

**ABSTRACTS OF THE
 PROCEEDINGS OF THE XXXIIIrd ANNUAL SCIENTIFIC CONFERENCE OF THE SOCIETY**
Held at the Department of Physiology, College of Medicine, University of Ibadan, Ibadan.

**ELECTROCARDIOGRAPHIC FINDINGS IN
 CHILDREN WITH SICKLE CELL DISEASE (2-
 15YEARS): AN INVESTIGATION OF PORT
 HARCOURT RESIDENTS**

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Sickle cell disease (SCD) is a genetic blood disorder affecting Africans, Hispanics, Indians and Middle Eastern descents. It affects almost all the major organs of which the heart is the most fatal and common cause of morbidity and mortality. This study aimed to obtain the electrocardiographic patterns of sicklers in the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt. It involved 118 subjects aged 2-15 years comprising of 55 SCD children and 63 non SCD age and sex matched controls. The controls were divided into group A (40 homozygote HbAA genotype) and group B (23 heterozygote HbAS genotype). Physical examination was done on all subjects to rule out the presence of co-morbidities and their height, weight, hemoglobin concentration and heart rates were measured. Electrocardiographic parameters were determined using a standard resting 12 lead electrocardiogram. The Hb concentration of the test group was significantly lower than the control group A; and control group B; ($p=0.000$). Several changes were observed in ECG patterns of sicklers compared to the control groups. Sicklers had a higher percentage of LVH, RVH, ST segment depression, ischaemic changes and axis deviation, than the control groups. The QTc interval of the sicklers was significantly higher than control group B at ($P=0.001$) but not control group A. The P axis of the sicklers was significantly lower than that of control group B ($p=0.028$); and the QRS axis of sicklers was significantly lower than that of control group A ($p=0.018$). The study shows that routine Electrocardiography can detect those SCD children prone to Arrhythmia, Ischaemic changes and sudden cardiac death.

References

- Adebayo R.A., Balogun M.O., Akinola N.O., Akintomide A.O., (2002). *Nig. J. Med.* 11: 1 45-52
 Bode-Thomas F., Ogunkunle O.O., Omotoso A.B.O. *Trop. Cardiol.* 2003;113:9-12.
 De Montalembert M, Maunoury C, Acar P, Brousse V, Sidi D, Lenoir G. (2004). *Arch. Dis. Child.* 89:359-62.

Mueller B.U., Martin K.J., Dreyer W., Bezold L.I., Mahoney D.H. (2006). *Pediatr. Blood Cancer.* 47:831-3.

**REDUCED RATE OF HEALING OF ACETIC ACID
 INDUCED COLITIS IN RATS EXPOSED TO
 CADMIUM CHLORIDE**

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Ulcerative colitis and other gastrointestinal inflammatory conditions have been linked to dietary and environmental factors. Cadmium exposure has been implicated in several pathologic conditions and colitis is known to be aggravated by chronic metal exposure. The effect of acute exposure to cadmium chloride on experimentally induced colitis was studied in five groups of male Albino Wistar rat (90-110g body weight). Group A served as control and received tap water while Group B rats were induced with colitis without any treatment. Group C and D received 100ppm for 2 weeks and 6 weeks respectively, before inducing colitis, while Group E rats received Cadmium Chloride without induction of colitis. Colitis was induced by administration of 1 ml of 4% acetic acid transrectally after animals were fasted for 12 hours. Animals were sacrificed on Days 3, 7 and 10 after colitis induction with distal 10cm colon resected. Colon was weighed for severity of inflammation and scored both macroscopically and microscopically. Malondialdehyde (MDA) was estimation in homogenized colonic tissue to access the level of lipid peroxidation. Statistical analysis was done by student t-test at $p < 0.05$. Exposure to cadmium Chloride delayed healing of ulcers induced by acetic acid as evident by relatively higher weight loss, increased colon weight and macroscopic damage scores in colonic mucosa of cadmium treated groups on days 3, 7 and 10 when compared with the control groups. Malondialdehyde levels were significantly higher in the exposed rats with higher inflammatory cell infiltration into the colon of cadmium-exposed rats when compared with the untreated groups on similar days of observation. Cadmium exposure delayed healing of acetic acid induced colitis via increased oxidative stress.

References

- Agency for Toxic Substances and Disease Registry (ATSDR) (2012): Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Afolabi O.K, Oyewo E.B, Adekunle A.S, Adedosu O.T, Adedeji A.L (2012): *EXCLI J* (11): 677–687.

ASSESSMENT OF LIPID PANEL IN FEMALE FACTOR INFERTILITY

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Assessment of lipoprotein levels is of much diagnostic importance and also one among the main criteria for establishing female factor infertility in diabetic partners. However, the influence of abnormal lipoprotein metabolism on female infertility has not been thoroughly explored. This study aimed at investigating the importance of lipid levels in female factor infertility. The lipid profile levels in 20 non-diabetic women presenting with both primary and secondary infertility between the ages of 20 and 35 years were estimated. Control samples were from volunteer mothers with at least parity of two live children. Lipid panel and hormonal levels were estimated by standard procedure. Standard statistical methods were used and level of significance taken at $p \leq 0.05$. Triglyceride mean value of 111.60 ± 2.59 and high density lipoprotein cholesterol HDL-C of 63.2 ± 3.74 in secondary infertile women showed a significant increase when compared to their control counterpart with 95.6 ± 2.74 and 34.50 ± 3.83 respectively. No difference in lipid profile was observed between women presenting with primary infertility and control. Assessment of the gonadal hormones however showed significant decrease in estradiol level in primary infertility while a significant decrease in progesterone level was observed in secondary infertility. Triglyceride and HDL-C levels may contribute a considerable percentage to infertility especially secondary infertility and should be considered when evaluating women presenting with infertility.

EFFECT OF QUASSIN ON EPIDIDYMAL *HongrESI* PROTEIN EXPRESSION

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Quassin, the major bioactive fractionate of *Quassia amara* plant has been reported to have reproductive toxic effect on rat epididymis, causing a decline in successful capacitation of sperm cells and a decline in progression to the acrosome reacted state. *HongrESI*, a protein specifically expressed in the caudal epididymis has been reported to critically regulate sperm capacitation and the acrosome reaction. Effect of quassin on epididymal

HongrESI protein expression was therefore observed in this study. Quassin (0.1 and 2 mg/kg) and distilled water (0.5ml) were administered by gavage (p.o) daily for 6 weeks to male rats (180-200g, n=5) and then sacrificed. Female rats were administered to the males after 5 weeks for cohabitation for 7 days. Mating ratio was 1:2, Male: Female. Prior to sacrifice, male rats were sedated with a combination of ketamine (100mg/kg bw) and xylazine (10mg/kg bw). Thereafter, transcardial perfusion with saline and then phosphate buffered formaline was done so as to fix tissues *in vivo*. The epididymis and testes was then carefully dissected and fixed in phosphate buffered formaline. Paraffin embedded tissue slides were then prepared and expression pattern of *HongrESI* was observed using immunohistochemistry technique. Slides were examined microscopically and intensity of tissue cell staining observed. Epididymal *HongrESI* protein expression was repressed by treatment with quassin and a dose dependent effect was observed. *HongrESI* was not expressed in the testes. Fertility was zero in 80% of treated rats, and a reduction in morphometric variables was observed in male offspring of the treated rats when compared with offspring of the control.

Antifertility action of quassin may be mediated by its action in suppressing epididymal protein *HongrESI* expression, and a consequent decline in number of spermatozoa that successfully undergo sperm capacitation and acrosome reaction.

References

- Obembe O.O. and Raji Y. (2012). *Academic Journal of Plant Sciences*, 5 (3): 60-69.
Zhou Y., Zheng M., Shi Q., Zhang L., Zhen W., Chen W. and Zhang Y.L. (2008). *PLoS ONE* 3(12): e4106.

EFFECT OF COMBINED ORAL CONTRACEPTIVE ON PROTEIN C AND S AND ANTHROMBIN III IN FEMALE WISTAR RATS

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Use of combined oral contraceptives (COC) is associated with a significant risk of thrombosis. The mechanisms of this are not clearly defined. Protein C and S and antithrombin III are components of physiologically important anticoagulant system. This study investigated whether changes in antithrombin III and protein C and S occurs after COC administration in female wistar rats. 80 female wistar rats aged 12 weeks weighing 180 – 250g were divided into four groups of 20 rat each. Each group comprising of 10 treated and 10 control rats. The treated group received 0.66mg/kg body weight of COC intragastrically for 4, 8, 12 and 16 weeks. Protein C and S were determined using ELISA assay and antithrombin III by the method of chromogenic substrates. There were significant decrease in level of protein C and S and

antithrombin III in female wistar rats given COC compared to the control groups ($P < 0.05$). the effect of COC on haemostasis may be through the anticoagulant pathway.

References

- Soare A.M., Popac (2010). *J. Med. Life* Oct. – Dec.; 3(4): 412-415.
 Dan Rosing (1999). *Am. J. Obst. Gyn*; 180(6): 5375 – 5382.

HETEROGENEITY IN VASCULAR SMOOTH MUSCLE REACTIVITY TO AGONISTS IN VARYING EXTRACELLULAR Mg^{2+} CONCENTRATIONS.

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Regional and species variations in the responses of isolated arteries to vasoactive agents have been reported (Toda and Miyazaki, 1978; Toda et al, 1990). The influence of extracellular magnesium ion (Mg^{2+})_o concentrations on contractile responses (CRs) induced by vasoactive agents (VA): Phenylephrine (PE), 5-hydroxyTryptamine (5-HT) and histamine (HIST) in vascular smooth muscle (VSM) isolated ring segments from regional sites of rabbit aorta, carotid and femoral arterial blood vessels were examined in standard laboratory organ bath procedure. Isometric contractions were recorded at the end of 90 minutes equilibration period. Concentration-response tests to all three VA were examined in each arterial ring in normal PSS (control) and thereafter, following 30 minutes exposure to Mg^{2+} -free or high- Mg^{2+} (4.8mM) PSS. Contractile responses were analysed with reference to maximal contractions induced by 80 mM K^+ in normal PSS. The results showed that CRs to VA (PE, HIST and 5-HT) in rabbit aortic, carotid and femoral arterial smooth muscle preparations were differentially influenced following exposure to varying $[Mg^{2+}]_o$. The maximal contractile responses (E_{max}) induced by VA relative to high K^+ contractions was in the order: femoral > aorta > carotid artery for PE and femoral > carotid > aorta for 5-HT and HIST in normal PSS. Enhancement by Mg^{2+} -free exposure was in the order: Carotid > Aorta > Femoral artery; aorta > carotid > femoral and femoral > aorta > carotid artery for PE, HIST and 5-HT respectively. Exposure to high- Mg^{2+} PSS (4.8mM) caused attenuated contractions in the order: Carotid > Femoral > aorta; Aorta > Femoral > Carotid and Femoral > Carotid > Aorta for PE, HIST and 5-HT respectively. Based on the sensitivity (EC_{30}) and potency (EC_{50}) values for (CRs) of the VA, we observed considerable variations in the modulation of these responses by exposure to varying $[Mg^{2+}]_o$. We also report the novel observation of a significantly greater enhancement of histamine contractions by Mg^{2+} free exposure. This study shows that contractile responses to various agonists as well as modulation of these contractile

responses by exposure to varying $[Mg^{2+}]_o$ exhibit considerable variability in different blood vessels.

Toda N., Ayaziki K., Okamura T., (1990). *J. Pharmacol. Exp. Ther.* 252(1) 374-9.

Toda N., Miyazaki M.. (1978). *Jpn J. Pharmacol.* 28: 495-497.

EFFECT OF AQUEOUS COLA NITIDA RUBRA SEED EXTRACT ON ESTROUS CYCLE AND SOME REPRODUCTIVE HORMONES IN ADULT FEMALE ALBINO WISTAR RATS

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The effect of *Cola nitida* rubra extract on estrous cycle and some female reproductive hormones was investigated in thirty two female Albino Wistar rats. The rats were divided into 4 groups, each consisting of 8 animals. Group 1 served as the control and were fed on normal rat chow and distilled water for 6 weeks. Groups 2, 3 and 4 received 2mg/kg, 6mg/kg and 10mg/kg *Cola nitida rubra* extract orally, once daily for 6 weeks. Vaginal smear was collected daily to monitor the estrous cycle. At the end of 6 weeks, the animals were sacrificed and blood samples were obtained for hormonal assay. There was a statistically significant increase in the diestrus phase of groups 3 and 4 compared to the control group at $P < 0.05$ but there was no significant difference in the proestrus phase of the experimental groups compared to the control group. There was a significant decrease in the estrous and metestrus phases of groups 3 and 4 compared to the control group. Hormonal assay results revealed a significant decrease in the serum concentration of follicle stimulating hormone in groups 3 and 4 compared to the control group at $P < 0.05$. The serum level of luteinizing hormone in the experimental groups decreased significantly compared to the control group while the estrogen level showed no significant difference. *Cola nitida rubra* extract demonstrated a dose dependent alteration of the estrous cycle and anti-gonadotropic effect in female rats in the present study.

References

- Akpantah A.O. Oremosu A.A. Noronha C.C. Ekanem T.B. and Okanlawon A.O. (2005). *Nig. J. Phys. Sci.* 20 (1-2): 58-62.
 Yakubu M.T. Akanji M.A. Oladiji A.T. Olatinwo A.O. Adesokan A.A. Yakubu M.O. Owoyele B.V. Sunmonu T.O. and Ajao M.S. (2008). *Iranian J. Reprod. Med.* 6(3): 149-155.

EFFECT OF IRON ON PANCREATIC BETA CELL FUNCTION AND INSULIN RESISTANCE IN FEMALE ALBINO RATS

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Iron is known to potentiate antioxidant activities. An increase in total body iron store has also been implicated in the aetiology and development of type 2 diabetes mellitus. The effect of iron supplementation on the incidence of diabetes mellitus is however not been fully elucidated. This study was therefore designed to investigate the effect of oral iron treatment on pancreatic beta cell function and insulin resistance in female albino rats. Forty-eight female Wistar rats weighing between (150-200g) were divided into 6 groups of 8 rats each; Group 1 served as control and were treated with 0.3ml distilled water, groups 2, 3, 4, 5 and 6 were treated orally with ferrous sulphate (Fe_2SO_4) at 10mg/kg, 20mg/kg, 40mg/kg, 80mg/kg and 160mg/kg respectively for 14days. Blood glucose was accessed using glucometer, insulin concentration was accessed using enzyme linked immunoassay method and the histology of the pancreas was accessed using hematoxylin and eosin technique. Data obtained were expressed as Mean \pm SEM, analyzed using student t test and statistical level of significant chosen at $p < 0.05$. Results showed a significant increase in the blood glucose concentration of all treated groups when compared with control. There was significant increase in insulin concentration and insulin resistance when treated with 80mg/kg and 160mg/kg of iron compared with the control. Histology of the pancreas showed fat infiltration in both acini and islet of Langerhan cells at 40mg/kg, 80mg/kg and 160mg/kg compared with control. Mild inflammation of the islets was also observed at 160mg/kg. In conclusion, it is likely that oral administration of iron in female rats causes hyperglycaemia, insulin resistance and pancreatic beta cell dysfunction and thus predisposes the animal to type 2 diabetes mellitus.

References:

- Halliwell B., Gutteridge J.M.C. (1990). *MethEnzymol* 186:1–85
 Yalow R.S., Berson S.A., (1960). *J. Clin. Invest.* 39: 1157–1175.

ROLE OF NITRIC OXIDE IN GLUCOSE-, FRUCTOSE- AND GALACTOSE-INDUCED INCREASES IN INTESTINAL GLUCOSE UPTAKE

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Previous studies have shown that the infusion of glucose, fructose and galactose resulted in significant increases in intestinal glucose uptake (IGU) (Alada and Salman, 2009) and that the increases were partially mediated by beta adrenoceptors ((Alada and Salman, 2010). The present study was designed to investigate the role of nitric oxide in the observed increases in IGU. Experiments were carried out on thirty-five (35) fasted male anaesthetized Nigerian local dogs divided into seven groups (5 dogs per group). Group I dogs served as control and received normal saline, groups II-IV dogs were infused with

glucose (1.1 mg/kg/min), fructose (1.1 mg/kg/min) or galactose (1.1mg/kg/min) while groups V-VII were pretreated with L-Nitro-Arginine-Methyl-Esther (L-NAME) (35 mg/kg) after which they were infused with glucose (1.1 mg/kg/min), fructose (1.1 mg/kg/min) or galactose (1.1mg/kg/min). Through a midline laparotomy, the upper jejunum was cannulated for blood flow measurement and blood samples were obtained for measurement of glucose content of the arterial blood and venous blood from the upper jejunal segment. Glucose uptake was calculated as the product of jejunal blood flow and the difference between arterial and venous glucose levels (A-V glucose). Blood pressure was recorded continuously. The results showed that only glucose caused an increase in jejunal blood flow while all the three sugars caused significant increases in IGU. However, after pretreatment with L-NAME, there were significant reductions in jejunal blood flow with total abolition of glucose-induced hyperemia in addition to significant reductions in glucose-, fructose- and galactose-induced increases in IGU. The results suggest that glucose-induced hyperemia was nitric oxide-dependent while the increases in IGU caused by the three sugars were partially mediated by nitric oxide.

References

- Alada A.R.A., Salman T.M. (2009). *Nig. J. Physiol. Sci.* 24 (2), 228.
 Alada A.R.A., Salman T.M. (2010). *Nig. J. Physiol. Sci.* 25 (2), 206.

CURABILITY OF HIV INFECTION WITH *NIGELLA SATIVA*

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There are many documented roles of *Nigella sativa* in treatment of diseases but the least expected is its potential of curing HIV infection. The dogma that HIV infection is in-curable was refuted by 27 years old HIV infected woman diagnosed during ante-natal care (EIA & Western blot) in 2004. She could not benefit from free antiretroviral therapy because her CD4 count was above 200 cells/ μL (i.e 350 cells/ μL) thus was commenced on *Nigella sativa* and honey therapy 10mls thrice daily for year. The several repeat of serology tests for HIV infection (EIA & Western blot) since 2005 were negative with undetectable HIV-RNA load. Despite the woman later had 3 children (2007, 2010 & 2012) that were breastfed, none of them was infected with HIV. It was concluded that *Nigella sativa* therapy induced sustained sero-reversion (cure) in this patient.

LONG TERM ADMINISTRATION OF *Cannabis sativa* ON LEARNING AND MEMORY IN MICE

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In recent times, there has been an increase in the use of Cannabis due to the fact that it is readily available compared to other drugs like cocaine, tobacco, etc. Due to the psychotic effects observed by users, the effect of the drugs on learning and memory was assessed using the Morris water maze (MWM). Mice were trained to use extra-maze visual cues to locate an escape platform hidden just below the surface of an opaque pool of water within 60 seconds (Morris, 1984). The test consisted of 3 days of acquisition, 3 days of reversal training (4 trials each day), and 1 day probe trial without the platform on the 7th day and a visible platform task on day 8. 27 albino mice weighing 16g-25g were randomly divided into 3 groups, each comprising of 9 mice. Mice in group I and II were administered 10mg/kg and 20mg/kg of *Cannabis sativa* respectively; while group III (control) was given 10ml/kg of normal saline. All groups were allowed normal rodent chow and water. Administration was done orally for a period of 4 weeks. The swim latency during the reversal training for the 10mg/kg and 20mg/kg were significantly ($P<0.01$) and ($P<0.001$) longer respectively compared to control. Quadrant duration in the probe trial was significantly ($P<0.05$) lower for the *Cannabis sativa* treated groups. The latency in the visible platform task was significantly ($P<0.05$) longer for the high dose group compared to control. In conclusion, *Cannabis sativa* impaired learning and memory.

References

Morris R. (1984). *Journal of neuroscience*. 11:47-60.

MUCOCILIARY CLEARANCE AND PEAK EXPIRATORY FLOW IN WOMEN EXPOSED TO BIOMASS FUELS IN ZARIA, NIGERIA

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Mucociliary mechanism is one of the primary clearance or protective mechanism that operates in the airways to remove inhaled and deposited materials from the lungs. Biomass smoke consists of many noxious and toxic components, exposing millions of women in Nigeria to pollutants. This work was aimed at investigating the effect of wood smoke on peak expiratory flow (PEF) and mucociliary clearance mechanism. A total of 58 adult non-smoking women within the ages of 20-60 years in Ahmadu Bello University, Zaria participated in the study. Saccharine transit time (STT) which was first described by Anderson *et al.* (1974) can be defined as the time lapse between deposition of the saccharine in the nose and the perception of a sweet taste by the subject. Peak expiratory

flow rate was performed using Vitalograph peak flow monitor, according to Quanjer *et al.* (1997). There was no significant difference between the study group and the control for PEF, PEF predicted and saccharine transit time test ($p > 0.05$). From the result it can be inferred that the respiratory defence mechanism is in place and working normally. In conclusion it has been reported that exposure to wood smoke might need a longer period of time to induce an adverse effect on lung function.

References

Quanjer P.H., Lebowitz M.D., Gregg I., Miller M.R. and Pedersen O.F. (1997). *Eur. Respir. J.* 10 (24) 2-8.

EFFECT OF ACUTE ADMINISTRATION OF AQUEOUS EXTRACT OF HIBISCUS SABDARIFFA CALYX ON BLOOD PRESSURE AND PULSE RATE OF APPARENTLY HEALTHY HUMAN SUBJECTS DURING STATIC HAND GRIP EXERCISE

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Hibiscus sabdariffa (HS) lowers blood pressure in animals (Mojiminiyi *et al.*, 2007) and man. This study was designed to investigate the mechanism of its hypotensive effect. Following ethical approval and informed consent, apparently healthy subjects ($n=20$) aged 29.9 ± 1.6 years weighing 67.3 ± 2.7 kg volunteered for the study. After adequate rest of at least thirty minutes, their basal blood pressure (BP) and Pulse rate (PR) were measured. Hand grip exercise (HGE) was then performed on them. The subject used his dominant hand to squeeze the handle of pliers with maximum isometric effort for 1 minute and the BP and PR were measured in the other arm at 30 seconds intervals. They were then given HS tablets at a dose of 15mg/kg orally and the procedure repeated. There was a significant ($p<0.05$) rise in BP and HR during HGE without HS (Mean arterial pressure: $MAP=116 \pm 2.0$ mmHg; $PR=78 \pm 1.2$ /min) compared with the basal values ($MAP=95.0 \pm 1.6$ mmHg; $PR=76.1 \pm 1.1$ /min) suggesting that the sympathetic nervous system was activated. The rise in these parameters without HS ($\Delta MAP=21.5 \pm 1.2$ mmHg; $\Delta PR=3.0 \pm 1.0$ /min) was significantly higher ($P<0.0001$) than with HS ($\Delta MAP=10.2 \pm 1.4$ mmHg; $\Delta PR=2.8 \pm 1.3$ /min). These suggest that the hypotensive effect of HS may be achieved through the inhibition of systemic vascular resistance mediated by the sympathetic nervous system.

References

Mojiminiyi F.B. et al. (2007). *Fitoterapia* 78(4) 292-7.
Bruce D. et al. (1972). *Br. Heart J.* 34; 605-610.

EFFECTS OF *SACCHAROMYCES CEREVISIAE* (BIOACTIVE YEAST) ON ENTERIC METHANE PRODUCTION AND SOME HAEMATOLOGICAL PARAMETERS IN WEST AFRICAN DWARF SHEEP (WADS) FED *PANICUM MAXIMUM* AND *CENTROSEMA PUBESCENS*.

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In this study, we investigated the effect of bioactive yeast (*Saccharomyces cerevisiae*) on enteric methane production and some haematological parameters in West African Dwarf Sheep (WADS) fed two forages (*Panicum maximum* and *Centrosema pubescens*) in two experimental protocols (EPs). Three doses of *Saccharomyces cerevisiae*, 0.4, 0.6 and 0.8 grams per kilogram body weight (gSC/kgbw) were administered to three groups A, B and C of five WADS respectively. Another group 'D' of same animals served as the control. Methane production was estimated using the prediction equation of Moe and Tyrrell while feeding *Panicum maximum* and *Centrosema pubescens* in each EP. The result of the study showed that *S. cerevisiae* significantly ($p < 0.05$) reduced methane production by 11.38% and 15.85% in *P. maximum* and *C. pubescens* EP respectively at the dose level of 0.8 gSC/kgbw when compared with the control groups. The haematological parameters remained within their normal physiological ranges in both diets even though some of the parameters in *C. pubescens* were significantly ($p < 0.05$) different from the control group. These observations suggest that regulated dietary inclusion of bioactive yeast can be used to bioengineer the rumen towards mitigation of enteric methane production while maintaining normal haematological profile.

EFFECT OF VANADIUM EXPOSURE ON ACETIC ACID-INDUCED COLITIS IN RATS

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This study was design to determine the effects of sodium metavanadate on experimentally induced colitis in rats. A total of 18 rats with average weight of 103 ± 3.9 were used for this study. Rats were divided into three groups depending of concentration of sodium metavanadate in drinking water, 0ppm- Group1 (n=6), 50ppm- Group 2 (n=7) and 150ppm- Group 3 (n=5). Weekly body weights were recorded and colitis was induced at the end of 10 weeks by intra colonic administration of 1.5ml of 6% acetic acid. The animals were sacrificed at day 7 after

colitis induction and the distal 8cm collected for histological and biochemical (malondialdehyde-MDA) assessment. Sodium metavanadate at 50ppm significantly increase body weight. Histological assessment revealed that sodium metavanadate at 50ppm also reduce significantly, erosion of epithelium, cellular/inflammatory aggregates, glandular epithelial degeneration and goblet cell count when compared with control group at $p < 0.05$. However, at 150ppm sodium metavanadate significantly increase erosion of epithelium and glandular epithelial degeneration. A significant increase in MDA level was also noticed in 150ppm sodium metavanadate group while there was no significant difference in 50ppm group when compared with control group. The present study demonstrate that sodium metavanadate at high dose aggravate ulcerative colitis but may be beneficial at a very low dose.

EFFECT OF CONTINUOUS EXPOSURE TO SMOKE FROM CARICA PAPAYA LEAVES ON LONG-TERM SPATIAL MEMORY, MOLECULAR AND MORPHOLOGICAL STATUS OF HIPPOCAMPUS IN ADULT MALE WISTAR RATS

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Folk and ethnopharmacology information has revealed that Carica papaya leaf relieves inflammatory process (extract), asthmatic attack (smoked) and acts as stimulant (smoked) (Okoli et.al., 2007; Owoyele et.al., 2008). This study was carried out to investigate the effect of continuous exposure to pawpaw leaf smoke on long-term spatial memory and on hippocampus cells in adult male Wistar rats. Twenty-four rats (male, 226-238g), divided into four groups (n=6) were used for the study. Animals in group A were used as control while those in groups B-D were exposed to smoke from 6.25g, 12.50g and 18.75g of dry pawpaw leaves respectively in a smoking chamber twice daily for 21 days with each exposure lasting for 3minutes. The spatial and long term memory of each group was tested using Morris water maze. Lastly, hippocampus was harvested in each group for histological study. Statistical analysis was done using ANOVA, the results showed a significant increase in mean value of recalling latency of spatial and long term memory in the group D (16 ± 0.13 , $p < 0.05$) and a significant decrease in mean values of recalling latency of the same memory in the B and C groups (8 ± 0.44 , 9 ± 0.25 ; $p < 0.05$) compared to the group A (control) that was given nothing (10 ± 0.36 , $p < 0.05$). Histological investigation showed signs of mild neural degeneration in high dose group and hypochromic appearance of the Nissl substance in all treated groups. In conclusion, exposure to smoke from papaya leaf has the ability to maintain an intact spatial and long term memory at all doses though retrieving such memory is faster in rats given low and medium dose. Despite this, the study confirms that smoke from dry C. papaya leaf has hazardous effects on the morphology and molecular content of hippocampus.

References

- Okoli I. R.I., Aigbe O., Ohaju-Obodo J.O., Mensah J.K. (2007). *Pakistan J. of Nutrition* 6 (5): 490-496.
- Owoyele B.V., Adebukola O.M., Funmilayo A.A., Soladoye A.O. (2008). *Inflammopharmacology*; 16 (4): 168 -173.

IMPACT OF TESTOSTERONE ON INDOMETHACIN-INDUCED PEPTIC ULCER IN FEMALE SPRAGUE DAWLEY RATS

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The development of gastric ulcers has been associated with changes that occur within hormonal cycles, especially those related to sex hormones. In fact, the impact is said to be exacerbated among men than women at reproductive age, by implication, the assumption of the involvement of testosterone. Nevertheless, male are known to be more expose to stress, cigarette smoking, alcohol ingestion and inadequate dietary habits, which are risk factors of peptic ulcer. This study investigates the possible impact of testosterone on indomethacin induced peptic ulcers in adult female Wistar rats. A total of 18 adult female rats of comparable weight were used for the study. They were randomly assigned to 3 groups and maintained under standard laboratory animal care. After acclimatization, animals in all the groups fasted for 48 but water allowed *ad libitum*. Group A served as control and receives no treatment. Group B served as the ulcer control; in which ulcer was induced without treatment using indomethacin (40mg/kg single dose orally). Group C animals were pre-treated with intra-muscular testosterone (2mg/kg), 8 hours before the induction of ulcer. Eight (8) hours after ulcer induction (group B and C), all animals were sacrificed to harvest the stomachs for analysis. Results showed significantly higher ($p < 0.05$) ulcer index in group B (4.60 ± 0.55 mm) compared to group C (3.60 ± 0.89 mm). Pre-treatment with testosterone resulted to a 21.74% ulcer inhibition compared to 0.0% in group B. Also, significant reduction in mucus content was observed in group C (0.79 ± 0.11 g) and B (0.87 ± 0.02 g) compared to the control (1.11 ± 0.03 g). Gastric p^H was significantly acidic in group B (4.40 ± 0.55) compared to group C (5.20 ± 0.45) and control (5.80 ± 0.45). Although weak, the findings suggest that testosterone might protect the gastric mucosa against NSAIDs.

References

- El-Tawil A.M. (2011). *J. Steroids. Hormon. Sci.*; 2:0e2.
- Machowska A., Szlachcic A., Pawlik M., Brzozowski, T., Konturek J.S. and Pawlik W.W. (2004). *J. Physiol. Pharmacol.*; 55 (2): 91 – 104.

DIFFERENTIAL RHEOLOGY OF ABO BLOOD GROUP SYSTEM

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ABO blood groups have been associated with different diseases in the literature. The non O blood groups (A, B, and AB) have been shown to be more susceptible to arterial and venous thrombotic diseases with no demonstrable rheological explanations. This study was aimed at ascertaining how specific antigenic substance affects the erythrocyte's rheological properties and that of the whole blood. A total of 68 young healthy subjects were studied, 20 subjects for each blood group (A, B, and O) and eight (8) AB. Standard laboratory techniques were used for the hemorheological determinations such as Relative plasma viscosity (RPV), Plasma Fibrinogen concentration (PFC) and red cell deformability using the transit time model (the higher the transit time, the lesser the deformability). We observed that blood group AB had a significantly higher RPV and Platelet count ($p < 0.05$, respectively) when compared with other blood groups. While transit times is in the order of $B >> A >> O >> AB$ ($p < 0.05$, respectively). There were no significant differences in the values of PFC and other red cell indices in all the blood groups, though, group AB exhibited a slightly higher value but not statistically significant. In conclusion, Blood group AB seems to have a positive advantage of better deformability despite its relatively high plasma viscosity. This clearly shows that hemorheological variations thus exist amongst the ABO blood groups and the biochemistry of the red cell antigens may be a determinant of their membrane mechanical properties.

References

- Bogar L., Juricskay I., Kesmarky G., Kenyeres P. and Toth K. (2005). *Eur. J. Clin. Invest.* 35:687–90.
- Diez-Silva M., Dao M., Han J., Lim C. and Suresh S. (2010). *MRS Bull: Mater. Res. Soc.* 35(5):382.

ACUTE HIGH BLOOD GLUCOSE LEVEL ATTENUATES HISTAMINE-STIMULATED ACID SECRETION IN MALE WISTAR RATS

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Studies have shown that hyperglycemic state induced by intravenous glucagon or glucose infusion may lead to inhibition of gastric acid secretion through the inhibition of gastric vagus activity (Doong and Yang, 2003). Histamine is a well-known mammalian acid secretagogue (Oyebola and Alada, 1992) and it stimulates acid secretion through H_2 -receptors. The aim of this study was therefore to determine what effect an acute hyperglycemic or hypoglycemic state would have on histamine-stimulated acid secretion. Male Wistar rats weighing between 200-250g were divided into three groups that received an intravenous infusion of normal

saline (control group), glucose (hyperglycemic group) or insulin (hypoglycemic group) followed by injection of histamine to stimulate acid secretion. The oesophageal and duodenal ends of the rats' stomach were cannulated with polythene tubing and the stomach was perfused at room temperature using a Langendoff perfusion apparatus. The effluent was collected in aliquots over 10 min per sample and its pH was measured. There was a significant ($p < 0.05$) decrease in acid secretion following histamine injection in the hyperglycemic rats while histamine injection led to an increase ($p < 0.05$) in acid secretion in the hypoglycemic rats. These results show that hyperglycemic state would result in attenuated histamine-stimulated gastric acid secretion while hypoglycemic state would lead to increased histamine-stimulated gastric acid secretion.

References

- Doong M.L. and Yang H. (2003). *Neurosci Lett.* 340(1): 49-52.
Oyebola, D.D.O. and Alada, A.R.A. (1992). *Isr. J. Med. Sci.* 28: 731 – 733.

EFFECT OF THEOPHYLLINE ON BLOOD PRESSURE OF NORMOTENSIVE CATS PRE-ADMINISTERED WITH ADRENALINE

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Theophylline has been used by Asthmatics as a potent bronchodilator in conjugation with other anti-asthmatic. The effect of Theophylline on the blood pressure of normo-tensive cats pre-administered with Adrenaline and the attenuation effect of Nifedipine (Ca^{2+} channel blocker is been investigated). The effect of various volumes of theophylline (Aminophylline) (4mg/kg) on the blood pressure of normotensive cats pre-administered with adrenaline was determined after the healthy animals has been subjected to an unconscious state. The results obtained revealed that theophylline showed a potentiating effect ($p < 0.05$) on catecholamines (adrenaline (10µg/ml) in elevating the systolic, diastolic and mean arterial blood pressure of the normotensive cats. Although, theophylline alone caused an increase ($p < 0.05$) in the diastolic and mean arterial blood pressure which may be due to the increase sympathetic discharge by theophylline. The antagonistic test carried out reveals the attenuation effect ($p < 0.05$) of the calcium channel blocker (nifedipine 2mg/ml) on the combination (adrenaline and theophylline). Theophylline possesses a potentiating effect on catecholamine in determining its effect on blood pressure of normotensive cats and it was inhibited by L-type calcium channel blocker (nifedipine).

References

- Richard S.H. (2011). *Brit. J. Pharm.* 39: 2016-2117

Prosnitz, E. H and Conrad, K. A (2007). *Euro. J. Clin. Pharm.* 24: 79-89

EFFECTS OF HIGH FRUCTOSE INTAKE ON THE REPRODUCTIVE INDICES OF MALE WISTAR RATS

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This study was carried out to evaluate the effects of high fructose intake on reproductive indices in male wistar rats. Control animals were given feed and water *ad-libitum* while the fructose fed group was given feed and 10% fructose in their drinking water for four weeks (Jarouliya *et al*, 2012). At the end of the second week, the fructose fed rats developed hyperglycemia which was maintained till the end of the study. The following indices were assessed: mean progressive body weights; weights and histology of pancreas, testes and epididymes; serum levels of testosterone, LH and FSH; sperm motility, sperm viability and semen volume. Values obtained from control rats were statistically compared with those obtained from fructose fed rats ($n=8$). Fructose fed group had a significant increase in body weight ($P < 0.05$) as compared with control. There was a significant increase in the mean weight of the pancreas, epididymis and seminal vesicles of the fructose-fed group when compared with control. There was also a significant decrease in sperm motility ($P < 0.05$) of the fructose-fed group. Serum level of testosterone was significantly reduced in the hyperglycemic group while the levels of FSH and LH were not significantly affected. All histological sections of fructose fed rats showed marked infiltration of tissues by fat. There were also congestion of blood vessels in the testes, epididymes, seminal vesicles and pancreas of the fructose-fed group. Hyperplasia of the prostate gland was seen in the fructose-fed group. It is deduced from the results of this experiment that four weeks of 10% fructose intake may affect reproductive indices in male wistar rats. It is therefore concluded that though high fructose intake may have mild effects on blood glucose levels, however, its effect on male reproductive function may be adverse.

Reference

- Jarouliya Urmila, Anish Zacharia J., Pravin Kumar, Bisen P.S. and Prasad G.B.K.S. (2012). *Indian J. Med. Res.* 135, pp 422-428

EFFECTS OF *Ricinus communis* SEED OIL ON LETROZOLE- INDUCED POLYCYSTIC OVARY (PCO) IN WISTAR RATS

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This study was aimed at investigating the effects of *Ricinus communis* seed oil (RCSO) on letrozole-induced PCO in wistar rats. Forty female animals were grouped into four (n=10). Group one which is the negative control (NC) received 2ml/kg Body Weight (BW) 1% CMC. During the induction phase, PCO was induced in the three other groups using twenty one days oral administration of 1mg/kgBW letrozole dissolved in 1% CMC (2ml/kg). Post induction (Treatment phase), group one and group two (positive control (PC)) received distilled water while groups three (PCO+500mg/kgBW) and four (PCO+1000mg/kgBW) received 500 and 1000mg/kgBW RCSO respectively for 21 days. Vaginal smear was collected daily from each animal for cytological analysis. After the treatment period, Five animals in each group were mated with proven male breeders (for fertility studies) while the rest were sacrificed at proestrus phase. Progressive body weight, weights and histology of ovaries and uteri; serum levels of testosterone, estrogen and Follicle Stimulating Hormone; estrous cycle length and percentage estrous phase were the variables analysed. Uterine weight was significantly decreased ($P<0.05$) in all groups when compared with negative control. Estrogen was significantly decreased in the PC as compared with the NC ($P<0.05$). A significant increase was noticed in the percentage estrus phase and metestrus phase during treatment as compared to induction period in the PCO+1000mg/kgBW group. Histology of the PC showed characteristic ovary with cystic spaces and degenerating follicles. PCO+500mg/kgBW showed incomplete luteinization and few degenerating follicles with cystic spaces. 1000mg/kg BW group showed no cyst, normal ovarian stroma with complete luteinisation within the granular cells. Fertility study results showed that NC had 80% fertility, PC had 20%, PCO+500mg/kgBW had 40% while PCO+1000mg/kgBW had 60%. The results showed that, 1000mg/kgBW RCSO ameliorated hormonal alteration and histopathological changes in the PCO as well as aided fertility in wistar rats.

REPRODUCTIVE FUNCTIONS IN TESTOSTERONE PROPIONATE TREATED MALE OFFSPRING OF HYPERGLYCEMIC RATS

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Adult phenotype is known to be dependent on environmental signals operating during intra-uterine programming. This places the babies born to women who experienced gestational diabetes at risk of developing abnormal glucose homeostasis in adult life. Testosterone treatment has been shown to improve survival in men with type 2 diabetes (T2D) and testosterone deficiency. However, it is not known if pubertal testosterone administration can prevent the development of T2D and promote reproductive functions. Reproductive indices in

testosterone propionate (TP) treated and non treated male offspring of hyperglycemic rats were investigated. A single intraperitoneal alloxan injection of 90mg/kg body weight was used to achieve maternal hyperglycemia at different gestational days (GD1-21, GD8-21 and GD15-21), and subsequent administration of 10% glucose in drinking water to sustain glucose levels in blood. Body weight, seminal indices; serum levels of testosterone, LH and FSH; the weights and histology of testes and epididymes of the male offspring of the hyperglycemic rats were assessed. There was no significant difference in the mean fasting blood glucose levels in testosterone treated groups as compared to non-treated groups. There was no significant difference in the mean percentage relative testis weight in the TP treated groups as compared to the non-treated groups. There was no significant difference in the mean percentage relative testicular, epididymal and seminal vesicular weights in the TP treated groups as compared to the non-treated groups. TP treated GD15-21 offspring showed significantly higher serum levels of testosterone ($P<0.05$) and luteinizing hormone ($P<0.01$) as compared with non treated GD15-21 offspring. Data from seminal analysis showed no significant difference between the TP treated and non-treated. Results from the study showed that testosterone propionate administration did not have effects on reproductive functions of male offspring of hyperglycemic rats with the exception of those exposed to maternal hyperglycemia from GD 15-21.

EFFECT OF HONEY ON ALTERED THYROID STATE IN FEMALE ALBINO RATS

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Thyroid dysfunction a reportedly common endocrine disorder in female subjects has been found to lead to hyperthyroidism and hypothyroidism. Altered lipid and antioxidant status are two main states implicated in these disorders. There are scientific reports on the antioxidant and anti hyperlipidemic properties of honey, though, there is a dearth of information on these beneficial effects of honey during altered thyroid states in female subjects. This study was designed to evaluate the effect of oral administration of honey on lipid profile and antioxidant status in altered thyroid state. Hypothyroidism and hyperthyroidism were induced with carbimazole (5mg/250g b.w) and levothyroxine (5ug/100g b.w) respectively for 35 days before treatment with honey (1ml/100g b.w) for 28 days. Fifty female Albino Wistar rats (100 – 120g) were divided into five groups of 10 animals each. Group 1 served as control and received 0.5ml of distilled water, groups 2, 3, 4 and 5 received carbimazole, carbimazole + honey, levothyroxine, levothyroxine + honey treatments respectively. Thyroid hormones (T_3 and T_4) and Thyroid Stimulating hormone (TSH) were assayed using ELISA technique to ascertain altered thyroid states at day 35 and 29th day post honey treatment. Lipid profile (Cholesterol (CHOL), triglyceride (TG), Low density lipoprotein (LDL), High density Lipoprotein (HDL)) and markers of oxidative

stress (Malondialdehyde (MDA), Superoxide dismutase (SOD)) were analysed at day 29 post honey treatment. Hypothyroid group showed significant reduction in T₃ and T₄ levels with an increase in TSH level while hyperthyroid group showed significant increase in T₃ and T₄ levels and a reduction in TSH level. The CHOL, TG and LDL levels were significantly reduced in honey treated hypothyroid rats when compared with untreated hypothyroid rats and was comparable to control rats. There was also a significant increase in CHOL, TG and LDL levels in honey treated hyperthyroid rats when compared with untreated hyperthyroid rats which was comparable to control rats. MDA level of honey treated hyperthyroid rats was significantly reduced when compared with untreated hyperthyroid rats and was comparable to the control animals. In conclusion, it is likely that honey treatment reduces Cholesterol, Triglyceride and Low density lipoprotein in hypothyroid state but causes a corresponding increase in the hyperthyroid state. Honey treatment reduces lipid peroxidation during the hyperthyroid state.

References

- Erejuwa O.O., Sulaiman S.A., Wahab M.S. (2012). *MOLECULES*, 17:1900-1915.
- Ishikawa Y., Genge B.R., Wuthier R.E. (1998). *J. Bone Miner. Res.* 13:1398-1411 9.

EFFECTS OF *SACCHAROMYCES CEREVISIAE* (BIOACTIVE YEAST) ON ENTERIC METHANE PRODUCTION AND SOME HAEMATOLOGICAL PARAMETERS IN WEST AFRICAN DWARF SHEEP (WADS) FED *PANICUM MAXIMUM* AND *CENTROSEMA PUBESCENS*.

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In this study, we investigated the effect of bioactive yeast (*Saccharomyces cerevisiae*) on enteric methane production and some haematological parameters in West African Dwarf Sheep (WADS) fed two forages (*Panicum maximum* and *Centrosema pubescens*) in two experimental protocols (EPs). Three doses of *Saccharomyces cerevisiae*, 0.4, 0.6 and 0.8 grams per kilogram body weight (gSC/kgbw) were administered to three groups A, B and C of five WADS respectively. Another group 'D' of same animals served as the control. Methane production was estimated using the prediction equation of Moe and Tyrrell while feeding *Panicum maximum* and *Centrosema pubescens* in each EP. The result of the study showed that *S. cerevisiae* significantly ($p < 0.05$) reduced methane production by 11.38% and 15.85% in *P. maximum* and *C. pubescens* EP respectively at the dose level of 0.8 gSC/kgbw when compared with the control groups. The haematological parameters remained within their normal physiological ranges in both

diets even though some of the parameters in *C. pubescens* were significantly ($p < 0.05$) different from the control group. These observations suggest that regulated dietary inclusion of bioactive yeast can be used to bioengineer the rumen towards mitigation of enteric methane production while maintaining normal haematological profile.

INVESTIGATION ON THE ROLE OF VITAMIN E ON ALCOHOL AND NICOTINE ALTERED REPRODUCTIVE ACTIVITIES IN ADULT MALE RATS

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Over the past decades the male gonad has been insulted by a lot of substances and this resulted to the poor quality of spermatozoa leading to infertility, among such substances are alcohol and nicotine. Alcohol and nicotine are the two most frequently used drugs in the world, and they are often used together. This study investigated the protective role of Vitamin E (antioxidant) on the adverse effects of alcohol and nicotine on fertility assessment and Testicular Histology in Adult Male Rats. Fertility study was carried out by cohabiting untreated female rats with the experimental male rats, and the histology of the testes of the experimental rats were as well examined. Administration of alcohol and nicotine for a period of 6 weeks revealed that both drugs reduced libido in male rats, litter weight and litter size delivered by the untreated female rats during the experiment. The histological section of the testes of rats treated with alcohol alone, nicotine alone, alcohol plus nicotine showed disruption of the seminiferous tubule interstitium, reduction in germ cell population and Sertoli cell cytoplasm. However, findings from this study showed that both alcohol and nicotine have antifertility effect and it was prevented by co-administration of vitamin E.

Reference

- De Krester D.M., and Kerr J.B. (1998). (eds. Eknobil and J, Neill). Raven press. New York. P. 837-932.
- Emanuele M.A., Emanuele N. (2001). *Alcohol Res. Health.* 25:282-287.

EFFECT OF POST TESTOSTERONE TREATMENT ON THE GASTRIC MUSCULARIS MUCOSAE DISRUPTION INDUCED BY INDOMETHACIN IN FEMALE WISTAR RATS

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This study examines the effect testosterone have on muscularis mucosae disruption caused by indomethacin. The study involved 18 female albino rats which were randomly assigned to 3 groups; A, B and C representing normal control, ulcer control and test group respectively. Ulcer was induced by 40mg/kg indomethacin given orally to group B and C. Eight hours' later, group C was treated with 2mg/kg IM testosterone. Eight hours after ulcer induction in group B and 8 hours after post treatment with testosterone in group C, animals were scarified and the stomachs harvested for macroscopic and microscopic examinations. Tissue macrographs showed exacerbated muscularis disruption in group C compared to group B and this was further confirmed by microscopic examination. Hence, testosterone therapy in the presence of ulcer exacerbates muscularis mucosae disruption.

PROTECTIVE EFFECT OF VITAMIN E ON NICOTINE – INDUCED REPRODUCTIVE TOXICITY IN MALE RATS

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The current study was performed to assess the protective role of vitamin E in alleviating the detrimental effect of nicotine on reproductive functions in male rats. Twenty four male albino rats were divided into four equal groups six rats. Control group was treated orally with 0.2 ml/kg body weight normal saline, nicotine treated group received 1.0 mg/kg body weight of nicotine, vitamin E treated group received 100 mg/kg body weight of vitamin E while nicotine plus vitamin E treated group received 1.0 mg/kg body weight of nicotine plus 100 mg/kg body weight of vitamin E. The experiment was conducted for 30 days. Nicotine caused a significant reduction in sperm count, sperm motility, sperm viability and normal sperm cells. Nicotine also caused a significant reduction in serum testosterone, FSH and LH levels. Histopathologically, nicotine caused impairment in the testis of rats. Conversely, treatment rats with vitamin E improved the reduction in sperm characteristics, hormone levels and the histopathological alterations of the testis. The study shows that nicotine exerts significant deleterious effects on male reproductive system and the concurrent administration of vitamin E ameliorated these detrimental effects.

References

Iranloye B.O. and Bolarinwa, A.F. (2005). *J. Physiol.* 567P, PC181.
Patterson T.R., Stringham J.D. and Meikle A.W. (1990). *Life Sci.* 46: 265–272.

SERUM CALCIUM AND LITHIUM LEVELS IN PREGNANT WOMEN IN

PORT HARCOURT

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Recent studies have demonstrated that physiologic changes due to pregnancy impact consequently on serum electrolytes and other biochemical parameters so as to ensure normal fetal development. Calcium absorption efficiency and lithium urinary excretion are approximately doubled during this period. This study aimed to relate serum calcium and lithium concentrations to pregnancy amongst women resident in Port Harcourt. A cross-sectional prospective survey recruiting 160 subjects within the age range 21 to 40 years was carried out; including 120 apparently healthy pregnant women in the 3 various trimesters and 40 nonpregnant subjects as control. Venous blood samples were collected and analyzed thus; Colorimetric, Spectrophotometric, Burette and Bromocresol methods for serum calcium, lithium, total protein and albumin concentrations respectively. When compared to the control, there was no significant difference in serum lithium concentration across gestation ($p>0.05$), whereas a statistically significant difference was observed in serum calcium concentration in the third trimester. Total protein increased significantly in the first trimester and decreased with increasing gestational age whereas there was a steep decline in albumin concentration across gestation. The significant impact of serum calcium especially in the third trimester of pregnancy is due to an increase in fetal skeletal demand on the mother as well as the effect of haemodilution of serum albumin.

References

Kovasc C.S. (2001). *The Journal of Clinical Endocrinology and Metabolism*; 86: 2344-2348.
Prentice A. (2000). *Journal of Nutrition*; 133 (5): 16935-16995.

THE EFFECT OF AQUEOUS EXTRACT OF CYPERUS ESCULENTUS ON SOME LIVER FUNCTIONAL INDICES IN RABBIT

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Twenty-five(25) adult female rabbits were employed to study the possible effect of aqueous extract of *Cyperus esculentus* on some liver functional indices. The rabbits were divided equally into five groups of five animals each with one group serving as control. The experimental groups received daily oral dose of 12.5mg, 25mg, 50mg and 100mg per kg of body weight of the extract respectively for a period of four weeks. Weekly estimation of serum alanine aminotransferase(ALT),

aspartate aminotransferase (AST) and alkaline phosphatase (ALP) were carried out. Statistical analysis was done using ANOVA and the results were expressed as Mean \pm SEM and p-values of less than 0.05 considered as statistically significant. The results revealed a statistically significant increase in serum ALT, AST, and ALP concentrations at the end of the experiment. In conclusion, the observed changes in the serum levels of these liver enzymes suggest that *Cyperus esculentus* may have hepatotoxic properties when taken in large quantities especially for a prolonged period.

References

- Belewu, M.A., Belewu, K.Y. (2007). *Int. J. Agric. Biol.* 5: 785-787.
Ekeanyanwu, R.C., Njoku, O., Ononogbu, I.C. (2010). *J. of Nutr.* 9(7): 709-715.

ANTIOXIDANT ACTIVITY OF SOLVENT EXTRACTS OF *ENANTIA CHLORANTHA* (OLIV) STEM BARK

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Enantia chlorantha is an ornamental tree that has been reported to possess haemostatic antimalarial, antibacterial, antiviral and antiprotozoan properties. The antioxidant potential of the hexane, chloroform, ethyl acetate and methanol extracts of *Enantia chlorantha* stem bark was evaluated using FRAP (Ferric reducing antioxidant power) and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay at 0.04, 0.06, 0.08 and 0.10 mg/ml. The results were compared with that of ascorbic acid. Antioxidant activity of the different solvents extract with the DPPH radical scavenging and iron (III) to iron (II) reducing activity were in the order of chloroform extract > methanol extract > ethyl acetate > hexane. Potency of the chloroform extract of *E. chlorantha* stem bark (85.8% inhibition) was of the same magnitude as that of reference ascorbic acid. The results suggest that extracts from the stem bark of *Enantia chlorantha* have strong antioxidant activity. These findings also suggest the involvement of antioxidant activities of *E. chlorantha* in its pharmacological properties.

THYROIDECTOMY AND THYROXINE TREATMENT CAUSE IMPAIRED ORAL GLUCOSE TOLERANCE IN RAT

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Thyroxine influence diverse metabolic pathways important in glucose metabolism and important mediators of glucose homeostasis (Boelen, 2009). Thyroxine replacement therapy is usually given in cases of hypothyroidism thus this study was conducted to assess the effects of thyroxine replacement therapy and thyroidectomy on glucose tolerance. Forty rats were

divided into four groups (n=10). Group 1 (control): sham operated; Group 2: thyroidectomised; Group 3: sham operated with T4 (10mcg per 100g body weight) for five weeks; Group 4: thyroidectomised with T4 (10mcg per 100g body weight) for five weeks. The rats were anaesthetised by injecting 0.2ml/100g/bdwt ketamine hydrochloride intraperitoneally. Oral administration of T4 to groups 3 and 4 commenced a week after the surgery (Mokuno et al (1999)). The rats were weighed before and weekly after the surgery. Oral glucose tolerance test was performed on the rats after five weeks treatment period and total serum thyroxine was determined by chemi-immunoluminescence. Results were presented as mean \pm SEM and P values less than or equal to 0.05 was taken as significant.

There was fluctuating weight loss and gain in groups 3 and 4 while group 2 had significant steady weight gain compared with control. Fasting blood sugar at zero minute was significantly higher in groups 2, 3 and 4. At 30mins glucose level was significantly reduced in groups 2 and 3 while group 4 was not significantly different from control. At 60 and 90 minutes glucose level was markedly reduced in the three groups compared with control but at 120 min there was no significant difference between glucose level in the groups and control. Based on the results in this study hyperthyroidism and hypothyroidism cause impairment in glucose tolerance and an elevated fasting blood glucose level while thyroxine replacement therapy did not normalize the disturbances caused by thyroidectomy on glucose tolerance nor did it reduce the fasting blood sugar level as observed in control.

References

- Boelen A. (2009). *Journal compilation, 2009. The Physiological Society.*
Mokuno T, Uchimura K., Hayashi R., Hajakawa N. et al (1998). *J. of Endo.* 160, 285-89

THE EFFECT OF STRESS ON GLUCOSE METABOLISM AND GROWTH PERFORMANCE IN SPRAGUE DAWLEY RATS

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Stress has become daily encounter of humans and no doubt has it implications on health and wellbeing. Considering the growing incidence of overweight and obesity couple with their health consequences, this study determines the influence of stress on glucose metabolism and growth performance indicated via weight changes using Wistar rats. The study involves 35 male adult rats of comparable weight. They were randomly assigned to four groups; A to D with groups B, C and D consisting of subgroups 1 and 2. Group A served as the control while those of group B₁, C₁ and D₁ were treated with 40mg/Kg/day, 80mg/Kg/day and 160mg/Kg/day of hydrocortisone (IM) respectively for four days and those

of B₂, C₂ and D₂ were treated with same doses of respective groups for eight days. Weights were determined and recorded before acclimatization, after acclimatization, after four days and eight days of hydrocortisone administrations. In addition, blood glucose level was determined using standard procedures. Results showed increased stress to increase blood glucose level in a dose and duration depended manner in group D but the opposite in group C. On the other hand, stress was observed to negatively influence weight and was indicated in a dosage and duration depended manner. Over all, while increased stress may cause increased blood glucose, it causes weight loss and this may give explanation of the increased blood glucose in the blood. Hence, stress may be involved in weight loss by increasing metabolism of glucose from fats and body mass.

References

- Hoehn K. and Marieb E.N. (2010). Human Anatomy and Physiology. San Francisco: Benjamin Cummings;
Stewart P.M., Shackleton C.H.L., Beastall G.H. and Edwards C.R.W. (1990). *Lancet*; 335:431–433.

INFLUENCE OF BURDIZZO CASTRATION ON HEMATOLOGY AND SERUM TESTOSTERONE CONCENTRATION IN PRE-PUBERTAL WEST AFRICAN DWARF BUCKS

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This study was conducted to determine the effect of Burdizzo castration on hematology and serum testosterone concentrations and other male reproductive parameters of West African Dwarf Bucks. Six West African Dwarf goats weighing between 7 and 10kg and ages < 1 year were used. The study was carried out at the Department of Veterinary Surgery and Reproduction, University of Ibadan which spanned for a period of 5 weeks and the first 2 weeks were used to stabilize and acclimatize the animals. The animals served as their own control — the data obtained at week 0, regarded as the control were compared with data from 1st and 2nd week following castration. There was significant difference ($p < 0.05$) in platelets, neutrophils, lymphocytes, testosterone, length of spermatic cord and temperature when the three groups were compared. Significant increase ($p < 0.05$) was observed in platelets, neutrophils and length of spermatic cord while the study also revealed significant decrease ($p < 0.05$) in testosterone, lymphocytes and temperature. Following Burdizzo castration neutrophilia, thrombocytosis, lymphocytopenia, decrease in serum testosterone as well as reduction in rectal temperature were observed. In conclusion, since the values observed in this study were still within normal reference range, thus the procedure can be performed in animals without

any adverse effect on the hematology and reproductive status of the animals.

MORPHOLOGICAL STUDY OF THE PROTECTIVE POTENTIAL OF VITAMIN C ON INDOMETHACINE INDUCED GASTRIC ULCER IN FEMALE RATS

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This study determines the mucosa protective potential of vitamin C using animal model. In a bid to achieved this objective, 15 female Sprague Dawley rats were divided into 3 groups with group A as the control, B as ulcer control (in which 40mg/kg indomethacin was given orally to induce ulcer) and C as test (pre-treated with 200mg/kg vitamin C 8hrs before ulcer induction). Eight hours after ulcer induction, animals were scarified and the stomach harvested for macroscopic and microscopic examinations. Macrograph presented reduced mucosal layer, mucosa ulceration and inflammation in group B but was mild in group C. These presentations were supported histologically. Hence, vitamin C ingestion prior to NSAID treatment is mucosa protective.

References

- Adriana M., SoimiNa S., Daniela-Rodica M., Camelia A., Login C., Doini N.C. and Doina D. (2008). *Bulletin UASVM, Vet. Med.*; 65(1). 119 – 125.
Chaturvedi A., Kumar M.M., Bhawani G., Chaturvedi H., Kumar M. and Goel K.R. (2007). *Indian J. physiol. Pharmacol.*; 51(2): 131-140.

COMPARATIVE STUDY OF BULL SPERMATOZOA CHARACTERISTICS USING THREE DIFFERENT SEMEN EXTENDERS

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The aim of this study was to determine the proportions of coconut milk, tomato juice, egg yolk and sodium citrate buffer suitable for extension of White Fulani bull spermatozoa at room temperature. Semen was collected from two White Fulani bulls and extended in different proportions of the extenders mentioned above and are tagged A, B, C, D, E. Diluent (A) contained 20ml of egg yolk, 30ml of Coconut milk and 50ml of Sodium Citrate as the buffer; diluent (B) contained 30ml of egg yolk, 20ml of Tomato juice and 50ml of Sodium Citrate as the buffer; diluent (C) contained 20ml of egg yolk, 15ml of Tomato juice, 15ml of Coconut milk and 50ml of Sodium

Citrate as the buffer; diluent (D) contained 10ml of egg yolk, 10ml of Tomato juice, 10ml of Coconut milk and 70ml of Sodium Citrate as the buffer; the control (E) contained 50ml of egg yolk and 50ml of Sodium Citrate as the buffer. Morphological abnormalities, motility, live/dead ratio of spermatozoa were determined at 0hour, 1hour, 2hours, 4hours and 24hours respectively. It was observed that the percentage motility of spermatozoa increased from control (76.00 ± 16.73) to 77.50 ± 5.00 (0 hour), 72.50 ± 9.57 (1 hour), 57.50 ± 9.57 (2 hours), and then from 7.50 ± 5.00 (4 hours) to 0.000 ± 0.00 (24 hours). Results showed that diluent (C) containing 20ml egg yolk, 15ml coconut juice and 15ml tomato juice gave the best support to spermatozoa livability while its support to spermatozoa motility at 2hours was poor. Thus, while diluent (C) would make a good semen extender, its motility would be best at a storage time of less than 3 hours. Therefore, diluent (C) is better for preserving bull semen at room temperature effectively for over 2 hours after semen extension with addition of antibiotics.

EFFECTS OF ORAL ADMINISTRATION OF ALCOHOL AND NICOTINE ON MALE REPRODUCTIVE PARAMETERS IN MALE RATS

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This study was carried out to investigate the combined effects of alcohol and nicotine on reproductive parameters in male adult rats. The rats were divided into four groups and were treated for a period of 6 weeks. Group 1 served as the control and received distilled water. Group 2 was administered alcohol 3g/kg bw as 40% v/v. Group 3 was administered 1.0mg/kg bw nicotine. Group 4 was administered 3g/kg alcohol plus 1.0mg/kg nicotine. At the end of the experimental period, the animals were sacrificed by cervical dislocation, blood was collected via cardiac puncture. The organs of choice such as testis, epididymis, seminal vesicle, prostate, liver, kidney and heart were removed and weighed immediately. Semen collected from the epididymis was analysed for sperm profile. Serum gonadotropins and testosterone assays were also carried out. Nicotine caused a significant decrease ($p < 0.05$) in body weight while alcohol caused a significant increase in body weight. There was an insignificant ($p > 0.05$) increase in testicular and epididymal weights of rats gavaged with alcohol plus nicotine. There was an insignificant ($p > 0.05$) increase in seminal vesicle of rats treated with alcohol alone and nicotine alone. However, there was a significant decrease ($p < 0.05$) in seminal vesicle of rats treated with both alcohol and nicotine. Sperm motility and count were significantly reduced ($p < 0.05$) while percentage sperm

abnormality were significantly increased in all treated groups. The hormonal profile were also significantly reduced ($p < 0.05$) in rats treated with alcohol, nicotine, and alcohol plus nicotine when compared with the control group.

References

Boyden T.W. and Pamenter R.W. (1983). *Endocr. Rev.* 4: 389-395.
Corrigall M.A. (1999). *Nicotine Tob. Res.* 1: 11-20.

GLYCOGEN CONTENT OF THE RAT LIVER AFTER CHLOROQUINE ADMINISTRATION.

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The frequent use of chloroquine due to high incidence of malaria infection, and reports from previous studies of the hypoglycemic effect of chloroquine administration, coupled with the very important glucostatic function of the liver, leads to the need to find out how chloroquine may affect glycogen deposition in the rat liver. The study was designed to evaluate the glycogen content of the rat liver after three days intramuscular injection of a therapeutic dose (25mg/kg) of chloroquine, and a pharmacological dose (50mg/kg) chloroquine. A total number of fifteen (15) rats were used for the experiment. The treatment with chloroquine was followed by sacrificing the animals, and the liver tissues were excised and processed according to the Kemp and Kits method of micro-calorimetric evaluation of glycogen content in tissues. Data for the acute and the pharmacological doses were compared with the control, and with each other. Results show no statistical significant difference between the mean values ($p > 0.05$). This study, therefore, concluded that administration of chloroquine does not affect the glycogen storage function of the liver and its hypoglycemic action is therefore not due to an increase in liver glycogen storage.

References.

Zahid A. and Abidi T.S. (2003). *Journal Pakistan Medical Association*, 53 (1).
Kemp A., Adrienne J. M. and Kits Van Heijningen (1954). *Biochem Journal*, 56(4); 646-648.

ASSESSMENT OF TEMPERATURE VARIATION BETWEEN AUTOMATED DIGITAL THERMOMETERS AND MERCURY THERMOMETER OF AXILLARY MEASUREMENTS IN APPARENTLY HEALTHY ADULT PERSONS AND HOSPITALIZED PEOPLES

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The various method used to measure body temperature has both advantages and disadvantages including the age old mercury-in-glass thermometers. Currently, there are variations in measurements with different methods as well as conflicting opinions about the optimal anatomic site for measuring body temperature. However, In this study, we aimed to assess the accuracy and reliability of thermometric measurements obtained from the axilla with two different automated digital thermometer and age-old mercury-in-glass thermometer. One hundred and fifteen participants were involved in this study, 73(33m;40f) of age 24.53 ± 5.67 were students from an higher institution while 42(20m;22f) of age 27.25 ± 6.51 were hospitalized patients. Simultaneous axillary temperature measurements (n: 115) were performed with the mercury-in-glass, Omron and wellbeing digital thermometers. The mean results of the axillary mercury-in-glass thermometers and axillary digital thermometer were 36.89 ± 0.27 , 36.75 ± 0.4 , 36.6 ± 0.46 for the student group while the hospitalized group were 37.3 ± 0.77 , 37.347 ± 0.76 and 37.26 ± 0.75 respectively. The Bland-Altman plot of differences suggests that 95% of the two Digital thermometer readings were within limits of agreement of $+0.56$ to -0.85°C and 0.44 to -1.01 for Omron and Well-being respectively among the student group .while the hospitalized group was 0.5 to -0.42 and 0.39 to -0.47 for the respective thermometers, when mercury-in-glass thermometer is considered as the standard. Our results showed that limits of agreement were wide between readings of axillary mercury-in-glass thermometers and digital thermometers but narrow for hospitalized groups with higher temperature readings. There was no statistic significant difference among the methods in febrile temperatures except lower temperatures. Result also revealed that digital thermometer under-reads lower temperatures. Furthermore, Higher Axillary readings of mercury thermometer were same with the digital thermometers supported by correlations at $r=0.9520$ and 0.9595 . Therefore, digital thermometer can be used interchangeably with mercury thermometer in clinically febrile patients but neither in apparently healthy persons nor experimental research that are sensitive for lower body temperatures.

Reference:

- Fullbrook P. (1993). *Journal of Advanced Nursing* 18: 9, 1451-1460
Ateş Kara, İlker Devrim, Ali Bülent Cengiz, Filiz Çelik, Hasan Tezer, Ali Kerem Uludağ, Gülten Seçmeer (2009). *The Turkish Journal of Pediatrics* 51: 325-327

HEMORHEOLOGICAL CHANGES DURING OVULATION

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Ovulation has been linked with inflammatory responses with a possible surge in inflammatory proteins and Luteinising hormone (LH), inflammatory proteins on the other hand has regulatory effects on haemorheology. This study was aimed at investigating haemorheological parameters as well as the ovulatory hormones with a view of identifying any possible alterations or changes during the ovulatory process. A total of (10) ten healthy females between the ages of 18 and 25 years were studied. They have fairly regular menstrual cycle of 28 days. Blood samples were obtained from each subject longitudinally on days 12, 13, 14 and 21 of their menstrual cycles. The samples were analysed for various ovarian hormones (LH, Oestrogen and progesterone), Relative plasma viscosity (RPV), Fibrinogen concentration as well as full blood count using standard methods. Our results showed significant rise ($P<0.05$) in LH on Day 12 compared with the other days, while oestrogen and progesterone showed significant increases on Day 21 compared with the other days ($P<0.05$, respectively). Also, a significant increase ($P<0.05$) in RPV and White blood cell (WBC) count were recorded on between Days 13 and 14 respectively while platelets recorded a low count on Day 13 ($P<0.05$). In conclusion, significant leucocytosis with slight increase in fibrinogen concentration and plasma viscosity, coupled with red cells and platelet pooling could be associated with LH surge which tends to activate acute changes in Hemorheology and inflammatory responses.

References

- Blum I. (1992). *J. Clin. Endocrinol. Metab.* 75(3):924-929.
Copley A.L. (1990). *Clin. Hemorheol.* 10:3-19.

PREVALENCE OF IRON DEFICIENCY ANAEMIA AMONG MALE FREQUENT BLOOD DONORS IN BLOOD DONOR BLEEDING BAY IN CALABAR, CROSS RIVER STATE, NIGERIA

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Iron deficiency is one of the most common nutritional disorders in the world, and blood donation may cause iron depletion (Javadzadeh *et al.*, 2005). One hundred and eighty-four male blood donors comprising 5 groups namely; group I, consisting of 35 first time donors (control), group 2, consisting of 32 second time donors, group 3, consisting of 35 third time donors, group 4, consisting of 41 fourth time donors and group 5, consisting of 41 fifth time donors attending University of Calabar Teaching Hospital (UCTH) bleeding bay were used for the study. Blood samples were taken from all the donors and their iron- related parameters namely; haemoglobin concentration (Hb), transferrin saturation (TS), serum ferritin level (SF) and serum transferrin receptor level (STfR) were determined as indicators of iron stores. The prevalence of iron deficiency anaemia was significantly ($P<0.05$) higher in the third, fourth and

fifth time blood donors (20.0%, 46.3% and 80.5% respectively) when compared with control (first) and second time groups. The higher prevalence of iron deficiency anaemia in the 3rd, 4th and 5th time donors may be caused by more frequent and larger volumes of blood they donate when compared to control and second time groups. The frequency of anaemia in the control and second time blood donors were 0% and 3.1% respectively. It is concluded that third time blood donors and those beyond third time should not be advised to donate blood.

Reference

Javadzadeh S.H., Attra M., Taher Y.M. (2005). *Transfusion Medicine*; 15:287-93.

COMPARATIVE STUDY ON DIETARY FIBERS ON POSTPRANDIAL BLOOD GLUCOSE, BOWEL TRANSIT RATE, AND LIPID PROFILE IN WISTAR MALE RATS

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The comparative study on effect of different dietary fibers on postprandial blood glucose, bowel transit rate and lipid profile was carried out on 25 wistar male rats of average weight 160 ± 5 g. The animals were randomly and equally selected into 5 groups. The group I served as control, group II received bisacodyl, while III, IV and V received maize bran, telfairia *occidentalis* and orange fibers respectively. Two hours after fed the animals with the feed, drug and dietary fibers, blood sample was collected for postprandial blood glucose and lipid profile assays. Also, their intestine was dissected for bowel transit rate determination. The results revealed that the postprandial blood glucose significantly decreased mostly in T. *occidentalis* fed rats, followed by maize bran and orange fiber ($p > 0.05$) respectively relative to control group. Bowel transit rate was significantly increased mostly in maize bran ($p < 0.05$) when compared with the control group. Plasma total cholesterol level was significantly reduced mostly in T. *occidentalis* ($P < 0.05$) when compared with the control, triglyceride level was significantly reduced in maize bran fed rats when compared with the control group ($p < 0.05$). The HDL cholesterol was mostly significantly reduced in T. *occidentalis* relative to the control group ($p < 0.05$). T. *occidentalis* fiber may be more potent in reducing postprandial blood glucose, total cholesterol and HDL cholesterol.

References

Tucker L.A. and Thomas K.S. (2009). *J. Nutr.* 139: 576-581.
Ofuya Z.M. and Georgewill A.A. (2006). *J. Med. and Pharm. Sci.* 2: 10-15.

ANTIHYPERGLYCEMIC ACTIVITY OF AQUEOUS EXTRACT OF SENNA FISTULA LEAVES IN STREPTOZOTOCIN INDUCED DIABETIC RATS

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Diabetes mellitus is a metabolic disease characterised by hyperglycemia, resulting from insufficient production of insulin or insensitivity of the hormone. *Senna fistula* leaves has been claimed to be used in the management of diabetes in the folk medicine of Nigeria. This claim, however, is yet to be substantiated or refuted by scientific data. This study was therefore designed to investigate antidiabetic activity of *S. fistula* leaf extract in streptozotocin (STZ) induced diabetic rats. Thirty male albino rats were completely randomised into 6 groups of five rats each (A-F), such that animals in group A: control received 0.5ml of distilled water thrice daily for 28 days. Animals in groups B, C, D, E, and F which were made diabetic (50mg/kg body weight of STZ, i.p) also received orally, 0.5ml of distilled water, 2.5mg/kg body weight of glibenclamide, 28.57, 54.14, and 114.28mg/kg body weight of the extract respectively. The phytochemical and mineral constituents of the extract were determined. The blood glucose level, body weight, food and water intake of the animals were also determined. The result revealed that the extract contained alkaloids, flavonoids, saponins, terpenoids, K, Ca, Zn, Mg. The extract significantly ($P < 0.05$) reduced/reversed blood glucose level, food and water intake of the diabetic animals in a manner that compared favourably with the non-diabetic distilled water treated animals ($P < 0.05$). Overall, the result suggests that aqueous extract of *Senna fistula* leaves at the doses investigated in this study possess antihyperglycemic activity which may be attributed to the presence of alkaloids, flavonoids, Zn, K and Mg, acting either alone or synergistically.

EFFECT OF CHRONIC ADMINISTRATION OF POTASH (POTASSIUM CARBONATE, K₂CO₃) ON LIVER ENZYMES IN ADULT WISTAR RATS.

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Food additives such as Potassium Carbonates have been implicated as etiological factor in many different disease states. This study, investigates the possible effect of chronic administration of Potash emulsion on the liver enzymes. Twenty five (25) male albino Wistar rats were randomized into five (5) groups of five (5) rats each. Group A served as control rats, Group B and C were experimental groups administered with 100mg/L and 200mg/L of Potash respectively for twenty eight (28) days, Group D and E were the reversal experimental groups treated with normal saline and ascorbic acid (200mg/ml) respectively after 200mg/L of Potash administration were terminated after an initial treatment

of three weeks. Exposure of rats to Potash emulsion caused significant ($p<0.05$) dosed dependent increase in Alanine aminotransferase (ALT), Aspartate aminotransferase (AST) and Alkaline phosphatase (ALP). While co-administration of Vitamin C caused a significant ($p<0.05$) reduction in liver enzymes. Therefore, Potash as a food additive is deleterious to the liver function and this effect can be ameliorated by the administration of Vitamin C.

References

- Guha M.D.N. (2005). *Toxicol. Appl. Pharmacol.* 206: 169-175
 Akintola J.K., Opeolu B.O. and Aina O.O. (2010). *Jordan J. Bio. Sci.* 1(3): 29-32.

EFFECT OF ALCOHOL AND CADMIUM CHLORIDE ON TESTICULAR FUNCTION AND THE RELATIONSHIP BETWEEN THESE TESTICULAR FUNCTIONS AND SOME TESTICULAR BIOMETRIC PARAMETERS

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Infertility is a source of global concern and this has been on the increase in both males and females. The study was undertaken to assess possible relationship between testicular weight, volume, and testicular function on Wistar rats administered with Alcohol and Cadmium Chloride. Forty five (45) male Wistar rats were randomized into nine (9) groups of five ($n=5$) rats each. Groups 1 and 2 served as normal control and reversal control respectively. Groups 3, 4 and 5 were treated with

15%, 20% and 25% alcohol, Group 6, 7 and 8 were administered with 15mg/ml, 20mg/ml and 25mg/ml cadmium chloride respectively. Group 9 served as reversal group after treatment with 25% alcohol. Testicular weight and volume measurement, semen analysis, serum testosterone assay and histology of the testes were carried out. Statistical analysis using Student *t*-Test for comparing groups, and Pearson product moment correlation for determining relationship was done with $p<0.05$ considered as statistically significant. The Alcohol and Cadmium chloride significantly ($p<0.05$) decreased the testicular weight and volume, semen quality, serum testosterone level as the various dose increased. Alcohol and Cadmium chloride also caused degenerative changes on the testes of the rats in a dose dependent manner. There were also significant ($p<0.05$) and positive correlation between testicular weight and volume, and testicular function. Therefore, there is a close association between testicular function and testicular volume and weight, and as a result testicular weight and volume can be used as a means of determining fertility in man.

References

- Adaikpoh M.A., and Obi F.O. (2009). *Afr. J. Biochem. Res.* 3 (10), pp. 321-325
 Emanuele M.A., Halloran M.M., Uddin S., Tentler J., Emanuele N.V., Lawrence A.M. (1993): In: Zakhari, S., ed., *Alcohol and the Endocrine System: NIAAA Research Monograph No. 23*, Bethesda, MD: Nat. Instit. Alcoh. Abuse and Alcoh.. 44: 89-116.