

Anti-Inflammatory Activity of Ethanolic Extract of *Desmodium gangeticum* Barks In Rats

VP. Hudha Basheer* and S. Satish

Department of pharmacology, National college of Pharmacy,
KMCT group of institutions, Manassery, Kozhikode, 673 602, India.

ABSTRACT

The present study is concerned with the study of *Desmodium gangeticum* barks for its anti-inflammatory activity using techniques carrageenan induced paw edema in rats. Although standard drugs like Aspirin, Indomethacin, etc are available, these are having their own side effects.

Keywords: Antiinflammatory and Carrageenen.

INTRODUCTION

Desmodium gangeticum, an undershrub growing about 24 ft in height with irregularly angled glabrescent branched stem. In India, plants are used for bronchitis, asthma, inflammation and dysentery¹. In the present study a crude ethanolic extract of *Desmodium gangeticum* barks was tested for its anti inflammatory activity in experimental animal models because it is commonly used in folklore medicine.

MATERIALS AND METHODS

Preparation of the Extract

The plant barks were collected in the local region, waste land road sides from Calicut district and identified by the Botanist. The powdered barks was extracted by hot percolation method (Soxhlet apparatus) using ethanol solvent system. The extract was concentrated by using a rotary evaporator at low temperature.

Animals

Wistar rats (180- 200 g) of either sex were procured from Indian Institute of Sciences. All the procedures were performed in accordance with Institutional Animal ethics committee constituted as per the direction of the committee for the purpose of control and supervision of experiments on animals (CPCSEA), under ministry of animal welfare division, Government of India, New Delhi, India.

Phytochemical Analysis

The preliminary phytochemical studies were performed for detection of various

phytochemicals by following standard methods described in practical pharmacognosy by Dr.C.K.Kokate² and Dr.K.R.Khandelwal. Phytoconstituents identified were flavonoids, saponins,alkaloids,phenols and glycosides.

Anti-inflammatory Activity

Anti-inflammatory activity was evaluated using carrageenan- induced hind paw edema method (Winter et al., 1962). The rats were randomly divided into groups of 5 animals . Group-I was marked as control, received 1% gum acacia as vehicle (p.o). Second group was administered standard drug Indomethacin (10 mg/kg). The animals of third and fourth groups were treated with ethanolic extract of *Desmodium gangeticum* at low dose (250 mg/kg), high dose (500 mg/kg) respectively. Thirty minutes after its administrations, each received a subplantar injection of 1% carrageenan suspension (0.1 ml per animal) through 26 gauge needle in its right hind paw. The average volume of right hind paw of each rat was measured at 0.5th, 1st, 3rd, 5th h after the injection of carrageenan. The data was analysed using students "t" test and the level of significance was set at p< 0.05. data is represented in table 1.

RESULTS

The animals treated with Indomethacin (10mg/kg, p.o) showed significant inhibition of paw edema (p<0.001) up to five hours as compared to control. High dose of test drug EEDG (500 mg/kg, p.o) showed significant inhibition in carrageenan induced paw edema (p<0.001) from 3rd hour. while low dose 250 mg/kg showed significant inhibition in

carrageenan induced paw edema in rats at 5th hour ($p < 0.05$).

DISCUSSION

Prostaglandins and bradykinins were suggested to play important role in carrageenan induced edema^{3, 4}. It is evident that carrageenan induced edema is commonly used as an experimental model for inflammation and is believed to be biphasic; the first phase is attributed to the release of histamine, serotonin and kinin and the second phase is related to the release of prostaglandins and bradykinins⁵. The ethanolic extract was found to possess saponin and flavonoid. So the anti-inflammatory activity of this plant may be presence of these chemical constituent. Flavonoids are known to inhibit

the enzyme prostaglandin synthesis, more specifically the endoperoxide and reported to produce anti-inflammatory effect⁶.

The significant anti-inflammatory activity of ethanolic extract of *Desmodium gangeticum* barks could be related to its inhibitory effect on release of histamine, kinin and prostaglandin.

CONCLUSION

We can conclude that ethanolic extract of *desmodium gangeticum* barks shows significant anti-inflammatory activities. Though the extract showed significant activity against the inflammation, It is also necessary to determine the exact compound responsible for this activity. Clinical studies has to be carried out in order to explore the full potency of EEDG.

Table 1: Anti-inflammatory activity of *Desmodium gangeticum* barks on Carrageenan induced edema in Rats

Sl.no.	Treatment	Dose mg/kg p.o	Paw volume at different time interval after carrageenan injection (ml)				% Inhibition
			0.5h	1h	3h	5h	
1.	Control		0.22±0.012	0.35±0.014	0.33±0.015	0.47±0.015	
2.	Indomethacin	10	0.17±0.020	0.21±0.018	0.13±0.014 ^{***}	0.06±0.013 ^{***}	87%
3.	EEDG	250	0.21±0.008	0.25±0.009	0.20±0.012 [*]	0.15±0.015 [*]	66%
4.	EEDG	500	0.18±0.017	0.23±0.012	0.18±0.014 ^{**}	0.10±0.014 ^{**}	83%

Values represents mean ±SEM. * $P < 0.05$, ** $P < 0.001$, *** $P < 0.0001$ compared with control (ANOVA followed by Dunnett's test).

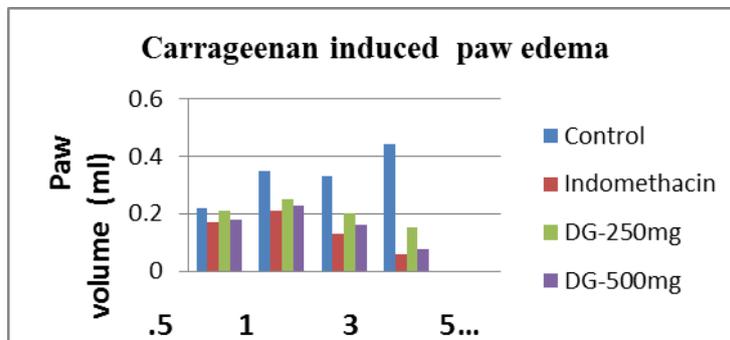


Fig. 1: Carrageenan induced paw edema in rat

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