

Histopathological and Biochemical Study of Alloxan-induced Diabetes Mellitus on Albino Rats

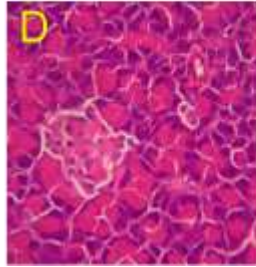
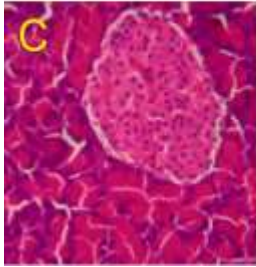
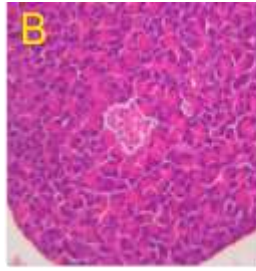
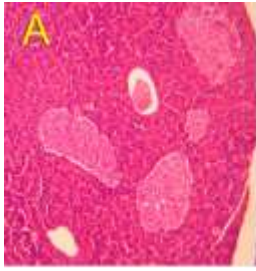
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Phone Zin Myint, Sanda Lin, Tin Tin Thein, Kyaw Zin Thant. (2011)

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Abstract

Preclinical in-vivo studies using the laboratory animals, both rodents and non-rodents species, are fundamental steps to prove the efficacy of the therapeutic agents and for the development of new drugs. A cross-sectional Laboratory based descriptive study was done at the Pathology Research Division during February 2011 to determine the effective dose of the alloxan monohydrate, diabetogenic chemical, to induce hyperglycaemia on albino rats for hypoglycemic drug research and to illustrate the pathological changes on alloxan treated diabetic rats. Eighty adult Wistar albino rats were grouped into one normal control group and seven test groups, induced hyperglycaemia by intraperitoneal injection of 2% alloxan monohydrate with different doses and then observed the histopathological and biochemical parameters during 21 days in this study. Alloxan monohydrate, 150mg/kg was the optimizing dosage for the induction of permanent as well as severe hyperglycaemia. A significant decreasing body weight ($p<0.05$) and marked rise in both fasting and two hours postprandial blood sugar levels were noted. On histological sections of the pancreas with haematoxylin& eosin staining of the diabetic rats, an extensive damage of the islets of Langerhans with reduced size, numbers as well as cellular population of acini were observed. Both serum cholesterol ($76.17 \pm 11.34\text{mg/dl}$) and ureal level ($142.52 \pm 29.85\text{mg/dl}$) were significantly increased among the test groups compared with normal control group ($p<0.05$). This study explored the pathophysiological changes of the albino rats after induction. Moreover, it provided thee useful baseline information to proceed further studies.



- A. Normal Pancreas (H&E Stain, 40 x)**
- B. Alloxan-treated Pancreas (H&E stain, 40 x)**
- C. Normal Pancreas (H&E Stain, 400 x)**
- D. Alloxan-treated Pancreas (H&E Stain, 400 x)**