

Comparative study of antidiabetic activity of *Cajanus cajan* and *Tamarindus indica* in alloxan-induced diabetic mice with a reference to in vitro antioxidant activity

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ABSTRACT

Background Oxidative stress not only develops complications in diabetic (type 1 and type 2) but also contributes to beta cell destruction in type 2 diabetes in insulin resistance hyperglycemia. Glucose control plays an important role in the pro-oxidant/antioxidant balance. Some antidiabetic agents may by themselves have antioxidant properties independently of their role on glucose control. **Objective** The present investigation draws a comparison of the protective antioxidant activity, total phenol content and the antihyperglycemic activity of the methanolic extract of *Cajanus cajan* root (MCC) and *Tamarindus indica* seeds (MTI). **Materials and Methods** Antidiabetic potentials of the plant extracts were evaluated in alloxan-induced diabetic Swiss albino mice. The plant extracts at the doses of 200 and 400 mg/kg body weight was orally administered for glucose tolerance test during 1-hour study and hypoglycemic effect during 5-day study period in comparison with reference drug Metformin HCl (50 mg/kg). In vitro antioxidant potential of MCC and MTI was investigated by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging activity at 517 nm. Total phenolic content, total antioxidant capacity and reducing power activity was also assayed. **Results** There was a significant decrease in fasting serum glucose level ($P < 0.001$), reduction in blood glucose level ($P < 0.001$) in 5-days study, observed in the alloxan-induced diabetic mice. The reduction efficacy of blood glucose level of both the extracts is proportional to their dose but MCC is more potent than MTI. Antioxidant study and quantification of phenolic compound of both the extracts revealed that they have high antioxidant capacity. **Conclusion** These studies showed that MCC and MTI have both hypoglycemic and antioxidant potential but MCC is more potent than MTI. The present study suggests that both MCC and MTI could be used in managing oxidative stress.

KEYWORDS

Alloxan . antioxidant activity . 1, 1-diphenyl-2-picrylhydrazyl . hyperglycemia . metformin hydrochloride . oxidative stress

REFERENCES