

***Dioscorea dumetorum*-Fed Rats Exhibited Decreased Body Weight, Blood Glucose, and Insulin in STZ-induced Diabetes**

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ABSTRACT

Background: Preventive measures that could slow down the rising incidences of diabetes mellitus are essential. The use of neglected local foods, which have effects on this chronic disease beyond basic nutrition as dietary controls, is desirable.

Objective: The effect of *Dioscorea dumetorum* (Kunth) Pax (*Dioscoreaceae*) feed on satiety, weight, blood glucose, and insulin levels were investigated in streptozotocin-induced diabetic rats.

Methods: Twenty adult male rats in four groups of five were used for the experiment. Three groups – *D. dumetorum*, glibenclamide, and standard pellet-fed rats were induced with diabetes by i.p. administration of 50mg kg⁻¹ streptozotocin, while the fourth group (?) served as a non-diabetic control. *D. dumetorum* was fed at 15g daily for ten days before induction, and after induction, feeding continued. Glibenclamide was orally administered 5mg kg⁻¹ daily. Both the untreated and non-diabetic rats were kept on standard rat pellets. Feed intake, weight, and blood glucose concentration were monitored daily, while insulin level was measured on day two and day six after inductions.

Results: Average feed intake for non-diabetic rats was 15g for *D. dumetorum* per day, which dropped to 10.3g after induction of diabetes. Weight of normal non-diabetic rats consistently increased (142.61 ± 4.37g – 169.43 ± 8.61g) for the duration (17 days) of the experiment. The *D. dumetorum*-fed rats showed weight reduction of 5.4%, glibenclamide 4.0%, and untreated diabetic 6.15%. Non-diabetic rats blood glucose levels ranged between 70 to 100mg dL⁻¹.

Streptozotocin (STZ) (i.p.) administration increased blood glucose levels from 370% to 626% in the rats. *D. dumetorum*-fed rats showed reduced ($p<0.05$) blood glucose levels of 22.6%. Glibenclamide had 5.5% reduction ($p<0.05$). Insulin was absent in *D. dumetorum*-fed rats, whereas 0.95ng ml^{-1} of insulin was detected in glibenclamide-administered rats. These quantities were lower ($p<0.001$) than 1.40ng ml^{-1} in the non-diabetic rats.

Conclusion: This study revealed that *D. dumetorum* tuber caused decreased hunger, weight reduction, and displayed hypoglycemic property in diabetic rats, even after heat treatment. Its probable mechanism of anti-hyperglycemic activity might not be through increased insulin secretion.

Key words: *D. dumetorum*, streptozotocin-induced diabetes, weight, blood glucose, insulin.