

Antihyperglycaemic Effect of Aqueous Extract of Daniella Oliveri and Sarcocephalus Latifolius Roots on Key Carbohydrate Metabolic Enzymes and Glycogen in Experimental Diabetes

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Abstract

The blood sugar lowering effect of the aqueous extract of *Sarcocephalus latifolius* S. M. (Rubiaceae) and *Daniella oliveri* Rolfe (Caesalpiniaceae) roots (250mg/kg) was investigated on normoglycaemic and alloxan induced diabetic rats. In addition, hexokinase, glucokinase and phosphofructokinase activities as well as hepatic glycogen content were assessed. The extract's potency was compared with a standard drug, glibenclamide. The test dose of the extract caused a significant ($p<0.05$) lowering of blood sugar level in alloxan diabetic rats within six hours; from 261.00 ± 3.02 to 65.00 ± 5.40 and from 302.75 ± 79.62 to 119.00 ± 20.30 after three weeks. The same dose did not show blood sugar lowering effect in normoglycaemic rats. Diabetic rats showed significant ($p<0.05$) decrease in the activities of hepatic hexokinase, glucokinase, phosphofructokinase and hepatic glycogen content. The extract significantly ($p<0.05$) restored both hepatic glycogen content and the activities of hexokinase, glucokinase and phosphofructokinase. The oral LD50 of the extract in mice was greater than 5000 mg/kg. Phytochemical analysis of the extract revealed the presence of high levels of flavonoids, alkaloids, saponins, glycosides, steroids and terpenoids and moderate levels of tannins. The results indicate that the decoction of the roots of *S. latifolius* and *D. oliveri* has antihyperglycaemic effect. The probable mechanism of action of the extract is discussed and we suggest that the combination of the root extracts of *S. latifolius* and *D. oliveri* is a good option for alternative medicine in the management of diabetes mellitus.

Keywords: *Daniella oliveri*, *Sarcocephalus latifolius*, diabetes, carbohydrate metabolism