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Title: Molecular mechanisms of anti-hyperglycemic effects of Costus speciosus extract in streptozotocin-induced diabetic rats

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Abstract: Objectives: To investigate the mechanisms of the anti-hyperglycemic effect of Costus speciosus (C. speciosus) root ethanolic extracts (CSREt) by assessing its action on insulin synthesis and glucose catabolic enzyme gene expression and activities in streptozotocin (STZ) diabetic rats.
Methods: This study was carried out at the Biochemical Laboratory, Faculty of Veterinary Medicine, Zagazig University, Zagazig, Egypt between July and August 2013. Sixty male albino rats (120 +/- 20 g weight, and 6 months old) were used and divided into 6 groups (n=10). Two groups served as diabetic and nondiabetic controls. Four groups of STZ diabetic animals were given oral C. speciosus (CSREt) in doses of 200, 400, and 600 mg/kg body weight, and 600 mu g/kg body weight of the standard drug glibenclamide for 4 weeks.
Results: The CSREt 400 and 600 mg/kg body weight induced a decrease in blood glucose and an increase in serum insulin level, glucokinase (GK), aldolase, pyruvate kinase (PK), succinate dehydrogenase (SDH), and glycogen synthase activities in addition to a higher expression level of insulin, insulin receptor A (IRA), GK, PK, SDH, and glucose transporting protein.
Conclusion: The C. speciosus has anti-hyperglycemic activity. It induces insulin secretion and release from cells, as well as stimulates the tissue's insulin sensitivity leading to an increase of the tissues' glucose uptake, storage, and oxidation.

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