



# STEVIA IMPROVES THE ANTIHYPERGLYCEMIC EFFECT OF METFORMIN IN STREPTOZOTOCIN-INDUCED DIABETIC RATS: A NOVEL STRATEGY IN TYPE 2 DIABETES MELLITUS

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## Abstract:

Diabetes mellitus is a major health problem that threatens the whole world. According to WHO reports, the prevalence of diabetic patients in Egypt is expected to increase from 2,623,000 in 2000 to 6,726,000 in 2030. Metformin is the first line drug for type 2 diabetes mellitus, which can be used alone or in combination with other drugs. However, the concomitant use of metformin with stevia needs more investigation to clarify the role of this combination as a new strategy in type 2 diabetes mellitus. Type 2 diabetes mellitus was induced in rats by i.p. injection of STZ and NA. Animals were divided into five groups, each contains 8 rats. Group I: negative control, group II: diabetic control received saline, group III: diabetic rats received 400 mg/kg/day stevia aqueous extract, group IV: diabetic rats received metformin 250 mg/kg/day, group V: diabetic rats received stevia 400 mg/kg/day + metformin 250 mg/kg/day. After 3 weeks blood samples were collected, animals were sacrificed and tissue samples were collected. Biochemical parameters including FBG, serum insulin, serum DPP-4, TC, TG, LDL, HDL, GSH and MDA were measured by colorimetric and ELISA methods. Both stevia and metformin significantly reduced FBG level. While serum insulin significantly increased. Serum DPP-4 was significantly reduced in all treated groups, concerning lipid profile, stevia and metformin significantly lowered TC, TG, LDL and increased HDL. Both stevia and metformin significantly decreased MDA and increased GSH compared to diabetic rats. In addition, stevia significantly improved the antidiabetic effects of metformin. Stevia has an antihyperglycemic effect and could increase the antidiabetic activity of metformin. DPP-4 attenuation, antioxidant and insulin-sensitizing effects may be involved in the antidiabetic action of stevia. Regarding lipid profile stevia showed hypolipidemic effect.

## Keywords:

diabetes mellitus, stevia, metformin, DPP-4, STZ and NA.

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