

Design, Synthesis and characterization of Zinc-Diosmin complex and evaluation of its antidiabetic potential in STZ-induced experimental diabetes in rats

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ABSTRACT

Zinc is an essential trace element succeeding iron in the human system. The presence of zinc in insulin molecule indicates a causal link between zinc and diabetes. Most of the zinc complexes so far investigated for their possible antidiabetic activity were poorly absorbed in their inorganic forms and required high doses which have been associated with undesirable side effects. In order to circumvent the chronic toxicity, various organo zinc complexes have been formulated and studied for their antidiabetic activity. Diosmin is a flavone glycoside found to be present in appreciable quantities in citrus fruits. In the present study, an attempt has been made to synthesize and characterize a novel zinc diosmin complex and evaluate its therapeutic efficacy in streptozotocin induced experimental diabetes in rats. Spectral studies such as IR, NMR and Mass were carried out to characterize the complex. Treatment with zinc-diosmin complex to diabetic rats at a dose of 5mg/kg body weight/day for a period of 30 days significantly decreased the levels of fasting blood glucose, glycosylated hemoglobin, urea, uric acid and creatinine in diabetic treated group of animals. Determination of plasma insulin level revealed the insulin stimulatory effect of the complex. In addition, the elevated levels of the serum transaminases and alkaline phosphatases were normalized upon treatment with the complex indicating the nontoxic nature of the complex.