



ANTIPYRETIC ACTIVITY OF METHANOLIC EXTRACT OF LEAVES OF *FICUS RACEMOSA* LINN. ON ALBINO RATS

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Abstract

The study of antipyretic effect of methanolic extract of leaves of *Ficus racemosa* Linn. The methanolic extract was tested on Brewer's yeast-induced pyrexia in Wistar Albino rats. The leaves extract at oral doses of 100mg/kg and 200mg/kg has been used to investigate the Antipyretic potential of leaves extract. Both doses showed significant reduction in body temperature on Brewer's yeast induced pyrexia when compared to standard (paracetamol 100mg/kg.).

Key words: Antipyretic, methanolic extract and *Ficus racemosa*, Linn.

Introduction

Ficus racemosa Linn. (Moraceae) is a large deciduous tree. It is native to all over india , srilanka , Pakistan , southern china to new guinea and northern Queensland and Australia. A medium-sized to large evergreen or occasionally deciduous tree up to 18 m tall, often with an irregular, shabby crown. Receptacles (figs) subglobos, dense tomentose, 1.5-4 cm across, dull reddish when ripe, borne in large clusters on short, leafless, warty, branches arising from the trunk and older branches. Leaves alternate, glabrous, 6-9 cm long and 3.2-8.5 cm wide, ovate-oblong, pinkish-brown to reddish-gray, coarsely flaky on older trees; latex copious, cream-buff in color. The different parts of the plant are traditionally used as anticancer¹, anti-inflammatory², hepatoprotective³, antifilarial⁴, antimicrobial⁵, larvicidal activity⁶, anthelmintic⁷, antitussive⁸, hypoglycaemic activity⁹. The plant has not been explored for its antipyretic activity so far. The present study was therefore aimed at investigating the antipyretic activity of the leaves extract of *Ficus racemosa*.

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Materials and Methods

Collection and preparation of Plant Extract

The leaves of *Ficus racemosa* were collected in the month of October from the local field of narasapur, Andra pradesh state, India, and authenticated done on Botanical survey of India, coimbatore and reference number and date is 11/5/2011/Tech.642. The leaves were dried under shade, coarsely powdered and 1000g leaves powder was extracted with methanol for 18h by hot continuous extraction method. The methanolic extract was filtered and partitioned by using petroleum ether to remove impurities. The solvent was evaporated under reduced pressure and dried in vacuum. The dried extract of *Ficus racemosa* thus obtained was used for the assessment of antipyretic activity.

Phytochemical screening

Qualitative assay, for the presence of plant phytoconstituents such as carbohydrates, alkaloids, glycosides, flavonoids, tannins, saponins and tannins were carried out on the powdered leaves following standard procedure.

Animals

Albino Wistar male rats weighing 150-200g was used for the present study. The animals were maintained under controlled conditions of temperature ($23^{\circ} \pm 2^{\circ}\text{C}$),

humidity ($50 \pm 5\%$) and 12-h light-dark cycles. All the animals were acclimatized for seven days before the study. The animals were randomized into experimental and control groups and housed individually in sanitized polypropylene cages containing sterile paddy husk as bedding. They had free access to standard pellets as basal diet and water ad libitum. Animals were habituated to laboratory conditions for 48 hours prior to experimental protocol to minimize if any of non-specific stress. According to prescribed guidelines of Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Government of India.

Antipyretic Activity

Brewer's yeast suspensions in rats^{10, 11, 12}

Antipyretic activity on albino rats was studied with fever induced by 20% brewer's yeast. Healthy Wistar strain albino rats weighing about 150-200 grams were taken. They were fasted overnight with water ad libitum before inducing pyrexia and just before induce pyrexia animals were allowed to quiet in the cage for some time and after that their basal rectal temperature was measured by using a clinical digital thermometer by insertion of thermometer to a depth of one inch into the rectum. After taking the temperature Pyrexia was induced by injecting subcutaneously 20% w/v suspension of Brewer's yeast in 0.9% saline solution at a dose of 20ml/kg. body weight in the back below the nape of the neck. The site of injection was massaged in order to spread the suspension beneath the skin and returned to their cage and allowed to feed. After 18 hrs of Brewer's yeast injection the rise in

rectal temperature was recorded. Only rats which were shown an increase in temperature of at least 0.60 C (or 1o F) was used for further experiment. The animals were divided into six groups, each group contain six animals. The different groups were treated with methanolic extract (100 and 200 mg/kg), and standard drug, paracetamol (100 mg/kg). Tween 80 (1% v/v) was used as suspending agent. The rectal temperature was then recorded over a period of 6 hr.

Results and Discussion

Methanolic extract produced significant antipyretic activity ($p < 0.05$). In general, non-steroidal anti-inflammatory drugs produce their antipyretic action through the inhibition of prostaglandin synthetase within the hypothalamus. Therefore, the antipyretic activity of methanolic extract of *Ficus racemosa* is probably by inhibition of prostaglandin synthesis in hypothalamus. Further, methanolic extract was found to contain carbohydrates, alkaloids, glycosides flavonoids and tannins, through preliminary photochemical screening. The antipyretic activity may be due to one/more group of above Phytoconstituents.

Extract reduced the hyperthermia at both 100 and 200 mg/kg doses 1 hr after administration. The initial and final rectal temperatures in the groups treated with methanolic extract (200 mg/kg) and paracetamol (100 mg/kg) were 38.48 ± 0.11 and 38.65 ± 0.12 and 38.55 ± 0.11 and 37.70 ± 0.03 0C, respectively. Both Paracetamol and methanolic extract showed significant antipyretic activity throughout the test period of 6 hr (Table 1).

Table 1: Antipyretic activity of methanolic extract of *Ficus racemosa* on albino rats

Treatment	Dose (mg/kg)	Rectal temperature in C at various times (hr)					
		-18	0	1	3	5	6
Control	---	37.29	38.17	38.23	38.20	38.19	38.20
		± 0.30	± 0.30	± 0.012	± 0.10	± 0.08	± 0.09
Methanolic Extract	100	37.68	38.65	38.47	38.33	38.29	38.18
		± 0.02	± 0.12	± 0.08	± 0.06	± 0.03	± 0.03
Methanolic Extract	200	37.63	38.48	38.20	38.21	37.61	37.59
		± 0.04	± 0.11	± 0.11	± 0.11	± 0.03	± 0.03
Paracetamol	100	37.71	38.55	38.36	38.27	38.22	37.70
		± 0.01	± 0.11	± 0.07	± 0.06	± 0.03	± 0.03

Values are expressed as mean \pm S.E.M. (n = 6); * $p < 0.05$ compared with 0 h of the same group

References

1. Khan N, Sultana S; Chemomodulatory effect of *Ficus racemosa* extract against chemically induced renal carcinogenesis and oxidative damage response in wister rats ; (2005) july , Life sciences 29 ; 77 (11) , 1194 – 1210.
2. Mandal, S.C., Tapan, K. Maity., Das, J., Saha, B.P. and Pal, M. Studied that the anti-inflammatory activity of the petroleum ether extract of the leaves *F. racemosa* Linn. *J. Ethnopharmacol.*, 72 (2000) 87-92.
3. Mandal SC, Maity TK, Das J, Pal M, Saha BP; Hepatoprotective activity of *Ficus racemosa* leaf extract on liver damage caused by carbon tetrachloride in rats. *Phytother__Res_* 1999 Aug;13(5):430-2.
4. Mishra V, Khan NU, Singhal KC. Potential antifilarial activity of fruit extracts of *Ficus racemosa* Linn. against *Setaria cervi* in vitro. *Indian J Exp Biol.* 2005 Apr; 43(4):346-50.
5. Subhash C., Pal. M., Saha, B.P. and Mandal. S.C. Studies on Antibacterial activity of *F. racemosa* Linn. Leaf extract. *Phytother. Res.*, 14 (2000) 278-280.
6. A. Abdul Rahuman .et.al; Mosquito larvicidal activity of gluanol acetate, a tetracyclic triterpenes derived from *Ficus racemosa* Linn. *Parasitol Res* (2008) 103:333–339.
7. C.H. Chandrashekar et.al; Anthelmintic activity of the crude extracts of *Ficus racemosa*. *Int J Green Pharm* 2008;2:100-3.
8. Bhaskara Rao, R., Murugesan, T., Pal, M., Saha, B. P. and Mandal, S. C. Antitussive potential of methanol extract of stem bark of *Ficus racemosa* Linn. *Phytotherapy Research*, 2003; 17: 1117–1118.
9. Bhaskara Rao, R., Murugesan, T., Sinha, S., Saha, B. P., Pal, M. and Mandal, S. C. Glucose lowering efficacy of *Ficus racemosa* bark extract in normal and alloxan diabetic rats. *Phytotherapy Research*, 2002;16: 590–592.
10. Vogel H.G, "Drug discovery and evaluation", 2nd edition, Pg.no.772.
11. Hajare S W, Chandra S, Tandan S. K., Sharma J, Lal J, Telang A G ; Analgesic and antipyretic activity of *Dalbergia Sissoo* Leaves *Indian Journal of Pharmacology* 2000; 32: 357-360.
12. Cheng L, Ming-liang H, Lars B et al. Is COX- 2 a perpetrator or a protector Selective COX-2 inhibitors remain controversial. *Acta Pharmacologica Sinica* 26: 926-933, 2005.