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RESEARCH ARTICLE

EVALUATION OF ANTI-ULCER ACTIVITY OF METHANOLIC EXTRACT OF *JASMINUM TRICHOTOMUM* LEAVES IN ALBINO RATS

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ABSTRACT

Jasminum trichotomum Leaves (oleaceae) has been reported various medicinal uses including analgesic, antipyretic and anti-inflammatory activities. We studied the anti-ulcer potential of the methanolic extract in order to validate ethanobotanical claim regarding the plant use in the above mentioned disorders. Gastro protective potential of the methanolic extract of *Jasminum trichotomum* (200 and 400 mg/kg/body weight) was studied on ethanol induced ulcers. The results of the present study shows that the methanol extracts of *Jasminum trichotomum* exert gastro-protective action against ethanol induced ulcer model. The parameters studied were ulcer index, total acidity and free acidity. These findings could justify, at least partially, the inclusion of this plant in the management of gastric disorders in traditional medicine.

Keywords: Analgesic, Antipyretic, Anti-inflammatory, Anti-ulcer, *Jasminum trichotomum*

INTRODUCTION

Jasminum trichotomum is a medium sized glabrous tree popularly known as Karanja in Hindi, Indian beech in English, and Kattumalligai in Tamil. Historically, *Jasminum trichotomum* has been used as folk medicinal plant, particularly in Ayurveda and siddha systems of Indian medicine[1]. All parts of the plant have been used as a crude drug for the treatment of tumours, piles, skin diseases, itches, abscess, painful rheumatic joints wounds, ulcers, diarrhoea etc. The roots are bitter and are useful for external application in ringworm infections and are recommending for ophthalmopathy[2]. In the present study, we investigated the anti-ulcer activity of the methanol extract of *Jasminum trichotomum* leaves in experimental animal using ethanol induced ulcer in rats[3].

MATERIALS AND METHODS

Collection of Plant

The plant *Jasminum trichotomum* is widely found throughout India, especially inTamilnadu. For our work the leaf of the plant was collected from Bhavani in the month of august 2012 and authenticated by Prof. P.Jayaraman, Ph.D, Plant Research Centre Chennai, Tamil nadu (RegNo:PAR/2011/748) The voucher specimen was deposited at the department for future reference.

Extraction of Plant Materials

The leaves were dried in shade, the dried leaves were powdered by mixer grinder and powder was passed through sieve number 40 and the powder was used for extraction. About 400g of air dried powder was taken in a 1000ml Soxhlet apparatus and extracted with petroleum ether for 2 days. After drying the powder was again packed and extracted by using methanol as solvent, till the colour disappeared. The temperature was maintained at 55˚C-65˚C. After that the extracts was concentrated by distillation and solvent was recovered. The final solution was evaporated to dryness and dry residue was obtained[4].

Animals

The albino rats both sex, weighing 150-200g were used. The experimental protocols were approved by Institutional Animal Ethical Committee has been taken to carry out and complete this study.

Experimental Study

Animal Oral Toxicity Study

Animal (albino rats 150 -200gm) were selected for studies. The procedure was followed by using OECD guidelines 423 (Acute toxic class method).

Preliminary Phytochemical analysis

The preliminary analysis carried out to find out the phytochemical constituents present in the Crude extracts[5].

Ethanol Induced Ulcer

Male Albino rats were divided into five groups of six animals per group and animals were fasted for 24 hrs prior to the experiment in perforated steel cages to avoid coprophagy. Six groups were made as below.

Group I - received 1 % Acacia (1 .0ml/kg, p.o) as normal control.

Group II - received 1% Acacia (l.0ml/kg,p.o) as vehicle control.

Group III - received (l00mg/kg, p.o) methanol extract of *Jasminum trichotomum*

Group IV - received (200mg/kg, p.o) methanol extract of *Jasminum trichotomum*

Group V - received (20mg/kg, p.o) Omeprazole as standard.

One hour after the drug treatment the animals were treated with absolute ethanol [5ml/kg] to induce ulcers. The

animals were sacrificed after 1 hr and stomach was opened and percentage inhibition of ulcer was determined[6]. The stomach was carefully excised keeping oesophagus closed and opened along greater curvature and luminal contents were removed. The gastric contents were collected in a test tube and centrifuged. The gastric contents were analyzed for gastric juice volume, pH, free and total acidity. The mucosa was hushed with saline and stomach was pinned on frog board. The lesion in glandular portion was examined under a 10x magnifying glass and as measured using a divider and scale and gastric ulcer was scored. Ulcer was calculated by adding the values and their mean values were determine[7].

- 0 -Normal coloured stomach
- 0.5 - Red colouration
- 1 - Spot ulceration
- 1.5 - Haemorrhagic stroke
- 2 - ulcers
- 3 - Perforations

Statistical Analysis

All the values are expressed as mean ± S.E.M for groups of six animals each. Analyzed by one way ANOVA and compared by using Tukey- Kramer multiple comparison test. The values are statistically significant at three levels, ***p<0.001. **p<0.01.*p<0.05. But ns if p> 0.05.

RESULT AND DISCUSSION

Phytochemical analysis

Leaves were collected, dried, extracted with petroleum ether and methanol tested for its Phytochemical constituents with different chemical tests. All the extract was showed the presence of alkaloids, carbohydrates, glycosides, phytosterols and flavonoids, show in Table1.

Table 1: Preliminary Phytochemical test

SL NO.	TEST FOR	RESULTS
1	Carbohydrates:	
	a. Molisch's test	+
	b. Fehling's test	+
	c. Barfoed's test	+
	d. Benedict's test	+
2	Proteins and amino acids:	
	a. Million's test	-
	b. Ninhydrin test	-
	c. Xanthoprotic reaction	-
3	Alkaloids:	
	a. Mayer's test	+
	b. Dragendroff's test	+
4	Phytosterols	
	a. Libbermann-Burchards test	+
	b. Salkowski test	+
5	Phenolic compounds and tannins	
	a. Ferric chloride test	-
	b. Gelatin test	-
	c. Lead acetate test	-
	d. Alkaline reagent	-
6	Glycosides	
	a. Borntrager's test	+
	b. Legal's test	+
7	Flavonoids	
	a. Ferric Chloride test	+
	b. Lead Acetate solution test	+
8	Saponins	
	a. Frothing test	-

Acute oral toxicity studies

The acute oral toxicity of the methanolic extract of *Jasminum trichotomum* was carried out as per OECD 423-guidelines (Acute toxic class method). Acute toxicity studies revealed that LD_{50}>2000mg/kg for the extract. Hence, the biological dose was fixed at EEJT 100&200mg/kg of body weight for the extract.

Ethanol induced ulcer

Effects of methanolic extract of *Jasminum trichotomum* was on ulcer index induced by ethanol in rats are show in Table 2. Ethanol induced gastric damage showed gross mucosal lesion, including long haemorrhage bands and petechial lesion. Animal pre-treated with methanol extract of *Jasminum trichotomum* and standard drug omeprazole showed very mild lesions and sometimes no lesion at all, when compared to ulcer control group.

Table 2: Effect of *Jasminum trichotomum* on ulcer index in ethanol induced gastric ulcer

GROUP	ULCER INDEX(UI)	PERCENTAGE INHIBITION (%)
Normal control	0	-
Ulcer control	19.66±0.55***	-
Jasminum trichotomum (100mg/kg)	4.66±0.35***	76.29%
Jasminum trichotomum (200mg/kg)	1.8±0.21***	90.84%
Omeprazole (20mg/kg)	1.08±0.15***	94.5%

All values are expressed as mean±S.E.M; (n=6) animals in each group. ***p<0.001. **p<0.01.*p<0.05, ulcer control was compared with Normal control Group. Omeprazole and extract treated Groups were compared with ulcer control group.

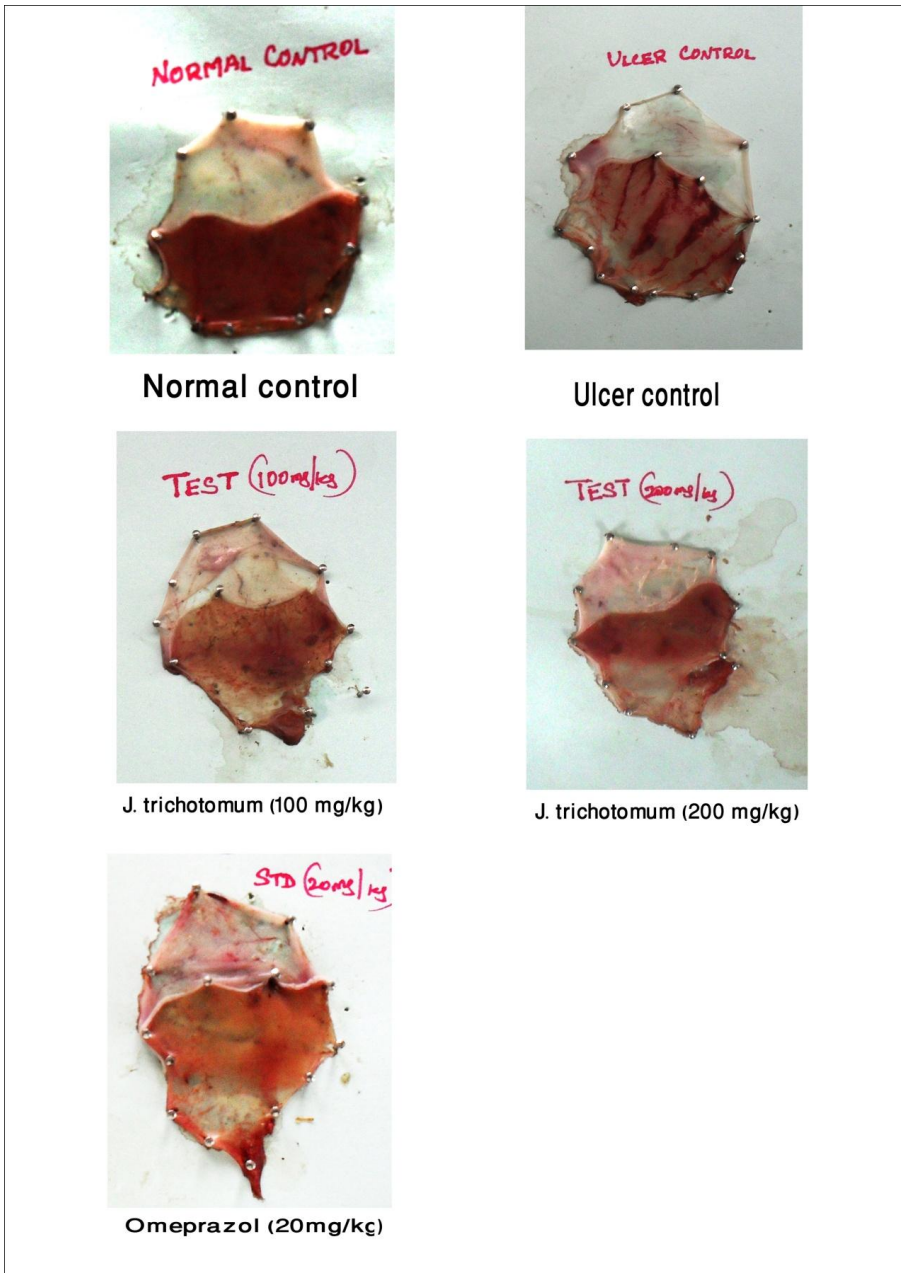

Figure 1: Effect of *Jasminum trichotomum* on ethanol induced ulcers

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Table 3: Effect of *Jasminum trichotomum* on Gastric secretion, total acidity and free acidity using ethanol induced ulcer

Group	Gastric volume (ml/100g)	pH of gastric juice	Free acidity	Total acidity
Normal control	1.3±0.05***	4.5±70.02***	52±0.63***	75±0.73***
Ulcer control	3.45±0.14***	3.73±0.01***	81.16±0.06***	98±0.77***
Jasminum trichotomum (100mg/kg)	2.7±50.06***	6.60±0.02***	48.16±1.01**	70.6±0.42***
Jasminum trichotomum(200mg/kg)	2.55±0.61***	6.87±0.01***	38.66±0.66***	61±0.57***
Omeprezole(20mg/kg)	1.76±0.03**	7.30±0.01***	31.33±0.66***	50.16±0.68***

All values are expressed as mean ± S.E.M. (n=6) animal in each group. ***p<0.001. **p<0.01.*p<0.05.Ulcer control group was compared with Normal control group. Omeprazole and extract treated groups were compared with ulcer control group.

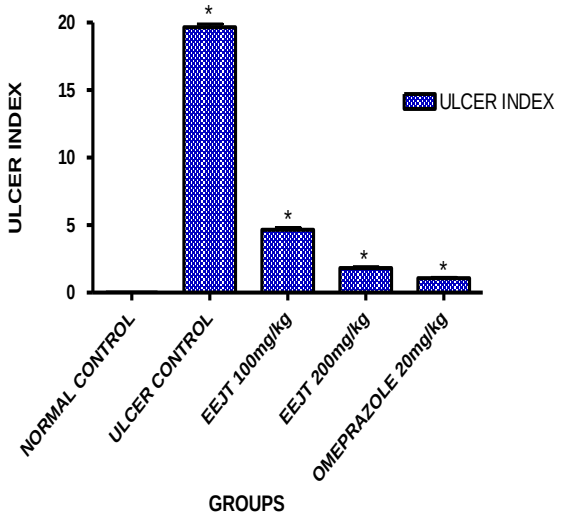

Figure 2: Effect of J*asminum trichotomum* on Ulcer index in ethanol induced

(All values are expressed as mean±S.E.M; (n=6) animals in each group.*p<0.001, ulcer control was compared with Normal control Group. Omeprazole and extract treated Groups were compared with ulcer control group)

CONCLUSION

In the present study attempts were made to study detail Phytochemical and pharmacological, particularly anti-ulcer activity of the leaves of *Jasminum trichotomum.* Phytochemical analysis shows the presence of alkaloids, flavanoids, glycosides, phytosterols and carbohydrates. In conclusion this extraction studies it found that the leaves *Jasminum trichotomum* has potent anti ulcer activity.

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