EFFECT OF PICRORHIZA KURROA BENTH. IN ACUTE INFLAMMATION

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ABSTRACT: The effect of the indigenous drug picrorhiza kurrooa Benth was studied on experimental acute inflammation in rats. It was observed that picrorhiza kurrooa at a dose of 100 mg/kg b.w. has significant (p<0.01) anti inflammatory effect with respect to control, vehicle and standard drug.

INTRODUCTION

Picrorhiza kurrooa Benth (commonly known as katuki), an indigenous plant drug, has been mentioned in several ayurvedic texts for various indications. Special emphasis has been given to this plant for its anti-inflammatory activity in different Ayurvedic texts (1-4). But scientific studies on the anti-inflammatory effect of P. Kurrooa is taken to evaluate the anti-inflammatory effect of this plant drug on carrageenin-induced experimental inflammation in rats.

MATERIALS AND METHODS

The rhizome of the P. kurrooa was purchased from local herbal shop and identified by the Botany department, Regional research Institute (Ayurveda), Calcutta. It was then sun dried and finely powdered.

Wistar albino rats of either sex, weighing 120-150g, housed individually in normal ambient temperature, fed with pellet food and water ad libitum, were divided into three groups of 10 animals each and used for the following studied. In group I the test drug was administered orally at a dose of 100 mg/kg b.w. (dose selected as 1/10 the of its LD50, calculated in a previous experiment) marking suspension in 4% gum acacia. In group II, the control vehicle 4% gum acacia. In group II, the control vehicle 4% gum acacia was administered at a dose of 100 mg/kg b.w orally and in group III phenylebutazone solution at a dose of 30 mg/kg b.w was administered orally.

Acute inflammatory oedema was induced by injecting 0.1 ml of 2% carrageenin in physiological saline/100 g.b.w. into subplantal tissue of the right hind paw of rats applying the techniques described by Balu et al (5) Carrageenin was administered to the animals one hour after administration of each drug. Volume of right hind paw of each animal was measured plethysmographically at 0 hr and 3 hr after administration of carrageenin. Per cent inhibition of oedema compared to the control by test drug and the standard
compound phynylbutazone was calculated by the following simple equation:

Mean inhibition of oedema
/ standard drug
---------------------------------- x 100
Mean oedema of control

Mean inhibition of oedema = Mean oedema of control – Mean edema of test/ Mean edema of test / standard drug

All the results were statistically analysed, applying students “t” test.

RESULTS

It was observed that the *P. Kurrooa* effectively decreased the rat paw volume (p<0.01). The values obtained were comparable with that of the standard drug phynylbutazone although the results of the standard treated group is highly significant (p<0.001). The detailed results are furnished in Table 1.

Table 1:
Effect of picrohiza kurrooa on acute Inflammation in rat.

| Treatment         | Volume of right hind paw (in ml) | Mean oedema (in mg ) ± S.E.M | %of inhibition of oedema |
|-------------------|----------------------------------|-----------------------------|--------------------------|
|                   | 0hr                 | 3 hr                      |                          |
| Control           | 1.14                | 2.38                      | 1.24 ± 0.06              | 1.2                       |
| P. kurrooa        | 0.96                | 1.86                      | 0.90* ± 0.11             | 26.8                      |
| Phenylbutazone    | 0.91                | 1.79                      | 0.88** ± 0.06            | 29.8                      |

*P<0.01
**P<0.001

DISCUSSION

Pain and oedema are the outcome of inflammatory reaction. Pain has been described and “nature ‘S, early sign of morbidity”. It is reported that chemical production of pain usually results in an inflammatory response in biologically active system (6). Therefore, compounds which are evaluated in the presence of chemical algesic stimuli usually exhibit anti-inflammatory activity and voice versa. *P. Kurrooa* which exhibits, a potent) anti-inflammatory activity (P<0.01) against chemically induced inflammation may be considered as a good naturally occurring analgesic. It is reported that the NASAID group of analgesic have the adverse effect like gastric ulcer (7) Unlike the NASAIDs, *P. kurrooa* has significant antiulcerogenic properties (8). Therefore P. kurrooa may be a safest substitute of all the synthetic NASAIDS.

In the present study it is found that *P. Kurrooa* inhibits 26.8% of oedema which closely resembles the result of the standard treated group where. The inhibition of oedema is 29.8% this result reveals that *P. kurrooa* is an active anti inflammatory drug. Although the direct mechanism of action is still not established it is mentioned that *P.*
kurrooa is the suppressor of sympathomimetic amines (9). It is reported that stimulation of sympathetic nerves are responsible for production of plain (10). Thus probable path of analgesic effect of P. kurrooa is by depression of sympathomimetic activity. Analgesic activity may also be reflected in the anti-inflammatory effect.

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