



833/E2

**Efficacy and dose response of glucose tolerance of *Gmelina arborea* in alloxan induced diabetic rats**

A P Attanayake<sup>1</sup>, K A P W Jayatilake<sup>1</sup>, L K B Mudduwa<sup>2</sup> and C Pathirana<sup>1</sup>

<sup>1</sup>Department of Biochemistry, University of Ruhuna, Kamburupitiya.

<sup>2</sup>Department of Pathology, University of Ruhuna, Kamburupitiya.

An aqueous extract of *Gmelina arborea* (Sinh. Et-Demata) is documented in Aurvedic Medicine for its hypoglycaemic activity. The present study was conducted to investigate the efficacy and dose response on glucose tolerance of the aqueous extract of *G. arborea* in healthy and alloxan induced diabetic rats.

The effect of different doses of the bark extract of *G. arborea* on oral glucose tolerance test (OGTT) was evaluated. A single dose of the aqueous extract at 0.25 g kg<sup>-1</sup> - 1.25 g kg<sup>-1</sup> doses including the therapeutic dose (1g kg<sup>-1</sup>) was administered orally to normoglycaemic (healthy) and to alloxan induced (150 mg kg<sup>-1</sup> body wt, ip) diabetic rats before 30 min of glucose administration. Glibenclamide was used as the standard drug at a dose of 0.5 mg kg<sup>-1</sup>. The acute effect was evaluated over a four hour period. The efficacy of hypoglycemic activity was evaluated using the area under OGTT curve. The results of test groups and glibenclamide treated rats were compared with the respective control group. The results indicate that the hypoglycaemic effect was dose dependent. No statistically significant change was shown with the control and test groups at doses of 0.25 g kg<sup>-1</sup> and 0.5 g kg<sup>-1</sup>. The area under the curve significantly decreased (p<0.05) at a dose of 0.5 g kg<sup>-1</sup> in diabetic rats but not in healthy rats. At the therapeutic dose, the aqueous extract improves the glucose tolerance by 26 % (p<0.05) and 30 % (p<0.05) in normal and diabetic test groups respectively. Healthy and diabetic rats show higher (p<0.05) glucose tolerance with the plant extract at a dose of 1.25 g kg<sup>-1</sup>. The experimental results revealed that the aqueous extract of *G. arborea* possesses a statistically significant hypoglycaemic activity and the therapeutic dose was found to be the most effective dose on glucose tolerance in alloxan induced diabetic rats.

**Acknowledgement:** Financial assistance by UGC/ICD/CRF 2009/2/5.