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Evaluation of the histological, biochemical and neurobehavioral studies of ginger treatment in streptozotocin (STZ) induced diabetic male Wistar rats

This study was aimed at evaluating the histological, biochemical and neurobehavioral effects of ethanolic extract of *Zingiber officinale* in streptozotocin (STZ) induced diabetic male Wistar rats. 25 male rats were used in this study. Streptozotocin was used to induce diabetes mellitus with a single IP injection of 55 mg/kgbw. Sustained hyperglycaemia of 200 mg/dl and above was considered as diabetic. The animals were further divided into the following groups: Group A; normal control, group B; diabetic control; group C; [diabetic+*Zingiber officinale* (200 mg/kgbw) day 14], group D; [diabetic+*Zingiber officinale* (200 mg/kgbw) day 21] and group E; [diabetic+metformin (500 mg/kgbw)] orally. The behavioral study was done as grouped using the elevated plus maze (EPM) model. After the last day of treatment, the rats were sacrificed and blood samples collected were assayed spectrophotometrically for serum concentration of liver enzymes, intracellular antioxidants superoxide dismutase (SOD), glutathione peroxidase (GPx) and malondialdehyde (MDA). The brain (hippocampus), liver and pancreas were harvested fixed and processed histologically. The result showed significant reduced levels of liver enzymes, increased antioxidants and reduced malondialdehyde in *Z. officinale* treated groups compared with diabetic control and metformin treated group. *Z. officinale* treated group showed repair of neuronal cells injury caused by neuropathy. There was significant cognitive improvement in *Z. officinale* treated group (day 21) when compared with values obtained for the diabetic control group. There was regeneration of collagen fibers in the liver in the *Z. officinale* treated groups. The islets of langerhans in the pancreas showed considerable improvement in β cell mass in the treated groups when compared with diabetic control group. The values obtained from the behavioral and cognitive studies showed improved behavior for the *Z. officinale* treated groups as compared to the diabetic control and standard drug treatment.

Biography

Godam Elvis Tams is a PhD graduate of Ahmadu Bello University Zaria, Nigeria and completed his MSc and qualified as an Associate of Medical Laboratory Science in Histopathology and Cytology from ABU Zaria. He was the Laboratory Head in Anatomy and Cytology in Bingham University and Supervisor of the University Medical Center. Currently, he is a Lecturer and Researcher in the Department of Human Anatomy. He has published several articles in both local and international journals and member of several professional bodies of repute.

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