

Antidiabetic and antioxidant activities of Jack (*Artocarpus heterophyllus*) leaves

An aqueous extract of Jack leaves (*Artocarpus heterophyllus*) is used in folk medicine for the treatment of diabetes mellitus. Previous investigations using rats and humans have indicated that a single dose of *A. heterophyllus* leaves possesses significant oral hypoglycaemic activity. There are no available reports on the antioxidant action of water extract of Jack leaves. Since oxidative stress is believed to be a pathogenetic factor in the development of diabetic complications, the objective of this study was to determine the hypoglycaemic and antioxidant effects of multiple doses of *A. heterophyllus* leaf extract on normal Wistar rats. Rats were randomly divided into two groups (6 rats each). Control group was given distilled water (1 mL) and test group was given 1 mL of the hot water extract of leaves per day for one week (5 g/kg body weight). At the end of one week rats were fasted for 16 h and were subjected to glucose challenge test. The antioxidant activity was measured *in vivo* by cardiac lipid peroxidation (using TBARS assay) and *in vitro* by the ability to scavenge 1,1-diphenyl-2-picrylhydrazyl free radical. Blood glucose levels were significantly reduced by *A. heterophyllus* leaf extract (32.5%, $p = 0.0027$) indicating that this plant aqueous extract improves the glucose tolerance in Wistar rats. Fasting blood glucose levels of the test group was also significantly lower in the test group than the control (39%, $P=0.0154$). The water extract exhibited dose dependent inhibition of DPPH activity, with a 50% inhibition (IC₅₀) at a concentration of 0.35 mg/mL whereas ethyl acetate extract had at 0.2 mg/mL. In the *in vivo* lipid peroxidation assay the reduction in TBARS generation in the homogenized heart tissue when compared with controls gave a value of $52.3 \pm 0.19\%$. Our results show that multiple doses of *A. heterophyllus* leaf extract not only possess an antidiabetic effect, but also possess an antioxidant effect in normal Wistar rats.