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Hypoglycaemic effect of aqueous leaf extract of *Passiflora suberosa* L. in normal mice: possible mechanisms of action

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Aqueous Leaf Extract (ALE) of *Passiflora suberosa* (wild passion fruit/ indigo berry) was recently identified to significantly ($p < 0.01$) decrease blood glucose levels at 1st (10%), 3rd (20%) and 5th (24%) hours post treatment with a single dose (50 mg/kg). Therefore, in the present study the mechanism of action of the hypoglycaemic effect of ALE of *P. suberosa* was investigated in normal male mice (ethical clearance no: 25/14). Distilled water (control) or ALE of 50 mg/kg was orally administered to normal mice (n=9/group) for 30 consecutive days. To determine mechanisms of action; glucose absorption from the mice intestine, glycogen content in liver and skeletal muscles, glucose uptake by diaphragm and beta cell proliferation in islets of Langerhans were determined on day 31. Further, the lipid profile and toxicity effects of ALE were determined. The treatment produced a significant ($p < 0.05$) reduction in glucose absorption (by 79%: compared to control) from the intestinal lumen. Further, the chronic administration of ALE significantly ($p < 0.05$) increased the glycogen content in the liver (by 61%) and skeletal muscles (by 57%), and it did not increase the glucose uptake by diaphragm or beta cell proliferation in islets of Langerhans. The decreased cholesterol levels (by 18%), additionally contributes to its use as an antidiabetic agent in hyperglycaemic conditions. Furthermore, ALE did not induce any overt toxic signs, renotoxicity (pathology) or hepatotoxicity (ALT and histopathology) in normal mice. Present findings suggest that *P. suberosa* may exert its blood glucose lowering ability presumably through enhanced transport of blood glucose to peripheral tissues or by inhibition of intestinal glucose absorption or by both.

Keywords: Aqueous leaf extract, mechanisms of action, *Passiflora suberosa* L.