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Extra - pancreatic actions of *Trichosanthes cucumerina*

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Trichosanthes cucumerina Linn (Family: Cucurbitaceae), locally known as Dummella is commonly found in Asian countries including Sri Lanka. The aerial parts of *T. cucumerina* (T.C) are widely used in combination with other plants in the traditional medicinal systems as a remedy for fever, dropsy, acute bronchitis, boils, inflammation, skin diseases, jaundice, gastric lesions and diabetes. In Sri Lanka, the aerial parts of T.C are used as a remedy for diabetes. In a previous study we demonstrated that hot water extract (HWE) of T.C aerial parts can exert significant hypoglycemic activity in both normaglycemic and streptozotocine (STZ) induced diabetic rats. It was also shown that HWE had no effect on intestinal glucose absorption. A study was therefore, carried out to determine if extra – pancreatic effects were the main mechanisms by which the HWE exerts its hypoglycemic effect in rats. Extra – pancreatic effects were investigated by comparison of (a) Liver glycogen levels and (b)Triglyceride level in adipose tissue in normaglycemic and STZ – induced (by i.v. 50 mg/kg) diabetic rats that were orally treated with the HWE with those that did not receive the extract in the corresponding groups.

Wistar rats (175 – 200 g body weight) were randomly divided in to 4 groups. Rats in Group 1 (n = 12; normal controls) were orally administered distilled water (1.0 ml/Kg), Group 2 (n = 12; normal test) received HWE (750 mg/kg of body weight), Group 3 (n = 7; diabetic control) received distilled water (1.0 ml/Kg) while group 4 (diabetic test) received HWE consecutively for 28 days. The dose of 750 mg/kg T.C was used because it exerted the maximum hypoglycemic effect in the previous study. Rats were kept fasting and, blood samples were collected from their tails at 14 days and 28 days post treatment and serum glucose levels determined. Subsequently, rats were sacrificed, livers and adipose tissues were harvested and subjected for estimation of glycogen levels and triglyceride levels respectively.

In the diabetic rats, compared to the control group HWE significantly reduce the blood glucose levels at the end of 14 days and 28 days. The reduction in blood glucose was comparable to that produced by the antidiabetic drug, glibenclamide (0.6 mg/Kg). In normaglycemic rats HWE reduced the blood glucose levels at the end of 14 and 28 days. At the end of 28 days, it was found that in both normaglycemic and STZ – induced diabetic rats, there was a significant ($P \leq 0.05$) increase in the levels of liver glycogen (normaglycemic rats by 55.8 %; diabetic rats by 93.6 %) and adipose tissue triglyceride (normaglycemic rats by 14.3 %; diabetic rats by 16.7 %) in comparison with the respective controls that were not treated with HWE.

It may be concluded that hypoglycemic effects demonstrated by T.C are mediated mainly via enhanced up take of blood glucose in to extra – pancreatic tissues.

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