

Abstract

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Experimental animals

Eighteen and matured adult male Wistar rats weighing between 80 g-150 g were purchased from the animal house of the Department of Human Anatomy, Cross River University of Technology, Okuku. The entire animals were kept in aluminum cages covered with wire mesh in standard laboratory environment. All animals were given water and commercial feed and allowed to rest and acclimatize for two weeks before commencement of experiment.

Experimental design and procedure

Eighteen animals were allotted to three groups consisting of six rats each. Animals in group 1 served as the control group, fed with normal rat chow and distilled water, while groups 2 and 3 served as the experimental groups treated with *G. africanum* leaf extract, orally for 21 days. Group 2 (low dose group) animals were treated with 0.3 ml/kg body weight of *G. africanum* leaf extract, while group 3 (high dose group) animals were treated with 0.5 ml/kg body weight of the extract.

Termination of experiment

At the end of experiment, all animals were sacrificed under chloroform anesthesia and the pancreas surgically removed and fixed in Bouin's fluid for 24 hours for histological and histochemical studies.

Histological Examination of the Pancreas

Reagents

Haematoxylin, eosin, xylene, alcohol and chloroform

Procedure

Tissue blocks were sectioned at 5 microns using a microtome. Sections were brought to xylene for two minutes per two changes. The xylene was cleared in 95% alcohol for one minute per two changes and then in 70% alcohol for another one minute. This was then hydrated in running tap water for 15 minutes, stained with haematoxylin for 15 minutes, differentiated in 1% alcohol (3 dips) and blued in running tap water for 10 minutes. The slides were then counter-stained with 1% alcohol eosin for 1 minute followed by rapid dehydration in ascending grades of alcohol, cleared in xylene, mounted with DPX and viewed under light microscope and photographed at 400X magnification.

Result

The histology of the pancreas of the control animal revealed normal architecture with many secretory acini and a lobular duct. General parenchyma shows a normal architecture with a prominent centroacinar cells and there was no observable pathology (Figure 1). The low dose group treated with 0.3 ml/kg body weight of *G. africanum* leaf revealed no pathology as there was a general parenchyma with many secretory acini and a small interlobular duct (Figure 2).

At high dose of 0.5 ml/kg body weight, the pancreas of the animals showed an intraductal papillary mucinous neoplasm within the interlobular duct. A secretory acini and a

low dose (0.3 ml/kg body weight) group showed no pathological signs. Although studies on the effects of herbs on pancreatic health are limited and some even inconclusive, promising preliminary studies including this one can provide a basis for further research on pancreatic disorders. Solemaini et al. [8] reported that the pancreas generally do not exhibit deleterious effects in reaction to most leaves but the high dose reaction in this study suggests a mucinous neoplasm in the interlobular duct. Udeh et al. [9] carried out a research on effects of *G. africanum* on pancreatic islets and discovered that the extract caused a dose-dependent reversal of islet destruction and an increase in antioxidant activity. Thus, such effects may not affect the pancreas ability to secrete insulin but will rather impair secretion of the bi-carbonate rich fluid and enzymes into the duodenum thereby limiting the neutralization of acids during digestion. Consequently, it can be inferred that effects of *G. africanum* on body viscera especially the pancreatic cells may be dose dependent considering the result of this work at high dose (0.5 ml/kg) and other few related work done so far. Subjects who ingest this leaf often may resultantly face the risk of developing mucinous neoplastic growths and thus further work on the effect of this leaf on some digestive tissues and its various associated organs should be investigated.

Conclusion

From the result of the study, the research suggests that consumption of *G. africanum* leaf at a moderate dose may not have effects on the pancreas except if being consumed in indiscriminate high proportions.

Since this leaf is largely consumed in most parts of West Africa, it might have a correlation with the increased reported rate of diabetes insipidus in this region as it may resultantly affect the ability of the islet cells to secrete insulin.

References

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