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Hypoglycemic and anti-hyperglycemic activities of *Phyllanthus debilis* in mice

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Phyllanthus debilis (family: Euphorbiaceae; in Sinhala: Ela-Pitawakka or Bimnelli; in Tamil: Kilanelli) is one plant used in Ayruvedic medicine in Sri Lanka in the treatment of diabetic mellitus. However, hypoglycemic and anti-hyperglycemic activity of this plant has not been scientifically validated. The present study was carried out to examine the antidiabetic potential of *P. debilis*. Aqueous plant extract (APE) of *P. debilis* was prepared and normoglycaemic mice were gavaged either with 3 doses (497.5 mg/kg, 995 mg/kg &1990 mg/kg body wt.) of APE, tolbutamide (33.5 mg/kg) or distilled water (control) and fasting and random blood glucose levels were determined. In addition, the toxicity of the APE was also examined using chronic administration (30 days). In normoglyceamic mice, high dose of APE significantly lowered the fasting blood glucose level in a dose-dependant manner. Further, APE markedly improved the oral glucose (1h: 13%, 3 h: 46% and 5 h: 51%) and sucrose ((3h: 32% and 5h: 25%) tolerance tests up to 5 hrs post-treatment. The improvement of the glucose tolerance test was dose-dependant. In addition, APE significantly inhibited glucose absorption from the small intestine (control vs. treatment: 24.21±0.96 vs. 47.55±1.25). The APE did not induce any overt toxic signs, hepatotoxicity (in terms of SGOT, SGPT and pathology) or renotoxicity (in terms of serum creatinine, urea and pathology). However, the total red blood cell counts and serum HDL levels were significantly increased. It can be concluded that APE of *P. debilis* is an orally active safe drug with antidiabetic potentials and with the ability to elevate HDL cholesterol levels and total RBC counts.

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