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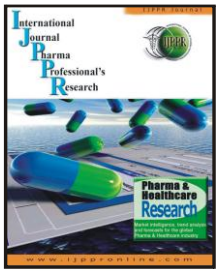

ANTI-INFLAMMATORY AND ANALGESIC ACTIVITY OF METHANOLIC EXTRACT OF STEM BARK OF *FICUS RELIGIOSA*

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Abstract

The methanolic extract of stem bark of *Ficus religiosa* was tested for anti inflammatory and analgesic activity. The extract produced dose dependent and significant inhibition of carrageenan induced paw oedema. Strong analgesic activity was shown by the extract against acetic acid induced analgesic response in rats. So the extract inhibits inflammation and peripheral pain mechanism.

Keywords: - *Ficus religiosa*, Anti-inflammatory, Analgesic

Introduction

Ficus religiosa is a well known historical and traditional plant of India. *Ficus religiosa* is locally known as 'Peepal'. The plant have provided a source of inspiration for novel drug compounds, as plant derived medicine have made large contribution to human health.[1] The drug is known to suppress inflammation by reducing both 5-HT and bradykinin. It also inhibits formaldehyde induced arthritis in early stages. Xanthones present in drug exhibits CNS depressive properties in rats & mice. Mangiferin isolated from drug has anti-inflammatory activity.[2] Drug is known to be a powerful remedy for bronchial asthma, pulmonary problems, cough, liver disorders, skin diseases and inflammations of joints. Whole plant is used as powder, infusion or an extract as antidiarrhoel , antimalarial, astringent and laxatives.[1,3]

Material and Methods

Plant Material: The stem bark of *Ficus religiosa* (Moraceae) was collected in November from Muzaffarnagar district, India. It was authenticated as *Ficus religiosa*. by Dr. H.B. Singh, NISCAIR Delhi.

Extraction:

Air-dried stem bark of *Ficus religiosa* (300gm) were coarsely powdered and exhaustive extraction of material was carried by soxhlet apparatus using 95% v\v methanol. The extract was dried under reduced pressure to obtain a dark brownish colored residue.

Animals:

Albino rats of either sex weighing between 150- 250 gm were selected for the experiment. They were maintained under standard animal housing conditions, housed in groups of six in clean cages. Commercial pellet diet and water ad libitum were used in study. Study was performed according to guidelines of Institute Animals Ethics Committee (IAEC) of Bharat Institute of Technology, Meerut, U.P. India.

ANTI-INFLAMMATORY ACTIVITY

Carrageenan Induced Paw Oedema:

Rats were divided into 4 groups of 6 animals in each group. They were starved overnight with water prior to the day of experiment. Control group received 2ml of 0.9% saline orally, standard group received an oral dose of 10mg/kg bodyweight and test groups received an oral dose of (25 and 50 mg/kg body weight) of the methanolic extracts.

Sixty (60) minutes after drug administration, according to the method 0.1ml of 1% carrageenan in normal saline was

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injected into the sub-plantar region of one of the hind paws. A mark was put on the leg at the mallelus to facilitate uniform dipping at subsequent readings. The paw oedema volume was measured with the help of plethysmograph by mercury displacement method at zero hour (immediately after injecting carrageenan). The same procedure was repeated at 30 minutes 1,2,3,4 and 5 hours, the difference between 0 hour and subsequent reading was taken as actual edema volume. The percentage inhibition of oedema in the various treated groups was then calculated by using the formula:-

Percentage inhibition = (1 – Vt/Vc) x 100

Where

Vt is edema volume in the drug treated group.

Vc is edema volume in the control group.

Table 1: Anti-inflammatory effect of methanolic extract of Ficus religiosa on Carrageenan induced oedema in rats.

Sample	Dose (mg/kg)	Paw oedema (Mean ± SEM)					Oedema (%)				
		1hr	2hr	3hr	4hr	5hr	1hr	2hr	3hr	4hr	5hr
Control	2.0	0.49± 0.0111	0.68± 0.0088	0.80± 0.0135	0.70± 0.0166	0.66± 0.0151	-	-	-	-	-
Test I	25	0.35± 0.0094*	0.56± 0.0089*	0.57± 0.0094	0.47± 0.0128*	0.40± 0.0146*	28.57	17.64	28.75	32.85	39.39
Test II	50	0.28± 0.0094*	0.45± 0.0124*	0.47± 0.0151	0.40± 0.0120*	0.35± 0.0129*	42.85	33.82	41.25	42.85	46.96
Standard	2.0	0.16± 0.0080*	0.21± 0.0115*	0.23± 0.0131	0.20± 0.0101*	0.17± 0.0084*	67.34	69.11	71.25	71.42	74.24

Values are expressed as mean ± SEM. (n=6)

*p<0.001 as compared to control group.

ANALGESIC ACTIVITY

Acetic Acid Induced Algesia:

Rats were divided into 4 groups of 6 animals in each group. Control group received 2ml of 0.9% saline orally, standard group received an oral dose of 250mg/kg body weight and test groups received an oral dose of (10 and 100 mg/kg body weight) of the methanolic extract. The abdominal constriction induced by intra-peritoneal injection 10ml/kg of acetic acid (0.6%). Animals were pretreated either with the test drug at varying doses or with the standard drug 30 minute before the acetic acid injection, same procedure was repeated for each animal one by one. The numbers of writhing occurring for 20 minutes after the acetic acid injection was recorded. The analgesic activity was expressed as the reduction of the number of abdominal constrictions in rats pretreated with the test drug.

Table 2: Analgesic effect of methanolic extract of Ficus religiosa on acetic acid induced algesia in rats.

Sample	Dose (mg/kg)	Writhing (Mean ± SEM)	Writhing Inhibition (%)
Control	2.0	40.83 ± 1.1668	-
Test I	25	25.33 ± 0.287*	37.96
Test II	50	17.00 ± 0.601*	58.36
Standard	2.0	11.66 ± 0.882*	71.44

Values are expressed as mean ± SEM. (n=6) *p<0.001 as compared to control group.

Statistical Analysis

All the data obtained from the above studies were statistically evaluated and the significance of various treatments was calculated using student's t-test. A value of $p<0.05$ was considered significant as compared with control.

Results And Discussion

The methanolic extract of stem bark of *Ficus religiosa* were evaluated for anti-inflammatory and analgesic activity in wistar rats respectively. The methanolic extract of stem bark of *Ficus religiosa* has shown significant anti-inflammatory activities orally. At low dose of drug (25 mg/kg), it inhibited 35.43% of carrageenan induced paw oedema while at high dose 50mg/kg, it inhibited 51.42% of carrageenan induced paw oedema as compared to control. The methanolic extract of stem bark of *Ficus religiosa*, administered orally was shown strong analgesic activity against acetic acid induced algesic response in rats. It significantly inhibited 13.04% and 17.39% writhings at low do 10mg/kg and high dose 100mg/kg respectively.

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