

ANALGESIC, ANTIPYRETIC AND ANTI-INFLAMMATORY STUDIES ON METHANOLIC EXTRACT OF *JASMINUM TRICHOTOMUM* LEAVES

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ABSTRACT

The present study was planned to evaluate the analgesic, antipyretic and anti-inflammatory activities of methanolic extract of *Jasminum trichotomum* leaves in albino rats following oral administration. The results showed that the methanolic extract significantly reduce the acetic acid induce writhing in analgesic model. Its effects on antipyretic activity were also appreciable it significantly reduces fever at higher doses within 2 hrs on yeast induce hyperthermia in rats. Edema induced by carrageenan was also significantly reduced within 1 to 7 hr. post dosing at all the dose levels used.

KEYWORDS: Analgesic, Antipyretic, Anti-inflammatory, *Jasminum trichotomum*

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INTRODUCTION

Jasminum trichotomum (Family: oleaceae) is a wiry small scandent shrub, frequently found in moist deciduous evergreen forests and widely distributed through out the greater part of India. Traditionally roots and leaves are used. The roots are bitter, acrid, and are useful for external application in ringworm and herpes and are recommended for ophthalmopathy ulcerative stomatitis, leprosy pruritus and wounds. The leaves are used as an emetic in cases of poisoning¹. In the present study, we investigated the anti-inflammatory activity of the methanol extract of *Jasminum trichotomum* leaves in experimental animal model using carrageenin-induced paw edema in rats. The analgesic and antipyretic activities were also examined using the writhing and tail immersion tests in mice and yeast-induced pyrexia in rats respectively.

MATERIALS AND METHODS

Animals

Wister albino rats of either sex weighing about 150- 200 gm and adult albino mice of either sex weighing 25 -30 gm were employed for this study and were procured from institute animal house. The animals were maintained under standard laboratory conditions.

Animals were allowed to take standard laboratory feed and tap water. Ethical clearance to perform the animal experiment was obtained from institute animal ethical committee (IAEC)

Plant

The leaves of *Jasminum trichotomum* were collected from an open field around B.Komarapalayam, Namakkal district Tamilnadu. Mr.G.V.S Murthy carried out identification of the plant at the Botanical Survey of India, Coimbatore-641003. The voucher specimen of *Jasminum trichotomum* leaves (JKK/CH/10) has been preserved in our herbarium for further collection and reference.

Experimental design

Analgesic activity: Acetic acid-induced writhing response in rats

To evaluate the analgesic effects of the plant extract, the method described by Koster R et al.² was used with slight modifications. Different groups of five rats each received orally normal saline solution (2ml/kg) (i.e. control), indomethacin (10mg/kg), or plant extract (250, 500mg/kg). Thirty minutes later, 0.7% acetic acid (10ml/kg) solution was injected intraperitoneally to all the animals in the different groups. The number of

writhes (abdominal constrictions) occurring between 5 and 20 min after acetic acid injection was counted. A significant reduction of writhes in tested animals compared to those in the control group was considered as an anti-nociceptic.

Antipyretic activity: Brewer's yeast induce hyperthermia in rats

Antipyretic activity was measured by slightly modifying the method described by Adams *et al*³. Rats were fasted overnight with water *ad libitum* before the experiments. Pyrexia was induced by subcutaneously injecting 20% w/v brewer's yeast suspension (10ml/kg) into the animal's dorsum region. 17 hr after the injection, the rectal temperature of each rat was measured using a digital thermometer. Only rats that showed an increase in temperature of at least 0.7⁰C were used for experiments. Methanolic extract of *Jasminum trichotomum* (250 mg/kg and 500 mg/kg b.w.), Paracetamol (200mg/kg b.w.) or vehicle was administered orally and the temperature was measured at 0, 1, 3, 5, and 7 hr after treatment.

The percentage of inhibition of abdominal constrictions for the extract treated groups was compared with control group.

$$\% \text{ inhibition} = \frac{\text{Control} - \text{test}}{\text{Control}} \times 100$$

Anti-inflammatory activity: Carrageenan induced hind paw edema in rats

Paw edema was produced in rats by carrageenan following the methods of Winter *et al*⁴. Male rats weighing 100–120 g were divided into groups of five animals. A volume of 0.05 ml of 1% carrageenan in normal saline solution (NSS) in 0.2M carbonate buffer was injected intradermally into the plantar side of the right hind paw of the rat. Test drugs and vehicle were given 1 h prior to carrageenan injection. Paw volumes were measured using a plethysmometer at 1, 3 and 5 hr after carrageenan, injection. Results obtained were compared with those obtained from their control groups, which received vehicle only.

The percentage of inhibition was calculated by using the formula,

$$\% \text{ inhibition} = \frac{V_c - V_t}{V_c} \times 100$$

Where, V_c = Average paw volume of control; V_t = Average paw volume of test

Statistical Analysis

Data were expressed as means ± S.E.M. Differences between the test and control groups of animals were evaluated using ANOVA and Duncan post-hoc test. Results were considered significant at *p < 0.05 (Significant) **p < 0.01 (highly significant).

RESULTS

Effect of *Jasminum trichotomum* methanolic extract on Acute toxicity study

Oral administration of graded doses (250 and 500mg/kg p.o.) of the methanolic extract of *Jasminum trichotomum* to rats did not produce any significant changes in behavior, breathing, cutaneous effects, sensory nervous system responses or gastrointestinal effects during the observation period. No mortality was recorded in any group after 72hr of administering the extract to the animals.

Effect of *Jasminum trichotomum* methanolic extract on Analgesic activity

Table.1 shows the effect of ME of *Jasminum trichotomum* significant shows analgesic activity.

Effect of *Jasminum trichotomum* methanolic extract on Antipyretic activity

Table 2 shows the effect of ME of *Jasminum trichotomum* significant decrease the pyretic activity.

Effect of *Jasminum trichotomum* methanolic extract on Anti-inflammatory activity

Table 3 shows the effect of ME of *Jasminum trichotomum* significant decrease the inflammatory activity.

DISCUSSION

In the present study attempts were made to study detail Phytochemical and pharmacological, particularly analgesic, antipyretic and anti-inflammatory of the leaves of *Jasminum trichotomum*. Phytochemical analysis of *Jasminum trichotomum* Methanolic extract of leaves shows the presence of alkaloids, flavonoids, glycosides, phytosterols and carbohydrates. In conclusion, this study has shown that, the methanolic extract of leaves of *Jasminum trichotomum* leaves has significantly reduced analgesic, pyretic and inflammatory. These properties justify its use by traditional healers as an analgesic, pyretic and inflammatory.

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Table 1: Analgesic activity - Writhing Test

Group	Dose mg/kg	No. of writhes	Inhibition of Writhing Response (%)
Control	5 ml	46.80±1.60	-----
Indomethacin	10mg	12.52±1.07**	73
MEJT	150mg	22.01±1.50*	53
MEJT	250mg	16.08±1.03**	66

Values are expressed as mean ± S.E.M. (n = 5); * p= 0.05(significant) **p=0.01 (highly significant) vs. control. MEJT-Methanolic extract of *Jasminum trichotomum*

Table 2: Antipyretic activity - Brewer's yeast induced pyrexia in rats

Group	Dose mg/kg	Rectal temperature in °C at time (hr.)				
		0hr	1hr	3hr	5hr	7hr
Control	5 ml	36.09±0.18	36.27±0.08	36.44±0.02	36.72±0.09	36.54±0.09
Paracetamol	200mg	36.27±0.07	34.397±0.02	34.59±0.10	34.87±0.03**	34.12±0.07**
MEJT	150mg	36.50±0.18	35.07±0.07*	35.42±0.27*	35.42±0.15*	35.30±0.14*
MEJT	250mg	36.40±0.29	35.00±0.07**	34.92±0.03**	34.71±0.06**	35.09±0.09*

Values are expressed as mean ± S.E.M. (n = 5); * p = 0.05(significant), ** p=0.01 (highly significant) vs. control. MEJT-Methanolic extract of *Jasminum trichotomum*

Table: 3 Anti-inflammatory activity - Carrageenan –induced paw edema

Group	Dose mg/kg	Paw volume increase (ml)			% inhibition		
		1hr	3hr	5hr	1hr	3hr	5hr
Control	5 ml	0.35±0.01	0.77±0.03	0.90±0.01	-	-	-
Indomethacin	10mg	0.11±0.12**	0.22±0.06**	0.21±0.01**	69	71	76
MEJT	150mg	0.26±0.02**	0.33±0.10*	0.38±0.04**	26	57	58
MEJT	250mg	0.15±0.01*	0.28±0.02**	0.29±0.02**	57	63	68

Values are expressed as mean ± S.E.M. (n = 5); * p = 0.05(significant), ** p=0.01 (highly significant) vs. control. MEJT-Methanolic extract of *Jasminum trichotomum*

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