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Evaluation of Antiulcer Activity of *Cordia sebestena* L. Root



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ABSTRACT

Cordia sebestena L. is also known as Geiger–Tree. It is a rounded, evergreen tree belongs to Boraginaceae family. It grows up to 25 feet with equal spread. Peptic ulcer disease affect a large portion of the world population and are induced by several factors, including stress, smoking, nutritional deficiencies, and ingestion of non-steroidal anti-inflammatory drugs. The pathophysiology of these ulcers involves an imbalance between offensive and defensive factors. Medicinal plants are considered to be a potential source to combat various diseases including gastric ulcer. The present study is an attempt to evaluate antiulcer activity of chloroform, ethyl acetate and methanol extracts. Preliminary phytochemical studies had shown the presence of flavonoids, alkaloids and glycosides. For inducing ulcer 80% ethanol was used. Methanol extract showed significant antiulcer activity when compared with standard Lansoprazole (30 mg/kg). This study suggested that *Cordia sebestena* possess antiulcer activity which supports the traditional use of the plant.

INTRODUCTION

Peptic ulcer disease is one of the most common diseases affecting the millions of people. Peptic ulcer occurs due to an imbalance between the aggressive (acid, pepsin and *Helicobacter pylori*) and the defensive (gastric mucus and bicarbonate secretion, prostaglandins, innate resistance of the mucosal cells) factors¹. Today, across the world people are becoming more & more aware of the importance of turning back to nature to combat different health problems. *Cordia sebestena* L. is an evergreen tree belongs to Boraginaceae family, also known as Geiger – Tree. The large seven-inch long, stiff, dark green leaves are rough and hairy. Dark orange two-inch flowers appear in clusters at branch tips, which have a pleasant fragrance. Flowers appear throughout the year, but especially in spring & summer. Fruits are in oval shape with green and white colour. Hawaiians refer to the plant as Kou Haole though, which means “foreign plant”². Recent archaeological evidence indicates that the plant is actually indigenous to the islands³. The leaves of the plant possess anti hyperglycemic property against streptazotocin induced diabetes, and it is anti-hypolipidemic & potent antioxidant⁴. The present study was undertaken for evaluation of antiulcer activity of *Cordia sebestena* L.

MATERIALS & METHODS

Plant Material

The roots of *Cordia sebestena* L. were collected from Talakona forest in Chittoor District of Andhra Pradesh in the month of June, 2013.

Preparation of Extract

The roots of *Cordia sebestena* L. were dried and powdered. The powder was extracted by using Soxhlet apparatus with chloroform, ethyl acetate and methanol. The extract was concentrated under reduced pressure.

Animals

Adult Wister rats of either sex weighing 180-200 gm were used for the study of antiulcer activity. The animals were maintained under standard environmental conditions and were fed with standard pellet diet with water *ad libitum*.

Acute Toxicity Studies

Acute oral toxicity studies were performed as per OECD-423 guidelines. Healthy Wister mice were used for the study. The mice were weighed and marked for identification. The animals were divided into six groups containing six animals in each group. The extract was administered orally at the doses from 200- 2000 mg/kg. There were no signs of toxicity and mortality was observed up to 2000 mg/kg.

Evaluation of Antiulcer Activity

The antiulcer activity was evaluated in healthy adult Wistar rats (180-200 gms) in groups of six animals of each dose. Albino rats were fasted for 24 hrs with free access to water. The rats were given test sample (chloroform, ethyl acetate and methanol extracts of *Cordia sebestena* L. 150 and 300 mg/kg) and standard Lansoprazole (30 mg/ kg).

One hour later, 1 ml of 80% ethanol administrated orally to each animal. After 1 hr of ethanol administration, animals were sacrificed; the stomach was removed and cut along the greater curvature to measure the Ulcer Index⁵.

Table 1. Effect of *Cordia sebestena* L. root against ethanol induced gastric ulcer in rats

Group	Dose	Alcohol	
		Ulcer Index	% of Ulcer Protection
Control	-----	7.5±0.65	-----
Standard (Lansoprazole)	30 mg/kg	1.33±0.47	83.02***
Chloroform extract	150 mg/kg	2.36±0.54	26.12*
Chloroform extract	300 mg/kg	4.54±0.74	31.74**
Ethyl acetate extract	150 mg/kg	4.41±0.66	27.89**
Ethyl acetate extract	300 mg/kg	3.32±0.42	47.82**
Methanol extract	150 mg/kg	4.36±0.72	31.22**
Methanol extract	300 mg/kg	3.63±0.49	49.69**

Results are mean \pm S.E.M. (n=6). Statistical comparison was performed by using ANOVA coupled with Student 't' test.* P<0.05, **P<0.01,***P<0.001 were considered statistically significant when compared to control group.

RESULTS AND DISCUSSION

The chloroform, ethyl acetate & methanol extracts of *Cordia sebestena* root showed significant antiulcer activity at both the dose levels (150 mg/kg & 300 mg/kg). Pretreatment of rats with *Cordia monoica* extracts produced a dose dependent protection in the ethanol induced ulceration model as compared to control group. Chloroform extract showed 26.12%, 31.74% of ulcer inhibition at the dose level of 150 mg/kg and 300 mg/kg respectively. Ethyl acetate extract showed 27.89% and 47.82% of ulcer inhibition at 150 mg/kg and 300 mg/kg dose levels, and methanol extract showed 31.22% and 49.69% whereas Lansioprazole showed 82.68% of ulcer inhibition. The maximum effect of ulcer protection was produced at 300 mg/kg for methanol extract. Anti-ulcerogenic effect of *Cordia monoica* root extract in ethanol induced ulcers was comparable to that of Lansioprazole 30 mg/kg. However the protection was statistically significant reduced the severity of ulcer and caused a significant reduction of ulcer index in this model.

CONCLUSION

Today a large section of world's population relies on traditional remedies to treat plethora of diseases due to their low cost and lesser side effects. The chloroform, ethyl acetate & methanol extracts of *Cordia sebestena* root showed significant antiulcer activity (at 150 mg/kg & 300 mg/kg).

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