



Effect of *Coccinia Grandis* (Ivy Gourd) Extract on the Pancreatic β -cells in Streptozotocin Induced Diabetic Rats

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Abstract

Introduction: *Coccinia grandis* (L.) Voigt (Family: Cucurbitaceae) has traditionally been used as an anti-diabetic phyto-medicine. The efficacy of antihyperglycaemic activities of the *Coccinia grandis* extract was determined in diabetic rats previously by our group. However, detailed antihyperglycaemic mechanisms of the *C. grandis* extract (0.75 g/kg) on the pancreas have not been reported in diabetic rats. Therefore, this study aimed to investigate the effect of leaf extract of *C. grandis* on the regenerative potency of pancreatic β -cells in streptozotocin induced diabetic rats. **Methods:** Wistar rats were divided into four groups (n=6/group); healthy untreated rats, streptozotocin-diabetic untreated rats (65 mg/kg, ip), diabetic rats receiving the aqueous leaf extract of *C. grandis* (0.75 g/kg) and diabetic rats receiving glibenclamide (0.50 mg/kg). The treatment continued for 30 days. The pancreas was excised from sacrificed rats in all groups. Immunohistochemical staining was done on paraffin embedded tissue blocks of the pancreas to confirm the presence of insulin secreting β -cells. **Results:** There was an increase in the number of islets and the percentage of insulin secreting β -cells in plant extract treated diabetic rats compared to untreated diabetic control rats. In addition, the *C. grandis* extract produced a significant increase in mean islet profile diameter in small (111% p=0.010), average (6% p=0.040), and large (16%, p=0.010) islets as compared with streptozotocin induced diabetic control rats. There was a slight improvement in the percentage of β -cells in glibenclamide treated diabetic rats. However, the islet profile diameter was not altered with the treatment of glibenclamide (p=0.055). **Conclusion:** The results revealed that the aqueous leaf extract of *C. grandis* (0.75 g/kg) induces β -cell regeneration in the pancreas of streptozotocin induced diabetic rats. Therefore, it could be considered as one important mechanism in which the leaf extract of *C. grandis* exerts its antihyperglycaemic activity *in vivo*.

Keywords: antidiabetic mechanisms, β -cell regeneration, *Coccinia grandis* extract, diabetic rats

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