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Physiological Effects of Myrrh and Ginseng Extracts in Diabetic Rats

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Abstract : The antidiabetic activity of myrrh and ginseng ethanolic extracts were investigated in streptozotocin (STZ)-induced diabetic rats. Thirty male albino rats were divided into five groups, each consisted of six rats. The first group (G1) is the negative control that was fed basal diet, the second group (G2) was injected with STZ and received no treatment, the third group (G3) injected with STZ and received metformin (50 mg/kg, b.wt) as standard anti-diabetic drug, the fourth group (G4) injected with STZ and ginseng (50 mg/kg, b.wt), the fifth group (G5) injected with STZ and received myrrh (500 mg/kg, b.wt). As compared with G1-group, STZ injection increased blood concentrations of glucose (6.2 fold), glycated hemoglobin (HbA1c) (2.51 fold), aspartateaminotransferase (AST), and alanine aminotransferase (ALT) (2.64, 4.60 fold respectively), creatinine (2.91 fold), cholesterol (1.79 fold), triglycerides (2.06 fold), low density lipoprotein-cholesterol (LDL) (2.92 fold), nitric oxide (NO) (20.18 fold), and malondialdehyde (MDA) (2.25 fold), whereas it decreased blood insulin (0.40 fold), albumin (0.60 fold), high density lipoprotein-cholesterol (HDL) (0.33 fold), and reduced glutathione (GSH) (0.49 fold). Vascular permeability index (VPI as measured by Evan's Blue; EB extravasations test) was significantly increased in the skin of diabetic animals (9.6 fold) when compared with the G1-group. In addition, histological alterations in liver, pancreas, kidneys and heart were observed. After 4 weeks of treatment, rats in G4 and G5 showed significant corrections in the all measured parameters and indices. In conclusions, the ethanolic extracts of ginseng and myrrh exhibited promising and safe anti-diabetic activity especially on peripheral circulation as manifested by decreased vascular permeability and improved histopathological alterations of examined organs and insulin secretion. Hence, it may be pursued for their clinical usefulness in the management of diabetes mellitus (DM) and associated vascular complications.

Keywords : diabetic rats, peripheral circulation, natural plants, myrrh, ginseng
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