

Histopathological Changes of Pancreatic Tissues in Hyperglycemic Male Rats Treated with Mixture of Plants Extracts

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Abstract : The present study aims to evaluate the hypoglycemic, and protective effects of mixture of methanol-watery extracts of five selective medicinal plants: *Trigonella faenum-graecum* seeds, *Nigella sativa* seeds, *Zingiber officinale* rhizomes, *Olea europeae* leaves and *Fraxinus ssp.* seeds, and determine the efficacy of this mixture in the treatment of diabetes mellitus type 2.

Animals were randomly divided into six groups: group I: normal negative control, group II: diabetic control, group III: normal rats treated with mixture of plants extracts for 60 days, group IV, V, VI: diabetic rats treated with mixture of plants extracts for 45, 60, 75 days respectively.

The results revealed significant decrease ($P < 0.05$) in body weight of the diabetic rats, diabetic rats treated with mixture of plants extracts for 45, 60 days as compared with normal control, and significant increase ($P < 0.05$) in the diabetic rats treated for 75 days as compared with the diabetic control, while normal rats treated with mixture of plants extracts for 60 days which showed significant decrease ($P < 0.05$) as compared with normal control, but it was considered significant increase as compared with diabetic rats. The result of fasting blood glucose levels showed significant decrease ($P < 0.05$) in all treated groups as compared with diabetic control. On the other hand, significant decrease ($P < 0.05$) was shown in serum insulin levels and pancreas/body weight ratios in diabetic group as compare with negative control while treatment with mixture of plants extracts for different periods caused non significant differences in all treatment periods as compared with negative control and returned pancreas/body weight ratio near the normal value. Treatment of normal rats with mixture of plants extracts for 60 days caused non significant differences in fasting blood glucose, insulin and pancreas / body weight ratio.

Histological sections of diabetic pancreas revealed degeneration, vacuolization of the islets of Langerhans and the exocrine pancreas manifested inflammatory cells infiltration, and vascular congestion, while treated groups exhibited normal appearance of islets of Langerhans especially β -cells and pancreatic acini and some pancreatic sections showed with inflammatory cells infiltration.

In conclusion, type II DM caused histopathological changes in pancreas, many of these changes could be prevented or reduced by using mixture of plants extracts used in this study. The effect of this mixture had more positive effects when given orally for longer period (75 days).

Keywords : Histopathology, Pancreas, Hyperglycemic Rats, Plants Extracts.