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Antioxidant Effect of Dietary Supplement *Withania somnifera* L. Reduce Blood Glucose Levels in Alloxan-Induced Diabetic Rats.

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Abstract

The phenolic compounds and flavonoids were determined from the extracts of *Withania somnifera* root (WSREt) and leaf (WSLEt). The WSREt has 28.26 mg/g total phenolic compounds and 17.32 mg/g flavonoids, whereas WSLEt has 5.4 mg/g total phenolic compounds and 5.1 mg/g flavonoids. The WSREt, WSLEt and glibenclamide were orally administered daily to diabetic rats for 8 weeks. After the treatment, the levels of urine sugar, blood glucose, liver glycogen, and antioxidants like vitamin C and E in plasma and superoxide dismutase (SOD), catalase (CAT), thiobarbituric acid reactive substances (TBARS), glutathione peroxidase (GPx), glutathione-S-transferase (GST) and reduced glutathione (GSH) in liver, kidney and heart were determined. Diabetic rats showed a significant ($p < 0.05$) elevation in glucose and TBARS and a significant ($p < 0.05$) reduction in glycogen, vitamin C and E, SOD, CAT, GPx, GST, and GSH levels when compared to normal control rats. Administration of WSREt, WSLEt and glibenclamide to diabetic rats restored the levels to normal. In the light of aforesaid facts, it is suggested that the presence of phenolic compounds including flavonoids in *W. somnifera* root and leaf extracts and their antioxidant activity may play a vital role in reduction of blood glucose level in alloxan-induced diabetic rats.

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