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Antihyperglycemic and Renal protective effects of Trichodesma amplexicaule in Streptozotocin induced diabetic rats

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Diabetic nephropathy is a major complication of diabetes mellitus resulting in end-stage renal disease. Prevention or reversal of diabetic nephropathy is a major challenge in the current management of diabetes. The aim of the present study is to evaluate the hypoglycemic, hypolipidemic and nephroprotective effects of the hydro alcoholic extract of the Trichodesma amplexicaule in streptozotocin-induced diabetic rats. Trichodesma amplexicaule (Boraginaceae) is widely used in traditional system of medicine to treat dysentery, snake bite, urinary diseases and diabetes. The root extract of the plant is reported to possess several biological activities such as antidiarrheal, antispasmodic, antimicrobial, anti-inflammatory and lipoxygenase inhibitory activity. The whole plant is evaluated for cough reflex induced by sulphur dioxide in animal model. Many potent secondary metabolites like non-steroidal compounds; hexacosane, 21, 24-hexacosadienoic acid, sitosterol, oleic, linoleic, palmatic, stearic and linolenic acid are reported which might contribute to various pharmacological activities. In the present study whole plant hydroalchoholic extract of Trichodesma amplexicaule has been screened for hypoglycemic activity. The hypoglycemic activity was carried out in normal and Streptozotocin (60 mg/kg) induced diabetic rats at two different doses (100, 200mg/ kg) orally for 21 days. Blood sugar level, body weight changes were monitored periodically. At the end of the treatment period, the serum from control and diabetic animals were subjected to the estimation of lipid profile, alanine transaminase (ALT), aspertate transaminase (AST), Blood urea nitrogen (BUN), urine albumin and creatinine. Effect of extract on glucose tolerance was carried out. Trichodesma amplexicaule was found to produce significant hypoglycemic activity in diabetic animals which could be compared to glibenclamide (5 mg/kg). The elevated triglycerides, total cholesterol, ALT, AST, urea and creatinine levels were significantly reduced in diabetic rats after drug treatment. The protective effect of Trichodesma amplexicaule was further confirmed by histopathological examination. The present study justifies the folkloric use of the plant to treat diabetes.

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