

Design, synthesis and characterization of zinc-morin, a metal flavonol complex and evaluation of its antidiabetic potential in HFD-STZ induced type 2 diabetes in rats

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From National Conference on Natural Products as therapeutics, Medical Microbiology, Nanobiology and System biology: Current Scenario & Emerging Trends, 'NATCON-2014'.

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18-19 September 2014.

American J of Bio-pharm Biochem and Life Sci 2014 September, Vol. 4 (Suppl 1): P 07

ABSTRACT

Zinc is an essential trace element crucial for the function of more than 300 enzymes and equally important for cellular processes like cell division and apoptosis. Hence, the concentration of zinc in the human body is tightly regulated and disturbances of zinc homeostasis have been associated with several diseases including diabetes mellitus, a disease characterized by high blood glucose concentrations as a consequence of decreased secretion or action of insulin. The present study deals with the synthesis, characterization of zinc-morin complex and evaluation of its antidiabetic efficacy in High Fat Diet (HFD)-fed low dose Streptozotocin (STZ) induced diabetic rats. Oral administration of zinc-morin complex to diabetic rats (5mg/kg body weight/day) for a period of 30days resulted in the decreased levels of fasting blood glucose and HbA1c. Oral administration of the zinc-morin complex for a period of 30days significantly improved hyperglycemia, glucose intolerance, and insulin resistance. The elevated levels of lipid peroxides such as TBARS declined and the antioxidant competence in terms of enzymatic and non-enzymatic were found to be improved in diabetic rats treated with the zinc-morin complex. In conclusion, the present study indicates that the zinc-morin complex possess significant antidiabetic and antioxidant potentials in HFD-fed STZ induced diabetic rats.