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THEME:

RE-ENGINEERING BIOCHEMISTRY AND MOLECULAR BIOLOGY FOR POVERTY ALLEVIATION AND DISEASE CONTROL

PROGRAMME

& BOOK OF ABSTRACTS

TASE25 EFFECT OF *Aloe barbadensis* MILLER GEL ON RAT LIVER MITOCHONDRIAL MEMBRANE PERMEABILITY TRANSITION PORE

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In this study, the effect of varying concentrations of *Aloe barbadensis* Miller (*Aloe vera*) gel on rat liver mitochondrial permeability transition *in vitro* and *in vivo* was investigated. A total of 25 male Wistar strain albino rats were used for the experiment. Twenty of the rats, divided into five groups of four animals, were used for the *in vivo* study while the remaining five rats were used for the *in vitro* study. Low ionic strength mitochondria were isolated by centrifugation; the mitochondrial protein content was determined. $CaCl_2$ solution was used as a triggering agent to induce mitochondrial swelling while spermine was used to reverse the calcium-induced pore opening. Permeability transition (PT) in the isolated rat mitochondria was determined spectrophotometrically as a measure of decrease in absorbance at 540nm within 12 minutes and swelling rate quantified as □A540/min/mg. The same pattern of result was obtained in the *in vitro* and *in vivo* analyses. There was no significant difference ($p>0.05$) between the change in absorbance in *A. barbadensis* –treated rats and the control in the absence of a triggering agent. A significant difference ($p<0.05$) was observed in the absorbance change of *A. barbadensis* –treated rats in the presence of a triggering agent compared to the spermine–treated rats. The results indicate that *A. barbadensis* gel did not induce pore opening in the rat liver mitochondria in the absence of the triggering agent. However, in the presence of triggering agent, *A. barbadensis* gel at all concentrations tested could not prevent the opening of the permeability transition pore.

Keywords: *Aloe barbadensis,* mitochondrial permeability transition, permeability transition pore, triggering agent, spermine

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Chem. PG Room UPP Block 3

TASE26 EFFECTS OF PETROLEUM ETHER AND N-HEXANE EXTRACTS OF *Globemetula braunii* ON GLUCOSE, LIPIDS AND BIOCHEMICAL PARAMETERS OF DIABETIC RATS

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Globimetula braunii is a parasitic plant (mistletoe) used to treat diabetes and hypertension by Nupe speaking people of Niger Sate, Nigeria. Extracts of petroleum ether and n-hexane showed presence of steroids, terpenes, and phenols. Rats of both sexes, weighing (135-244)g were randomly allotted to five groups of four rats each. Rats in group one (control) were the normoglycaemic (administered 10 ml distilled water daily), while those in groups two, three, four, and five were rendered diabetic by the administration of 100 mg/kg bodyweight of alloxan monohydrate. Group five rats were treated with 500 mg/kg bodyweight of standard drug (metformin), groups three and four rats were respectively treated with 500 mg/kg bodyweight of petroleum ether and n-hexane extracts for two weeks, while the group two rats were untreated (negative control). Blood glucose was checked after every two days using glucometer. Blood glucose concentration of rats in the extracts (n-hexane and petroleum ether) treated groups decreased significantly (217.16±4.33 – 84.33±2.33), with n-hexane extract having the highest (84.33±2.33). The animals were anaesthesized under chloroform at the end of the treatment and blood samples were collected by jugular puncture and used for the analysis

of biochemical parameters. Serum cholesterol of the two extract treated groups reduced significantly ((162.43±1.03) and (147.93±3.40) for petroleum ether and n-hexane groups respectively). There was a similar reduction in serum triglyceride levels of extract groups, with petroleum ether group having the highest (152.91±2.15) activity. Total protein decreased (5.57±0.03) in n-hexane treated group while alkaline phosphatase increased in all the groups with the standard drug treated group having the highest (32.2±0.35) value. Activity of alanine aminotransferase in n-hexane treated group increased (47.7±12.4) while that of aspartate transaminases in groups increased with the petroleum ether group having the highest activity (84.7±2.96). Urea in all groups increased, except in the n-hexane treated group. Creatinine levels decreased in petroleum ether and standard drug treated groups. Na^+ levels reduce in all groups except the standard drug treated group, K^+ levels increased in petroleum ether group, Cl^- values increased in all groups and HCO_3 decreased in petroleum ether and standard drug treated groups. The extracts have hypoglycaemic and hypolipidemic properties, but may be hepatotoxic.

Key words: *Globemetula braunii, hypoglycaemia, hypolipedemia*

TASE27 EFFECTS OF AQUEOUS EXTRACTS OF *Cnestisferruginea* ROOT AND *Fadogiaagrestis* STEM ON RAT PENILE PHOSPHODIESTERASE V ACTIVITY

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Effects of aqueous extracts of *Cnestisferruginea* root and *Fadogiaagrestis* stem on rat penile phosphodiesterase V activity was determined.Erectile dysfunction (ED) is the persistent inability to attain and maintain an erection sufficient to permit satisfactory sexual performance. Phosphodiesterases (PDEs) are enzymes that regulate the cellular levels of the second messengers, cAMP and cGMP, by controlling their rates of degradation. Although several different types of phosphodiesterases have been identified, human smooth muscle cells express phosphodiesterase type V (PDE V) as the major cGMP hydrolyzing enzyme. PDE V normally regulates penile erection by degrading cGMP. Sildenafil citrate, a potent PDE V inhibitor, lowers the activity of PDE V by competing with cGMP and consequently raised the level of cGMP. *Cnestis ferruginea* root and *Fadogia agrestis* stem are some of traditional herbs which have been scientifically proven to possess potent aphrodisiac properties at low doses as acclaimed by foklore medicine. This study is aimed at identifying the probable mechanism of action of the aqueous extracts of these plants. Alkaloids and saponins are the major phytochemicals found in aqueous *C.ferruginea* root and *F.agrestis* stem extracts. Sildenafil citrate inhibited PDE V activity between 0.0238-0.119 μM. The aqueous root extracts of *C.ferruginea* and stem of *F.agrestis* inhibited PDE V activity between 25-125 μg/ml. *C.ferruginea* and *F.agrestis* exerted their inhibitory effects on PDE V activity via decreased tunover rate of cGMP. However, the presence of these androgenic agents enhanced the binding affinity of PDE V for cGMP suggesting that these agents exerted their inhibitory effects upon the formation of [ES] complex.

Key words: Phosphodiesterase V, Erectile dysfuncton, Cyclic Guanosine MonoPhosphate

TASE28 EFFECTS OF ORAL ADMINISTRATION OF ETHANOLIC LEAF EXTRACT OF *Mucanapuriens* OBTAINED FROM AFIKPO ON SERUM BIOCHEMICAL PARAMETERS AND ELECTROLYTES IN ALBINO WISTAR RATS