**104/A**

## Hypoglycaemic mechanisms of the Beli-mal drink (water extract of dried flowers of *Aegle marmelos*)

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The hypoglycaemic effect of the water extract of dried flowers of *A. marmelos* (WEAM) has been established in healthy and alloxan-induced diabetic rats. The present study evaluated the hypoglycaemic mechanisms of WEAM. Diabetes was induced by intravenous administration of alloxan monohydrate (40 mg/kg) and rats with a serum glucose concentration > 126 g/dl were divided in to test and control groups (n = 6). Blood was drawn from overnight fasted rats and the WEAM (500 mg/kg) and distilled water were administered to the test and control groups respectively. After½ h a glucose load (3 g/kg) was administered and 2 h later blood was collected for the estimation of serum glucose, insulin, glucokinase and glycogen synthase kinase by reagent kits. The rats were immediately euthanized to harvest the intestines and the glucose concentration was estimated in the content of intestines. The mean fasting serum glucose concentrations of the test and control groups were 246.7 ± 7.43 g/dl and 239.08 ± 6.08 g/dl. There was a 22.4% ($P < 0.05$) reduction in the post glucose load serum concentration in the test group (326.17 ± 28.22 g/dl) compared to the control group (420.53 ± 12.86 g/dl). The glucose concentration of the intestinal content of the test group (14.8 ± 1.2 g/dl) was significantly reduced ($P < 0.05$) by 33.0% compared to the control group (25.07 ± 0.85 g/dl). Serum insulin was increased significantly ($P < 0.05$) by 55.1% in the test group (2.16 ± 0.26 mU/l) compared to the control group (0.97±0.08 mU/l). Among the enzymes tested, serum concentration of glucokinase was increased significantly ($P < 0.001$) by 50.7% in the test group (134.83 ± 3.09 pg/l) compared to the control group (66.5 ± 2.15 pg/l). A significant reduction ($P < 0.05$, 20%) in serum glycogen synthasekinase level in the test group (121.17 ± 4.39 pg/l) compared to the control group (149.58 ± 5.1 pg/l) was detected. The water extract of the dried flowers of *A. marmelos*exerts the hypoglycaemic effect by stimulating the secretion of insulin by pancreatic cells and improving the hepatic glucose uptake.

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