

**ANTI-INFLAMMATORY ACTIVITY OF AQUEOUS EXTRACT OF
OROXYLUM INDICUM VENT. LEAVES EXTRACT- PRELIMINARY STUDY**

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Summary

The aqueous extract of leaves of *Oroxylum indicum* was studied in carageenan induced rat paw edema in rats. The extracts at 150mg/kg and 300mg/kg doses showed significant (P<0.01) anti-inflammatory activity. Extract at 300mg/kg showed better anti-inflammatory activity as compared to 150mg/kg dose, whereas both the extracts was found to be less effective as compared to standard anti-inflammatory drugs i.e diclofenac sodium.

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Introduction

Oroxylum indicum Vent. Family Bignoniaceae, commonly known as Indian caper, is a climbing shrub found through out India and has been used as a 'Rasayana' drug in the traditional Ayurvedic system of medicine. The plants are used for curing stomach disorders, diarrhea, dysentery and rheumatic swelling (1). The root bark is used in fever, bronchitis, intestinal worms, asthma, inflammation, anal troubles etc. The fruit and seeds are used as expectorant, purgative and bitter tonic (2). In Hindu the root, bark, stem and leaf are prescribed for snake bite (3). The leaves of the plant are also reported for its analgesic (4) and antimicrobial (5) activity. The plant contain flavonoids such as chrysin (5, 7-dihydroxyflavone), oroxylin A (5, 7-dihydroxy-6-methoxyflavone), baicalein (5, 6, 7-trihydroxyflavone) and baicalein glycoside, benzoic acid and fatty acids. Ethanol – CH₂Cl₂-soluble fraction prepared from twigs and leaves of this plant have reported for their anti-mutagenic activity (6). So, an attempt was made to evaluate the aqueous extract of *Oroxylum indicum* leaves for its anti-inflammatory activity

Material and Methods

Collection and extraction of plant material:

The fresh leaves of *Oroxylum indicum* were collected from local area of Wardha district, Maharashtra, India and were authenticated by the authority of Botany Department, Nagpur University, and Nagpur. The fresh leaves were shad dried finely powdered (Sieve no.40) and extracted with water by double maceration method to obtain the aqueous extract. The extract was evaporated upto dryness under reduced pressure (40°C), which gave dark greenish coloured wet mass. The yield recovered was 18% w/w of the dried plant material.

Animals

Male albino rats weighing 150-200g were used for the experiment. They were acclimatized to laboratory conditions before starting the experiments and housed in polypropylene cages. All the animals were fed with pellet diet, water *ad libitum*. The experiment was approved by Institutional Animal Ethical Committee (IAEC).

Anti-inflammatory activity (7)

The anti-inflammatory activity was evaluated by carrageenan induced rat paw edema in rats. The rats were divided into four groups of six animals in each group. They were fasted overnight and during the study had free access to water. The test samples were prepared in 2.5% tween 80 and administered to the respective groups. Following an overnight fast, 150 and 300mg/kg of the aqueous extract of *Oroxylum indicum* were orally administered to animals in different groups, using an oral cannula. At the same time animals in reference group received 25mg/kg diclofenac orally, while animals in the control groups received 2.5% tween 80. one hour later, 0.1 ml (1%) Carrageenan was injected into the right hind limb of each rat under the subplantar aponeurosis. Measurement of paw size was done by plethysmometer (Almenon 2290-4) immediately and at hourly intervals for 5hrs. after carrageenan injection. The swelling was calculated in relation to paw volume before injection of carrageenan.

Statistical analysis

Results were calculated using one way analysis of variance (ANOVA) followed by Bonfeeroni multiple comparison test, $P < 0.05$ was considered as significant.

Results and Discussion

As shown in table 1 and 2, paw volume was significantly reduced in dose dependant manner by *Oroxylum indicum* extract as compared to control. *Oroxylum indicum* aqueous extract at a dose of 300mg/kg showed maximum anti-inflammatory activity. However the activity produced by both the doses was less effective than the reference standard diclofenac sodium. Edema represents the early phase of inflammation in carrageenan induced paw edema and is the simplest and most widely used model for studying anti-inflammatory activity. The paw edema induced by the subplantar injection of carrageenan in rats is biphasic, the first phase 1hr.involves the release of serotonin and histamine while the second phase (over 1hr.) is mediated by prostaglandin, the cyclooxygenase products and the continuity between two phases is provided by kinin (8).

Extract at both doses showed significant anti-inflammatory activity at 5hr. against carrageenan injection suggesting that the extract predominantly inhibit the release of prostaglandin like substances. In conclusion, leaves of *Oroxylum indicum* showed anti-inflammatory activity which may be attributed to the presence of different chemical constituents. Further study is required to confirm the anti-inflammatory activity of *Oroxylum indicum* leaves.

Table 1: Effect of *Oroxylum indicum* leaves extract on Carrageenan induced Paw edema

Groups	Volume displaced in ml				
	1hr	2hr	3hr	4hr	5hr
Control	0.61± 0.009	0.74± 0.007	0.83 ± 0.001	0.88± 0.009	0.92± 0.008
Aqueous extract (150mg/kg)	0.54± 0.005**	0.55± 0.008**	0.60± 0.008*	0.64± 0.10**	0.80± 0.012**
Aqueous extract (300mg/kg)	0.59± 0.009**	0.63± 0.012**	0.69± 0.011**	0.72 ± 0.013**	0.74± 0.013**
Diclofenac Sodium (25mg/kg)	0.43± 0.012**	0.47± 0.009**	0.49± 0.13**	0.51± 0.008**	0.52± 0.011**

Results expressed as Mean±SEM (n=6), *P<0.05, **P<0.01

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