

Anti-Inflammatory Activity of *Ficus Glomerata* Roxb Latex Against Carrageenan Induced Rat Paw Edema In Rats

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Summary

Ficus glomerata roxb latex are traditionally used in treatment of inflammation. Latex of *ficus glomerata roxb* were subjected to preliminary screening for anti-inflammatory activity in albino rats. All dose of latex exhibited significant anti-inflammatory activity comparable to the standard drug Indomethacin against carrageenan induced rat paw edema method. Latex of plants showed maximum anti-inflammatory activity every hour.

Introduction

Ficus glomerata roxb (*Moriace*) is commonly known as Gular, traditionally its latex are useful in different disorders, has been recommended to be used in pain, inflammation, wound healing, piles, diarrhoea, dysentery [1] astringent to bowels, stomachic, carminative, diabetic, allergy, dry cough, loss of voice, diseases of kidney, spleen, leucorrhoea and blood disorder. in bleeding disorders, asthma and piles [2], dysentery and hydrophobia, bronchitis and biliousness. Recently, the plant has been studied scientifically for its analgesic, antipyretic, antidiabetic, hepatoprotective, antifungal, and antibacterial activities [3-5] few drops of latex of with cow milk is used in male infertility The literature survey revealed the anti-inflammatory activity in the latex of *Ficus glomerata Rox*. However, no work has so far been reported on the anti-inflammatory activity of latex of these plants in the literature. So it was thought worthwhile to investigate arthritic activity of their latex. The present paper reports the antiinflammatory activity of latex in this plant.

Materials and Method

Ficus glomerata roxb latex was collected during October to November 2006 from village Chakda Karnal District, Haryana after authentication by Taxonomist Prof. V.V. Siddhalingappanavar, HOD, Dept. of Botany, Basaveshwar Science College, Bagalkot, Karnataka, India. *Ficus glomerata roxb latex* was collected during October to November 2006 from village Chakda Karnal District, Haryana after authentication by Taxonomist Prof. V.V. Siddhalingappanavar, HOD, Dept. of Botany, Basaveshwar Science College, Bagalkot, Karnataka, India. The latex was collected from tree by a diagonal cut angled downward made through the bark; this cut extends the trunk. The latex exudes from the cut was collected in a small cup. The amount of latex obtained on each tapping was about 0.5 ml.

Thereafter, a thin strip of bark is shaved from the bottom of the original cut to retap the tree, usually every other day. The gathered latex was diluted with saline before oral administration. prepared test solution were tested in dose of 50, 100, 200, 400, and 500 mg/kg, p.o. for its antinflammatory . Dose calculation was based on w/w of the latex.

Indomethacin was obtained from U-Medico Laboratories Pvt., G.I.D.C., Vapi, Gujarat, India, as a complement sample and was used as a standard drug. UGO BASILE Digital plethysmometer (7141) [6].

Experimental animals

Healthy albino rats of either sex (Wistar strain) weighing 100-160g were used in present study. The animals had free access to food and water and were maintained under controlled temperature ($27\pm 2^{\circ}\text{C}$) and 12 h: 12 h light and dark cycle. Initial body weight of each animal was recorded.

Acute Oral Toxicity

Healthy Swiss albino mice of either sex weighing 15-30 gm, starved over night were divided into 3 groups (n =3) and were fed with increasing dose (30, 300, and 3000 mg/kg) of the latex. The toxicity was evaluated as per the Guidelines for non clinical-toxicity Investigation of Herbal medicine (Annexure -1) given by the Ministry of Health and family Welfare, Govt. of India and OECD guideline 425. The total latex administered orally in doses up to 3 g/kg, did not produced any sign of toxicity and mortality in rats, when observed for 14 days after administration [7].

Test for Anti-inflammatory Activity

Overnight-starved wistar albino rats were divided into groups of 6 each. The latex under study was administered orally 30 min prior to subplantar injection, the edema was developed by the subplantar injection of 0.1ml of 1% solution of lambda carrageenan and the volume of the injected foot was measured periodically using UGO BASILE Digital Plethysmometer (7141). Change in paw volume was measured on every hour till 5th hour. The percent difference in the right and left paw volume of each animal of control and drug treated group was calculated and compared as the mean % change in paw volume in control and drug treated animals and expressed as per cent edema inhibition by drug [8,9]

Statistical Analysis

Results were were expressed as mean \pm SEM and statistical analysis by ANOVA followed by Dunnet's test. The value $P < 0.05$ as considered as significant.

Result and Discussion

Administration of 1% carrageenan in rat paw significant ($p < 0.05$, $p < 0.01$, $P < 0.001$) and gradually increased the paw volume from 1st hour to 5th hours of the study when compared with normal. 10 mg/kg dose of indomethacin significantly ($p < 0.05$, ($p < 0.01$) inhibited carrageenan induced increase in paw volume from 2nd hour to 5th hour of the study. Treatment of the wistar albino rats with *Ficus glomerata roxb latex* significantly ($p < 0.05$, $p < 0.01$, $p < 0.001$) inhibited carrageenan induced rat paw volume from 1st hour and maintained its steady effect till the completion of the study.

Table-1

Effect of *Ficus glomerata Roxb latex* on carrageenan-induced rat paw edema

Treatment	0 h	1 st h		2 nd h		3 rd h		4 th h		5 th h	
	Paw volume (ml)	Paw volume (ml)	% Inhibition	Paw volume (ml)	% Inhibition	Paw volume (ml)	% Inhibition	Paw volume (ml)	% Inhibition	Paw volume (ml)	% Inhibition
Normal	0.035± 0.0024	0.040± 0.0019	--	0.032± 0.00084	--	0.029± 0.0032	--	0.025± 0.0042	--	0.025± 0.0055	--
Control	0.057 ± 0.011	0.19 ± 0.032*	--	0.29 ± 0.038*	--	0.35 ± 0.035**	--	0.34 ± 0.046**	--	0.44± 0.022***	--
Indomethacin (10 mg/kg, p.o.)	0.097 ± 0.026	0.12 ± 0.021	37	0.16 ± 0.015*	45	0.19 ± 0.023**	46	0.17 ± 0.036*	50	0.17 ± 0.037*	61
Latex (50 mg/kg, p.o.)	0.063 ± 0.011	0.15 ± 0.014	21	0.24 ± 0.013	17	0.31 ± 0.020	12	0.31 ± 0.015	8.8	0.29 ± 0.020	34
Latex (100 mg/kg, p.o.)	0.13 ± 0.023	0.16 ± 0.012	16	0.22 ± 0.046	24	0.25 ± 0.015*	29	0.25 ± 0.011	27	0.27 ± 0.041	38
Latex (200 mg/kg, p.o.)	0.13 ± 0.036	0.11 ± 0.038*	42	0.13 ± 0.020**	55	0.12 ± 0.031***	66	0.1 ± 0.038**	71	0.10 ± 0.035 ***	68
Latex (400 mg/kg, p.o.)	0.037 ± 0.003	0.14 ± 0.029	26	0.09± 0.0060**	69	0.19 ± 0.013 **	46	0.35 ± 0.051	-3	0.49 ± 0.089	-11
Latex (500 mg/kg, p.o.)	0.17 ± 0.043	0.19 ± 0.056	0	0.30 ± 0.056	-3.4	0.47 ± 0.10	34	0.58 ± 0.12	-71	0.61 ± 0.14	-39

All the values are expressed as ± SEM, Analysis of Variance (ANOVA) followed by Dunnett's test; P< 0.001; P< 0.001; P< 0.001 as comparison to control group.

These results were better than results obtained from indomethacin treatment as 42, 55, 66, 71 and 68 v/s 37, 45, 6, 50 and 61% inhibition was observed on 1st, 2nd, 3rd, 4th and 5th hours respectively and no significant effect was observed on carrageenan-induced inflammation at lower doses (50 and 100 mg/kg) of the latex. The higher doses (400 and 500 mg/kg) considered in the study have shown both anti-inflammatory effect. The 500 mg/kg dose of the latex has shown no significant effect at 1st hour of the study but it has shown prominent pro-inflammatory activity from 2nd hour to 5th hours of the study. However, 400 mg/kg dose of latex has shown significant ($p < 0.05$) anti-inflammatory effect at 2nd and 3rd hour and pro-inflammatory activity on 4th and 5th hour of the study. These studies, therefore, provide a basis for further detailed investigations on therapeutic efficacy of these plants. Studies in the direction in elucidating the mechanism of anti-inflammatory activity need to be conducted.

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