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NOTE

Antiinflammatory Activity of the Fruits of *Ricinus communis* Linn

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The methanolic, ethanolic, chloroform, ethyl acetate and petroleum ether extracts of fruits of *Ricinus communis* Linn was tested to study the antiinflammatory activity using the technique of carrageenan induced paw edema in albino rats. The extract showed significant antiinflammatory activity comparable to the reference standard aspirin.

Key Words: Antiinflammatory activity, *Ricinus communis* Linn.

Nowadays, the developing world the trend has been change from allopathic to natural medicine. The use of medicinal plant was compiled in Ayurvedic literature listed more than 8000 herbal remedies[1].

Ricinus communis Linn is one of the famous plant in Indian traditional system of medicine. It is used for treatment of pain, skin disease, hepatoprotection, asthma and castor oil from the plant is best purgative[2]. The purpose of this study was to evaluate antiinflammatory potential of methanolic, ethanolic, chloroform, ethyl acetate and petroleum ether extract of fruits of *Ricinus communis* Linn.

The fruits of *Ricinus communis* (Family: Euphorbiaceae) was collected from SNDT University Campus, Mumbai and sample was authenticated by Zandu Pharmaceuticals Pvt. Ltd., Dadar, Mumbai.

Preparation of extract: The collected drugs were cleaned, air dried and powdered. The dried drugs were exhaustively extracted in the Soxhlet apparatus (18 h of extraction for each batch) using analytical grade solvent. All the extracts were concentrated *in vacuo* to a syrupy consistency.

Preliminary phytochemical investigation: Various chemical tests were performed on the extracts of fruits of *Ricinus communis* to determine the presence of carbohydrates, amino acids, alkaloids, proteins, glycosides, flavonoids, phenolic compounds, fats, oils, steroids and volatile oil[3].

Animals: Healthy male and female Wistar Albino rats with body weight 150-250 g were used for study. They were fed with standard chaw diet and

water *ad libitum*. They were housed in polypropylene cage maintained under standard conditions (12 h light/12 h dark cycles, 25 ± 3 °C, 35-60 % humidity).

The experimental protocol was subjected to the scrutiny of Institutional Animal Ethics Committee and was cleared by the same before starting.

Acute toxicity study[4]: Healthy adult albino rats of either sex were starved overnight and divided into five groups, each containing six animals. Animals were orally fed with an increasing dose of 5, 50, 300, 1000 mg/kg body weight of aqueous and non-aqueous extract of *Ricinus communis*. After oral administration the animals were observed for signs of toxicity, gross behavioural changes and mortality up to 14 d.

Evaluation of antiinflammatory activity: All the extracts were evaluated for their antiinflammatory activity by the carrageenan induced rat paw edema method. Healthy adult albino rats of either sex were divided into twelve groups of six animals each. First group received normal saline, second group received aspirin and remaining group received 150 mg/kg body weight of each extract.

Food was withdrawn overnight, but adequate supply of water was given to the rats before the experiment. The drugs were given orally with the help of an oral catheter. After 1 h, a sub plantar injection of 0.1 mL of 1 % freshly prepared carrageenan was given to the left hind paw to all the animals. The paw volume was measured with help of plethysmometer immediately after injection. The paw volume was measured after 1, 2, 3 and eventually after 4 h. The average fourth hour paw volume of the extract treated rats was compared with the control group and the standard drug (aspirin) group[5-7].

Statistical analysis: Results were expressed as mean ± SEM and evaluated by Dunnett multiple comparison test. Values of $p < 0.001$ were considered statistically significant.

RESULTS AND DISCUSSION

The extracts of fruits of *Ricinus communis* showed significant reduction in rat paw edema volume at a dose of 150 mg/kg body weight which is comparable to standard drug aspirin. The reduction in the paw volume of rat with the time shown in Fig. 1. The results are as shown in Table-1.

Ricinus communis on preliminary phytochemical screening revealed variety of constituents like sugar, amino acid, alkaloids, saponins, tannins and some phenolic compounds. The activity might be attributed to these components. Acute toxicity showed that aqueous and non-aqueous extract of *Ricinus communis* was safe upto 2000 mg/kg body weight.

The results revealed that the extracts of the fruits of *Ricinus communis* showed statistically significant antiinflammatory activity at the dose level of 150 mg/kg body. Petroleum ether extract showed nearly equal anti-inflammatory activity as compared to standard aspirin.

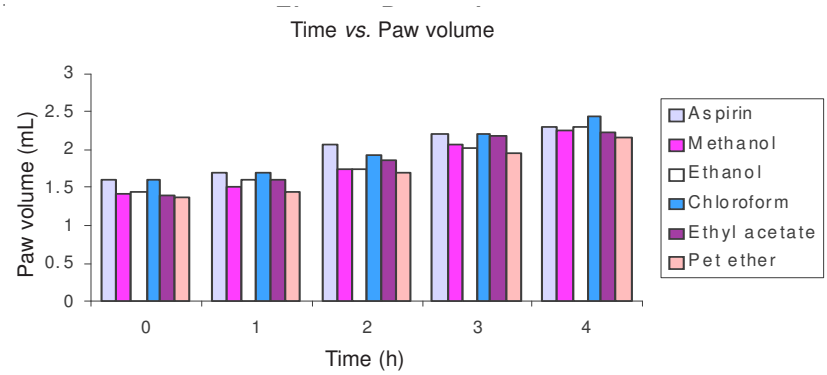

Fig. 1. Inhibition of carrageenan-induced hind paw edema at 0,1,2,3,4 h by standard aspirin and methanol, ethanol, chloroform, ethyl acetate, pet ether extract at dose 150 mg/Kg body wt as compared to control

TABLE-1
ANTIINFLAMMATORY ACTIVITY OF THE EXTRACTS OF FRUITS OF *Ricinus communis* BY USING CARRAGEENAN INDUCED RAT PAW EDEMA METHOD (Dose of aspirin and all extracts is 150 mg/kg body weight)

Treatment	Mean difference in 4th hour paw volume ± SEM	% Inhibition at 4th hour
Normal saline	1.230 ± 0.0450	–
Aspirin	0.673 ± 0.1560**	44.77
Ricinus communis methanol extract	0.840 ± 0.8452**	31.70
Ricinus communis ethanol extract	0.841 ± 0.6946**	31.71
Ricinus communis chloroform extract	0.834 ± 0.1032**	32.52
Ricinus communis ethyl acetate extract	0.842 ± 0.7450**	33.33
Ricinus communis pet ether extract	0.791 ± 0.0920**	35.77

**$p < 0.001$ *vs.* control (normal saline).

REFERENCES

1. V.V. Sivaranjan and I. Balechandran, Ayurvedic Drugs and Their Plant Sources, Oxford and IBH Publishing Co. Pvt. Ltd., p. 3 (1994).
2. V.P.K. Nambiar, P.K. Warrier and C. Ramankutty, Indian Medicinal Plants: A Compendium of 500 Species, Orient Longman Ltd. Publication, Arya Vaidyasala, Kottakkal,Vol. 4, pp. 290-296 (1995).
3. K.R. Khandelwal, Practical Pharmacognosy, Nirali Prakashan, edn. 11, pp. 149-156 (2004).
4. OECD Guidelines, pp. 420-425 (1997).
5. A. Tawfeq, A. Mohamed, Al-Yahya, S. Mansour, Al-Said and S. Rafatullah, *J. Biol. Sci.*, **7**, 1933 (2004).
6. A. Ahmadiani, M. Jjavan, E. Barat and S. Semnanian, *J. Ethanopharmacol.*, **75**, 283 (2001).
7. D. Satynarayana, A.B. Joshi and K.S. Chandrashekher, *Indian Drug*, **41**, 405 (2004).

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