. Dermatoglyphics is referred to as the study of the friction ridge formation that appears on the palms of the hands and soles of the feet. There have been works done by different researchers on dermatoglyphics in the field of medicine which have helped in the detection of diseases like breast cancer, anemia, etc. But not much has been done at level 2 dermatoglyphics which has created a gap in the literature on those areas, especially uterine leiomyoma. This study was aimed at determining the level 2 dermatoglyphic digital patterns in Uterine Leiomyoma. The study was non-experimental and analytical. One hundred subjects were selected by simple random sampling. Chi-square test was done using the SPSS twenty version. The result of the study has shown clearly that the most distributed level-2 pattern in both categories is the bifurcation and, ridge crossing is the least distributed pattern in both categories. In uterine leiomyoma, the distribution of bifurcation was higher than in the control group. The higher distribution of bifurcations in the uterine leiomyoma could be attributed to the genetic difference in both categories. The difference between the uterine leiomyoma subjects and the control subjects (normal) was not significant statistically in the pattern distribution, but there was a marked difference that can be used as a guide in the diagnosis of uterine leiomyoma condition.

Keywords: uterine leiomyoma, trifurcation, bifurcation, ridge ending, dot

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Cymbopogon citratus decreases Epithelia Cells and Increases Epithelial Height in Rat Prostate

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Cymbopogon citratus (*C. citratus*) has an inhibitory action on cell inflammation, oxidation, and mutation. This study, assess the protective effect of *C. citratus* on testosterone–induced histomorphology and morphometrical changes in the prostate of Wistar rats. Thirty-six adult male rats were divided at random into six groups (n=6). Group 1 had only standard nutrition and water. Group 2- 6 received 10mg/kg body weight of intramuscular (IM) testosterone propionate once daily (OD), throughout the period of the drug administration. Group 3 - 6, in addition, received 30mg/kg, 100mg/kg, and 300mg/kg body weight of aqueous extract of C. citratus and 15mg/kg body weight of finasteride per oral (PO), OD respectively. On the 32nd day of the experiment, the rats were sacrificed via cervical neck dislocation. The prostates were harvested preserved and processed for histological studies. The study, showed normal histoarchitecture in prostatic tissue indicating normal stromal and epithelial lining in groups 1 and 3- 6 with serious disruption in prostatic morphology in group 2. Also, there was a significant decrease ($P<0.5$) in total epithelial cells in group 2 when compared to group 1 and groups 3 – 6 and, a significant increase ($P>0.5$) in epithelial height in group 2 when compared to the other groups. The research revealed the protective effect of *C. citratus* on testosterone-induced histomorphology and morphometrical damage on the prostate of Wistar rats.

Keywords*: Cymbopogon citratus*; prostate; epithelia cells; epithelial height

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The Distribution of Mid-Digital Hair Among the Idoma People of Benue State, Nigeria

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Hair has accompanied human development since ancient times as a symbol of power, dominance, and strength. It has been perceived as a thing of beauty and a tool for sexual communication. Over the years, anthropologists have studied body hair distribution, particularly phalangeal hair, this is because it shows variation concerning race, nationality, and ethnic groups. Clinicians have also shown great interest in the study of bodily hairs due to their many useful biological functions, including the dispersion of sweat gland products. There are few reports of the distribution of mid-digital hair among some tribes in Nigeria but there is a paucity of data among the Idoma tribe of Benue State. Hence, this study aimed to investigate and document the frequency of distribution of mid-digital hair among the Idoma tribe of Benue State. The study was community-based, descriptive, and cross-sectional with a sample size of 401. Data was collected using a closed-ended questionnaire that was administered by an interviewer following an examination of the mid-digital hair.

Mid-digital hair was present in 113 (28.2%) of the participants and absent in 288(71.8%) of the participants. The only significant socio-demographic characteristic among participants was the educational level with 7.754(0.051). The study indicated that less than one-third of the participants had mid-digital hair. Furthermore, the mid-digital hair distribution was sexually dimorphic, as it was more prevalent among the males than the females (ratio of 8: 6). The reason for the higher distribution in the males than females could be attributed to the hormonal difference in both genders.

Keywords: hair distribution, mid-digital hair, Idoma, Nigeria

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Predicting the Post Mortem Interval of Hanged and Surface Carrions in a Nigerian Savannah: A comparative study

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Forensic taphonomy is the science that studies the decomposition of biological remains to reconstruct events surrounding death. This estimation is based on the predictable phases of decomposition, including discoloration, bloating, liquefaction, and skeletonization. This study aimed to predict the post-mortem interval (PMI) of hanged and surface carrions (*sus scrofa*) in a Nigerian Savanna. Six domestic pigs weighing between 25 kg and 30 kg were separated into two groups comprising three pigs each. Three pigs were hung on tree branches at the research site while the other three pigs were placed on the soil surface. Daily periodic decomposition observations were noted and decompositional milestones were quantified using already established Total Body Scoring (TBS) systems. Daily average temperatures were recorded throughout the 30-day study period and were used to calculate Accumulated Degree Days (ADD).

There was a statistically significant difference in the decomposition rate between hanged and surface carrions. The hanged carrions decomposed faster at the initial stage reaching a TBS of 10 by the second day while the surface pigs initially decomposed at a slower rate but later sped up at about 167 ADD, reaching mummification faster than the surface carrions. Factors that were seen to drive these changes included necrophagous insects, temperature, and depositional patterns. The prediction models for estimating PMI using ADD and TBS are reliable at a 95% confidence level. The data from this study will aid Forensic Anthropologist and Law Enforcement in the estimation of the PMI in Nigeria.

Keywords: Taphonomy, ADD, PMI, TBS, Carrion

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Photogrammetric Analysis of Facial Soft Tissue Profile among Adult Indigenes of Cross River State

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The perception of facial appearance is subjective as it is influenced by various factors such as race, ethnicity, gender, culture, and age. Nigerians are categorized as a Negroid race as they possess a different facial profile compared to Caucasoid and Mongoloid individuals. Variations in facial parameters have been widely researched for different ethnic groups and races. The present study aimed to investigate and determine the normative and mean values of the facial angles among indigenes of Cross River State and inferentially analyze the obtained values for sexual dimorphism. The sample populations used for this research included 300 people who are full breed indigenes of Cross River State, comprising 150 males and 150 females. Subjects included in this study were required to be 18 to 35 years of age to minimize the effect of aging on facial dimensions. Other inclusion criteria consisted of parents and 4 grandparents of Cross River State extraction, no previous plastic reconstructive surgery of the face, no major trauma of the face, body mass index of not greater than 27, and no history of craniofacial syndrome.

The results showed that males have a higher Mean±SD (42.67±0.16) value for middle face proportion and females had a higher Mean±SD (60.61±0.27) value for lower face proportion. An independent Student's t-test was done to test the differences in the craniofacial angles between the males and the females; the females recorded statistically significant higher Mean±SD values for the nasofrontal angle and the nasomental angle (135.26±8.2, 130.22±7.1) respectively while males recorded statistically significant higher Mean±SD for the nasofacial angle and the mentocervical (33.65±5.9, 91.66±8.2) angle. The differences observed in all measured parameters were considered statistically significant at $P<0.05$.

Keywords: photogrammetry, facial soft tissue, craniofacial angles, sexual dimorphism

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Anthropological Survey of Dimple among the Idoma Tribe of Benue State, Nigeria

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Dimple is a major marking on the face when present. A dimple, also called a gelasin (from Latin gelasinus) is a small natural indentation in the skin on a part of the human body, most notably on the cheek. The presence or absence of dimples is an important anthropological feature of the human face that can be used as a means of identification on the living, for a family, group of people, and tribes. The paucity of literature on the prevalence /distribution of dimple among the Idoma people and the other tribes in Benue State informed this study. The study employed 404 participants randomly selected and examined for the presence or absence of dimple using a self-made close-ended questionnaire. The most dominant age group was 33-47 years, the most common religion was Christianity, participants who had tertiary education were more predominant, for marital status, the dominant group were married/cohabiting. The comparison of dimple distribution and the sociodemographic characteristics showed that only level of education is significantly (p=0.04) associated with dimple distribution. The survey showed that 60.3% of the indigenous tribes had dimple. The distribution of the dimple among the population showed that 59.9% had cheek dimple, while 40.1% had chin dimple. The survey shows that three in five persons had dimple in the population, one in four persons had chin dimple, and three in eight persons had cheek dimple. The result of this study could be used as a baseline data for the Idoma people.

Keywords: anthropological survey, dimple, cheek, chin, Idoma, Benue State

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Post-mortem Interval of Buried Homicides in Okuku, Nigeria

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Post-mortem interval estimation of carcasses buried in shallow graves is a grey area in Nigerian forensic investigations. Most of the investigations and court decisions on the time of death of concealed homicides are based on assumptions in Nigeria. This study investigated the post-mortem interval of buried remains in Okuku, Cross River state of Nigeria using porcine models; and also provided a model account of the pattern and timeline of decomposition of buried remains in Nigeria. Four adult domestic pigs (*Sus scrofa domestica*) were used for this study. The concept used for the research procedure was standard taphonomic procedures. The animals were sacrificed and death was confirmed when there was no heartbeat recorded by the stethoscope, and via the pupillary reflex. All the animals were buried at the same time and were buried in a manner that they had direct contact with the soil. The animals were covered with a wooden board to enable the researchers to open them up and observe the decomposition stages at intervals. Four stages of decomposition were identified within the study period which includes fresh, bloat, active decay, and advanced decay stages.

Features of bloat stage of decomposition include bloating of the animals and the release of putrid odor. The active decay stage was characterized by the absence of maggots, bone exposure, and greyish discoloration of the body. The advanced decay stage of decomposition is characterized by adipocere formation, fungi activities, and bone exposure. Buried bodies do not completely skeletonize within 168 days in a typical Nigerian Savannah region. Bloat stage started on the seventh day; the active decay stage started on the 14th day. The fresh stage of decay lasted up to 7 days; the bloat stage lasted for 14 days. The active decay stage lasted about 35 days, and the advanced decay stage started at about the 56th day and progressed till the end of the study.

Keywords: buried, clandestine, concealed, PMI, shallow graves

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Predictors of Cognitive Impairment Among Type 2 Diabetes Mellitus Patients In Katsina, North Western Nigeria

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Type 2 diabetes mellitus (T2DM) is known to increase the risk of cognitive impairment (CI). There is a dearth of research addressing the growing concern of CI among individuals with T2DM in Nigeria, specifically Katsina State. The present study identified the risk factors associated with CI among T2DM in Katsina State. This cross-sectional study randomly selected and recruited 193 participants (81 males and 112 females) earlier confirmed to have T2DM with CI who met the study inclusion criteria. Mini-mental state examination (MMSE) questionnaire was used to determine CI. The data collected include socio-demographics [age, sex, marital status, level of education (no formal/formal education) and smoking status], medical factors [duration of T2DM (DOD), presence of hypertension (HTN) and glycemic control], nutritional characteristics [normal weight (NWT) and overweight (OWT)] and adiposity characteristic [body adiposity index (BAI), waist-to-hips ratio (WC/HC), waist-to-height (WC/HT) and conicity index (C.I)]. The prevalence of CI in T2DM is 53.6%. Binary logistic regression revealed age >50 years (AOR 3.761), male gender (AOR 5.199), unmarried persons (AOR 2.018), formal education (AOR 5.199), cigarette smoking (AOR 5.122), DOD>10 years (AOR 9.458), HTN (AOR 2.595), poor glycemic control (AOR 1.361), OWT (AOR 2.116), abnormal BAI (AOR 3.076), abnormal WC/HC (AOR 4.196), abnormal WC/HT (AOR 43.441) and abnormal C.I (AOR 4.441) was significantly associated with an increased risk of CI among T2DM patients. This study has provided evidence-based information to policymakers and healthcare providers in Katsina State and other regions of Nigeria, informing the development of policies and interventions aimed at addressing the problem of CI among T2DM patients.

Keywords: cognitive impairment, Type 2 diabetes mellitus, Katsina State

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From Actual to Virtual: A Cost-Effective Pipeline for the Digitalization of Gross Anatomy Specimens Which Can Serve as Digital Assets for Use in Diverse Platforms for Anatomy Education

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The arrival of emerging technologies in this present age has necessitated a shift in the way of doing things; from an analog to a digital approach. This shift cuts across every discipline including the field of anatomy. This research seeks to leverage the recent advancements in technology to digitalize gross anatomy specimens. It also seeks to establish a cost-effective and easy procedure for the digitalization of anatomy specimens. Standard procedures are expensive hence the need for the present study. Bone specimens obtained from the Department of Anatomy Museum, CRUTECH were used for this study. The devices used were: an electric turntable, an Android mobile phone running on the Android 11 operating system, and a Creality® Enders3 3D printer. The software used were Polycam 3D® and UltimakerCura®. Photographs were taken at different angles with an Android phone and taken through a pipeline to generate 3D models that can be used as anatomically accurate digital assets. These digital anatomy assets can be used for virtual reality, augmented reality, and digital applications, as well as 3D printed for anatomy education. In this study, an Enders3 3D printer was used to print the assets for comparison with the actual specimen. The android pipeline works perfectly for the digitalization of anatomy specimens and provides an intuitive way for digitalization. The printed models showed close similarities with the actual specimen. The overall outcome of this study shows that with our handy devices and zero experience, we can digitalize anatomy models. 3D models which are very expensive can be produced in a more cost-effective way which will go a long way to aid gross anatomy education and help to solve the problem of scarcity of human specimens.

Keywords: Anatomy, digitalization, android photogrammetry, polycam 3D, anatomy education

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Technology Acceptance Model and Students' adoption of E-Learning Systems in the Post-Pandemic Era

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With the COVID-19 pandemic necessitating the utilization of e-learning as a viable teaching and learning solution in higher education, universities in Nigeria face the challenge of transitioning to this new approach while uncertain about its acceptability and sustainability. This research examines the adoption of e-learning among medical students at Enugu State University of Science and Technology using the classical Technology Acceptance Model (TAM). The TAM construct comprises four indicators: perceived usefulness (PU), perceived ease of use (PEOU), attitude toward use (ATU), and behavioral intention to use e-learning for educational sustainability (ITU). A stratified random sampling method was employed to select 300 medical students, who provided their responses through an Open Data Kit (ODK) questionnaire. The questionnaire demonstrated high internal consistency (Cronbach's $\alpha = 0.82$) and encompassed questions related to the student's perception of challenges associated with online learning implementation. Structural equation modeling (SEM) was employed to analyze the data and evaluate the students' intention to use e-learning for educational sustainability. Both PU ($\beta=0.56$, $P<0.01$) and PEOU ($\beta=0.42$, $P<0.01$) had significant direct effects on ATU. While the direct effects of PU ($\beta=0.20$, $P<0.01$) and PEOU ($\beta=0.17$, $P<0.01$) on ITU are relatively modest, they are amplified through positive ATU toward online learning ($\beta=0.59$, $P<0.01$). The most prevalent challenges identified by students are technical issues, such as insufficient infrastructure and resources. This study underscores the effectiveness of the TAM framework in elucidating medical students' inclination to adopt e-learning for educational sustainability at Enugu State University Medical College (ESUCOM). However, this emphasizes the need to address the identified challenges to ensure a smooth implementation of online learning.

Keywords: Technology Acceptance Model, e-learning, educational sustainability, student, University

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Morphometric Evaluation of the Ocular Globe: A Nigerian Retrospective Study

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The size and position of the ocular globe are important in the screening, diagnosis, and management of several ophthalmologic pathologies. The study aimed to determine the normal values of the globe diameters, position, and protrusion among adults seen at a Radiological unit in Delta State, Nigeria. Three hundred brain computed tomography (CT) (80 males and 70 females) and magnetic resonance images (MRI) (75 males and 75 females) stored in the Radiology Unit of a Teaching Hospital in Delta State, Nigeria were used to measure the ocular morphometry after the institutional ethical board approval was granted. The metric parameters were analyzed using a statistical package for social sciences version 23. The comparison of the means in the different gender, side, and age groups was conducted using the student's t-test and analysis of variance while the association between quantitative variables was probed using the Pearson's correlation test. Significance was set at $p<0.05$. On both CT and MRI groups, the globe diameters were symmetrical while asymmetry was observed in the globe protrusion and the eyeball volume calculated from MRI measurements. The ocular parameters showed significant gender differences and the CT globe diameters had a negative correlation with age. Significant positive associations between the globe diameters, position, protrusion, and inter-zygomatic line were observed. The normal reference values of the globe parameters obtained are useful to radiologists and ophthalmologists in the diagnosis, management, and follow-up of patients with different ocular conditions in the study region.

Keywords: Globe, axial length, protrusion, position, eyeball