

Effects of Solvent Fractions of *Balanites aegyptiaca* Stem-bark Ethanollic Extract on Glucose Metabolic Enzymes in Diabetic Rats

Suggested title: Effects of Solvent Fractions of Ethanollic Extract of *Balanites aegyptiaca* Stem-bark on Glucose Metabolic Enzymes in Diabetic Rats

ABSTRACT

Aims: This study investigates anti-hyperglycemic effect of aqueous-fraction of *Balanites aegyptiaca* Stem-bark ethanollic extract on enzymes of glucose metabolism in streptozotocin (STZ) diabetic rats. (make it more clear as in title)

Methodology: Diabetes was induced in male rats by intra-peritoneal injection of 60 mg/kg body weight of STZ. *Balanites aegyptiaca* stem-bark was extracted using ethanol followed by solvent-solvent fractionation with ethyl acetate and water. The aqueous fraction obtained was used; it was orally administered at a dose of 400 mg/kg bwt (i.e. 1/10th of lethal dose) to diabetic rats, metformin (200 mg/kg bwt) serve as reference drug and diabetic/normal controls received 10 % dimethyl sulfoxide (vehicle) for the 28 days treatment period. On day 29th, rats were sacrificed; blood and liver samples were collected. Liver tissues were homogenized, centrifuged and the supernatants were used for assay of glucose metabolic enzymes while serum was used for biochemical markers estimations.

Results: Results obtained showed no death or lethal effect in the acute toxicity study up to a dose of 4000 mg/kg bwt therefore, the LD₅₀ value was considered to be >4000 mg/kg bwt. When the streptozotocin induced diabetic rats were treated with aqueous-fraction a significant ($P=.05$) regulation in glucose metabolic enzymes were noticed; glucokinase activity increased (3.04 ± 0.004 U/min/mg Protein) against untreated diabetes (2.22 ± 0.016 U/min/mg Protein) as well as glycogen synthase (0.13 ± 0.001 U/min/mg Protein) against untreated diabetes (0.09 ± 0.003 U/min/mg Protein). Glucose-6-phosphatase activity decreased (0.26 ± 0.028 U/min/mg Protein) against untreated diabetes (1.44 ± 0.054 U/min/mg Protein). Glycogen content increased to 13.77 ± 0.32 mg/g liver compared to untreated diabetes (10.69 ± 0.32 mg/g liver). Significant effects on fasting blood glucose was observed; treated diabetes (290.4 ± 18.4 mg/dL) and untreated diabetes (336.0 ± 11.9 mg/dL).

Conclusion: These results indicated that *Balanites aegyptiaca* exhibited a significant potential as antihyperglycemic agent perhaps via its effects on glucose metabolic enzymes.

Comments-(grammatical mistakes may be corrected.)

Normally CMC in distilled water is used in animal study.

What is reason for using 4000mg/kg?

bwt is not a standard abbreviation for body wt.

P=.05 is not used in significance as p value.