Antihyperglycemic Effects of *Tragia plukenetii* Ethanolic Extract

Sama Venkatesh¹*, T. Rajini¹, Humera Afroz¹, P. Balaraju¹, B. Madhava Reddy¹ and Mullangi Ramesh²

G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad-500028, Telangana, India; and Jubilant Innovation, 96, Industrial Suburb, Yeshwanthpur, Bangalore-566022, Karnataka, India.

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**ABSTRACT**

Plants represent a major potential source of drugs for treating diabetes. The study of plants having antidiabetic activity may give a new approach in the treatment of diabetes mellitus. *Tragia plukenetii* is traditionally claimed to be useful in the treatment of diabetes. The present study was intended to evaluate the antihyperglycemic activity of aqueous ethanolic extract on normal fasted, glucose loaded and alloxan induced diabetic rats, at an oral dose of 75, 150 and 300 mg/kg in male Wistar rats. The alcoholic extract has not produced any hypoglycemia in normal fasted rats. The ethanolic extract has displayed a significant dose dependent antihyperglycemic activity in oral glucose tolerance test and in alloxan induced diabetic rats at an oral dose of 150 and 300 mg/kg. The ethanolic extract has effectively scavenged the stable free DPPH radical *in-vitro*. It is concluded that *Tragia plukenetii* aerial parts alcoholic extract is effective in controlling blood glucose levels in diabetic rats.

**KEYWORDS:** *Tragia plukenetii*, Hypoglycemia, Antidiabetic activity, Alloxan, Glucose, Ethanolic extract, DPPH.

**Introduction**

Plants have been the basis of many traditional systems of medicines throughout the world for thousands of years and continue to provide mankind with new remedies. Plants represent a major potential source of drugs for treating diabetes (Alarcon-Aguilar et al., 1998). Diabetes mellitus is a metabolic disorder characterized by hyperglycemia, which affects the metabolism of carbohydrates, fats and proteins. This metabolic disorder is associated with absolute or relative deficiency in insulin action (Cunha et al., 2008). The recommendation of WHO committee on diabetes mellitus is encouraging research on hypoglycemic agents of plant origin used in traditional medicine has greatly motivated the researchers (Malalavidhane et al., 2000). In several studies treatment with traditional medicine in the form of plant extract has been reported to give remarkably good results. Available ethnobotanical information reports about 800 plants which may possess antidiabetic potential. However, most orally active hypoglycemic remedies extracted from plant materials are not scientifically evaluated and incompletely characterized.

*Tragia plukenetii* R. Smith. (Euphorbiaceae) is an herb or undershrub and commonly known as Chinnadulagondi. The ethanolic extract of *Tragia plukenetii* is reported to possess antioxidant and antitumor properties when tested in *Ehrlich ascites* carcinomacells (Muthuraman et al., 2008). The aqueous juice of *Tragia plukenetii* aerial parts is claimed to be useful in treatment of diabetes at Tirupati region of Andhra Pradesh, India. *Tragia cannabina* is claimed to be a cure for diabetes in traditional medicines (Sivajothi et al., 2008). The alcoholic extract of *Tragia cannabina* was reported to possess a significant antihyperglycemic effect in streptozotocin induced diabetic rats at a dose of 250 mg/kg (Sivajothi et al., 2007). In view of the reported antihyperglycemic activity of other *Tragia* species and traditional claim, *Tragia plukenetii* is screened for antihyperglycemic activity with the aim of developing a natural antidiabetic drug.

**Materials and Methods**

**Plant material**

The aerial parts of *Tragia plukenetii* were collected from Vallur village of Kadapa district, Andhra Pradesh. The botanical identification of plant is performed by Prof. Rama Krishna, Head, Department of Botany, P.G College of Science, Hyderabad. The voucher specimen (TRP-303-09) is being maintained in Department of Phytochemistry and Pharmacognosy.

**Preparation of extract**

The dried aerial parts powder (470 gm) was extracted with 80% aqueous ethyl alcohol by maceration for seven days. The contents were filtered and concentrated under reduced pressure in rotary flash evaporator, yielding 9.26% of extract. The extract was subjected to

**ABBREVIATIONS:** DPPH- 2,2-diphenyl-1-picrylhydrazyl; CMC- Carboxy methyl cellulose