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**ANTI-INFLAMMATORY ACTIVITY OF *EUGENIA JAMBOLANA*  
IN ALBINO RATS****PAVAN KUMAR. KOTA\*<sup>1</sup>, DHARANI PRASAD. P<sup>2</sup>, NARAYANA RAO.  
A<sup>3</sup>, DAYAKAR REDDY. P<sup>4</sup> AND G. ABHINAY<sup>5</sup>.**<sup>1</sup>Pre-Clinical Toxicology, Sipra labs Ltd., R&D centre, Sanath nagar, Hyderabad, A.P., 500018.<sup>2</sup>Dept of Pharmacology, Vels institute of science Techonology & Advanced studies(VISTAS), Vels university, Pallavaram- chennai-600117.<sup>3</sup>Dept of Pharmacology, Khammam College of pharmacy, Khammam.<sup>4</sup>Dept of Pharmacology, Brilliant group of institutions integrated campus faculty of pharmacy, Hyderabad.<sup>5</sup>G7 synergon Pvt. Ltd. Sahakaranagar, banglore-560092\* *Corresponding author* Kota2284@hotmail.com**ABSTRACT****Objectives:** To study the anti-inflammatory activity of *Eugenia Jambolana* leaves extract in albino rats.**Methods:** Leaves of *Eugenia Jambolana* were extracted and the extract was screened for anti-inflammatory activity in albino rats using acute carrageenan paw oedema and chronic granuloma pouch model.**Results:** The extract showed presence of chemical compounds with hydroxyl, ester, carbonyl and olefin functionalities and exhibited dose dependant anti-inflammatory activity in acute and chronic models.**Conclusions:** The extract of *Eugenia Jambolana* leaves showed anti-inflammatory activity in acute and chronic administration in albino rats.**KEY WORDS***Eugenia Jambolana*, albino rats, anti-inflammatory activity.**INTRODUCTION**

Jamun is a very common, large evergreen tree of Indian subcontinent. The scientific name of jamun is *Eugenia jambolana* (EJ) or *Syzygium cumini* Linn and it belongs to the myrtaceae family. Other common names for jamun are Java plum, black plum, jambul, Indian blackberry, doowet, faux pistachier etc. It grows naturally in tropical as well as in subtropical zones. The juice is carminative, diuretic and gives a soothing effect on human digestive system<sup>1</sup>. The juice of ripe fruit is used for preparing sauces as well as beverages. It is

also dried with salt and preserved as a digestive powder or *churan*. The bark, flowers and seeds have been used in diabetes for their hypoglycemic activity<sup>2</sup>. Fruits and leaves juices were advocated for dysentery and gingivitis (bleeding gums)<sup>1</sup>. *E. jambolana* seeds were further reported to have hypoglycemia<sup>3</sup>, anti-inflammatory<sup>4</sup>, neuropsychopharmacological<sup>5</sup>, anti-bacterial<sup>6</sup>, anti-HIV<sup>7</sup> and anti-diarrhoeal<sup>8</sup> effects.

## MATERIALS AND METHODS

Fresh leaves (5 kg) were collected directly from the field and were authenticated by the Botany Group. They were then cut into small pieces and immersed into ethyl alcohol. Extracts were drawn (7.5 L) at the intervals of 24 hours till the extract was almost colourless (6 x 7.5 L). The combined extracts were concentrated under reduced pressure when the crude extract (34.3g, 0.686%) was obtained as a greenish, thick and fragrant liquid. The pharmacological screening of the crude extract was carried out using standard protocols. The crude extract was suspended in 1% carboxy methyl cellulose (CMC) for administration to albino rats.

Albino rats (Wister Strain) of 150-200 g were used for present investigation. They were kept in polypropylene cages in an air-conditioned area at  $25 \pm 2$  °C in 12-12 hr light dark cycle. They were provided with balanced feed and aquagard purified water *ad libitum*. The ethanol extract of *E. Jambolana* was devoid of any mortality or change in behaviour upto 1 g/kg orally in albino rats. Based on this observation maximum dose of 200 mg/kg orally was used for acute treatment in following experiments.

### Carrageenan induced rat paw oedema<sup>9, 10</sup>:

Twenty four rats were divided into 4 groups of 6 rats each for various treatments as shown in Table I. Subsequently 30 min after above treatment, 0.1ml of 1% carrageenan was injected subcutaneously into the planter region of right hind paw to induce oedema.

The paw volume was measured initially and at 1, 2, 3 and 4 h after carrageenan injection using plythesmographic method of Harris and Spencer. Percentage inflammation was calculated for comparison.

### Cotton pellet granuloma<sup>11</sup>:

Cotton pellet granuloma was induced according to the method of D' Arcy et al. Sterilised cotton pellets each weighing 10 mg were implanted in both axilla and groin of each rat under light ether anaesthesia. Twenty four rats were divided into four groups as shown in Table 2 for various treatments for five days. Subsequently, on 6th day all pellets were dissected out under ether anaesthesia and dried at 70°C for 6 hours and weight of each granuloma was determined.

### Statistical analysis:

The data were analysed using one-way analysis of variance. Post-hoc comparisons using Scheffe's test were carried out for the analysis to determine significant overall effects ( $P < 0.05$ ).

## RESULTS

### Carrageenan - induced rat paw oedema:

The extract as well as indomethacin showed antiphlogestic activity. This anti-inflammatory activity was dose-dependent and found to be statistically significant at the higher concentration, 200 mg/kg, (Table I). The anti-inflammatory activity of indomethacin, a standard reference drug, was also found to be significant.

**Table I**  
**Acute anti-inflammatory activity of *Eugenia Jambolana* extract on carrageenan induced rat paw oedema**

Group	Dose (mg/kg)	Percent of Inflammation at Time (hr)			
		1	2	3	4
Control	---	39.51 + 4.67	83.68 + 3.11	109.65 + 6.15	124.81 + 6.03
Test-1	100	35.65 + 5.55	67.28 + 4.10	92.48 + 3.60	104.87 + 5.96
Test-2	200	17.38 + 3.49*	52.58 + 4.74*	84.42 + 5.22*	92.27 + 4.97*
Indomethacin	10	12.15 + 3.29*	19.18 + 3.75*	27.67 + 3.42*	34.50 + 3.42*

\*  $p < 0.05$  as compared to control group. Values are mean + SEM; n = 6 in each group.

**Cotton pellet granuloma:**

There was dose dependant reduction in granular tissue formation in extract and indomethacin treated rats as shown in Table II. The activity was found to be statistically significant for the dose ranges used.

**Table II**  
**Effect of *Eugenia Jambolana* extract (C.A.) on cotton pellet induced granuloma in albino rats**

Groups	Dose (mg/kg)	Weight of granuloma (mg)	Pairwise mean difference*
Control	----	36.433 + 2.369	-----
Test-1	40	25.316 + 0.558	11.116 + 2.217 <sup>a</sup>
Test-2	80	22.766 + 1.098	13.666 + 2.217 <sup>a</sup>
Indomethacin	5	20.216 + 1.642	16.216 + 2.217 <sup>a</sup>

Values are mean + SEM; n=6 in each group. . <sup>a</sup> P<0.001

One way ANOVA revealed F=20.765, P=0.001 indicating significant difference between groups. Further multiple comparisons using Sheffe's test showed significant difference among treated and control groups. \*Mean difference (+SEM) is between control and each treatment using Scheffe's test.

**CONCLUSION**

The crude ethanol extract showed presence of multiple chemical constituents with presence of hydroxyl, ester, carbonyl and olefinic groups. The ethanol extract of *E. Jambolana* is devoid of toxicity upto 1 g/kg in albino rats. The extract showed dose dependent anti-inflammatory activity, which was found to be statistically significant at higher concentration in acute carrageenan induced rat

paw oedema model. However, this activity was less potent as compared to indomethacin. This activity appears to be significant in early phases of inflammation in which various biochemicals, viz. histamine, 5-HT, various kinins are involved. In the chronic model of cotton pellet implantation the activity was dose dependant and significant reduction in granular tissue formation was recorded. The results were significant when analysed statistically. Thus, extract shows anti-inflammatory activity at various acute phases of inflammation and on formation of granular tissue.

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