ANTI-INFLAMMATORY ACTIVITY OF HELIOTROPIUM INDICUM LINN. AND LEUCAS ASPERA SPRENG. IN ALBINO RATS

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SUMMARY

Objective: To study the anti-inflammatory effect of Heliotropium indicum, and Leucas aspera on carrageenin induced hind paw oedema and cotton pellet granuloma in rats.

Methods: Hind paw oedema was produced by subplantar injection of carrageenin and paw volume was measured plethysmometrically at '0' and '3' hours intervals after injection. Cotton pellet granuloma was produced by implantation of 50 ± 1 mg sterile cotton in each axilla under ether anaesthesia. The animals were treated with H. indicum and L. aspera and the standard drugs viz., acetylsalicylic acid and phenylbutazone.

Results: H. indicum and L. aspera produced significant anti-inflammatory effect in both acute and subacute models of inflammation. In acute inflammation, L. aspera was more effective than acetylsalicylic acid. However in subacute inflammation, these two drugs were found to be less effective than phenylbutazone.

Conclusion: H. indicum and L. aspera possess anti-inflammatory effects in both acute and subacute inflammation.

KEY WORDS Heliotropium indicum        Leucas aspera        anti-inflammatory activity

INTRODUCTION

Two indigenous drugs viz. Heliotropium indicum Linn. (F:Boraginaceae H:Hatisura) and L. aspera Spreng. (F: Labitae H:Chotahalkusa) were collected in Ganjam district, Orissa, India. The former is used as local application for ulcers, sores, wounds and in rheumatism¹. The latter is said to be useful in chronic rheumatism². But the scientific data on their anti-inflammatory activity are not available. Hence in the present study the anti-inflammatory effect of these indigenous drugs was investigated.

MATERIALS AND METHODS

Wistar strain rats of either sex, weighing between 120-150 g were used. They were kept on standardised diet and water ad libitum.

Dried leaves of H. indicum and L. aspera were ground to powder separately. Suspensions of these powders with 2% gum acacia were prepared and used. The animals were divided into several groups.

Acute inflammation was produced by subplantar injection of 0.1 ml of 1% suspension of carrageenin in normal saline in the right hind paw of the rats. Paw volume was measured plethysmometrically by the method of Chattopadhyay, et al., at '0' and '3' hours after carrageenin injection. The animals were treated with H. indicum, (100 mg/kg, orally), and L. aspera (50 mg/kg, orally). Saline (3 ml/kg, orally) treated animals served as control and acetyl salicylic acid (100 mg/kg, orally) was administered as standard drug. The drugs were administered simultaneously with carrageenin injection. Mean increase in paw volume was measured and percentage of inhibition was calculated.

Subacute inflammation was produced by cotton pellet induced granuloma in rats⁶. Sterile cotton (50 ± 1 mg) soaked in 0.2 ml of distilled water containing penicillin (0.1 mg) and streptomycin (0.13 mg) was implanted subcutaneously bilaterally in axilla under ether anaesthesia. The animals were treated with H. indicum (100 mg/kg, orally), and L. aspera...
(50 mg/kg, orally) for consecutive six days. Saline (3 mg/kg, orally) treated animals served as control and phenylbutazone (100 mg/kg, orally) was administered as standard drug. The animals were sacrificed on the 7th day. The granulation tissue with cotton pellet was dried at 60°C overnight and then the dry weight was taken. The weight of the cotton pellet before implantation is subtracted from the weight of the dried, dissected pellets.

Statistical analysis was done by unpaired Student's 't' test. P values <0.05 were considered significant.

RESULTS

In acute inflammation model, the carrageenin induced paw oedema was significantly reduced by all the drugs when compared to control (Table 1).

In the model of subacute inflammation, the weight of the granulation tissue was significantly reduced by treatment with H. indicum, L. aspera and phenylbutazone when compared to control (Table 2).

DISCUSSION

The results of the present investigation suggest that H. indicum and L. aspera have significant anti-inflammatory effect against carrageenin induced paw oedema and in cotton pellet induced granuloma in rats. In carrageenin induced oedema, the effect of L. aspera was more than that of acetylsalicylic acid. In cotton pellet induced granuloma, the two indigenous drugs were found to be less potent than phenylbutazone. Carrageenin induced hind paw oedema and cotton pellet induced granuloma are the two standard experimental models of acute and subacute inflammation respectively. In the present investigation, as the test drugs are effective in both models of inflammation, there is a possibility that these drugs may be effective in acute and chronic inflammation.

REFERENCES