

**NOTE****Antiinflammatory Activity of Defatted Extract of  
Oleo Gum Resin of *Boswellia serrata***

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Defatted alcoholic extract of the oleo gum resin of *Boswellia serrata* was screened for antiinflammatory activity in carrageenan induced rat paw edema at the dose level of 250 and 500 mg/kg and compared to the standard drug diclofenac sodium. The result were found to be significant ( $p < 0.001$ ) when compared to the control.

**Key Words:** Oleo gum resin, Antiinflammatory, Carrageenan.

*Boswellia serrata* Roxb. (Burseraceae) is a balsamiferous tree. It grows widely in tropical Asia and Africa. The tree on injury exudes an oleo gum resin known as Indian olibanum, Indian frankincense or salai guggul. The oleo gum resin secreted from the cortex is fragrant, transparent, golden yellow and solidifies to brownish yellow tears or drops. The yield varies considerably from 0.9 to 2.5 kg/tree/year<sup>1</sup>. It has found use as incense and therapeutics. Tetracyclic triterpene and pentacyclic triterpene acids have been isolated from this plant<sup>2</sup>.

The gum exudates of *Boswellia serrata* was collected from local market, authenticated by the National Herbarium of Cultivated Plants, New Delhi, Voucher no. NHCP/NBPGR/91/4083, where a voucher sample has been deposited. The oleo gum resin was cut to small pieces and dried, then it was processed to powder from with the help of sand and macerated with 95 % alcohol for 1 week. The alcoholic extract was concentrated to obtain a yellowish brown sticky viscous material. This material was defatted by hexane. The defatted portion was suspended in vehicle (5.0 % v/v Tween 80) and used for the study.

**Antiinflammatory activity<sup>3,4</sup>:** Wistar albino rats of either sex weighing between 100-150 g were taken. All animal were housed under standard condition of temperature ( $25 \pm 5$  °C) A 12:12 h light dark cycle was maintained and the animal were provided with standard pellet diet and water. They were fasted over night and during the experiment. However they had free access to water. The experiment was carried out after getting approval from the Institutional Animal Ethics Committee. Animal were divided into 4 groups having 6 rats each. The first group administered 1 mL of vehicle orally and served as control. The second group was given standard drug

diclofenac sodium (10 mg/kg) intraperitoneally. The third and fourth groups were orally administered 250 and 500 mg/kg defatted extract, respectively. After 0.5 h of dosing, all the rats were injected 0.1 mL (w/v) solution of carrageenan in saline in the subplanter region of the left hind paw. The right paw served as reference. The paw volume was measured at 1 h interval till 3 h plethysmographically. The antiinflammatory activity was expressed as:

$$\% \text{ inhibition of edema} = \frac{E_c - E_t}{E_c} \times 100$$

where  $E_c$  is the edema volume of the control group and  $E_t$  is the edema volume of treated group. The results were analyzed using one way analysis of variance (ANOVA) and Dunnett's t-test. p value less than 0.001 were considered as significant.

The carrageen induced rat paw edema test showed a dose related antiinflammatory activity in the extract treated animal (Table-1). Significant decrease in the pedal edema was observed after 3 h. The % inhibition of edema was 50 % at the dose of 500 mg/kg which is approx, same as the standard drug diclofenac sodium (54.16 %). Even the dose of 250 mg/kg produced 31.25 % inhibition of edema.

TABLE-1  
ANTIINFLAMMATORY ACTIVITY OF DEFATTED ALCOHOLIC EXTRACT OF  
*Boswellia serrata* ON CARRAGEENAN-INDUCED PAW EDEMA IN RATS

Group	Treatment	Dose (mg/kg b.w)	Increase in paw volume in mL after			
			0.5 h		1.0 h	
			Paw volume	Inhibition (%)	Paw volume	Inhibition (%)
I	Control (vehicle)	–	0.16 ± 0.01	–	0.31 ± 0.01	–
II	Standard (diclofenac sodium)	10	0.12 ± 0.01	25.00	0.15* ± 0.01	51.61
III	Alcoholic extract	250	0.14 ± 0.01	12.50	0.24* ± 0.01	22.58
IV	Alcoholic extract	500	0.13 ± 0.01	18.75	0.18* ± 0.01	41.93
			2.0 h		3.0 h	
I	Control (vehicle)	–	0.42 ± 0.01	–	0.48 ± 0.02	–
II	Standard (diclofenac sodium)	10	0.20* ± 0.01	52.38	0.22* ± 0.01	54.16
III	Alcoholic extract	250	0.29* ± 0.01	30.95	0.33* ± 0.01	31.25
IV	Alcoholic extract	500	0.22* ± 0.01	47.61	0.24* ± 0.02	50.00

Values are expressed as mean ± SEM (n = 6). \*p < 0.001 as compared to control (ANOVA followed by Dennett's t-test).

Histamine, serotonin, bradykinin and prostaglandins have been identified as mediators of carrageenan induced hind paw edema<sup>5,6</sup>. The antiinflammatory activity of NSAID'S is reported due to the inhibition of prostaglandin biosynthesis through their interaction with PG synthetase<sup>7</sup>.

This study shows that the plant has promising antiinflammatory activity as stated and used in Indian Medicinal System and by folk.

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