

ANTI-INFLAMMATORY ACTIVITIES OF SOME SPECIES OF *ANDROGRAPHIS* WALL. (ACANTHACEAE)

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ABSTRACT: *The anti – inflammatory activities of the alcoholic extracts of three species of Andrographis Wall. were assayed at a dose of 500 mg/kg body weight in Male albino rats using carrageenin induced rat paw edema. All the extracts were screened for their anti-inflammatory activities in Carrageenin induced inflammation in rats. The maximal anti-inflammatory activity was found with the alcoholic extract of Andrographis alata Nees.*

INTRODUCTION

Inflammation is associated with the cardinal signs of redness, heat, pain and swelling¹. This is a homeostatic phenomenon². When a tissue is injured the body adopts this mechanism to contain the inflammation subsides within a few days, it is known as acute inflammation. The mediators of inflammation are histamine and kinin systems; and prostaglandins³. The earlier phase of Carrageenin inflammation is maintained by histamine and kinin systems and sustained inflammation is maintained by prostaglandins⁴. When a tissue is injured with a noxious agent, leucocytes migrate to the inflamed site and wage a war to neutralize the ill effects, of the foreign agents^{5,6}. In the process, the lysosomes present in these cells get damaged resulting in the release of the hydrolytic enzymes that cause extensive damage to the surroundings tissue^{7,8}. This gives a fairly simpler picture of inflammation.

It has been found that major mechanisms involved in the anti-inflammatory compounds are through,

- a) inhibition of synthesis of prostaglandins
- b) stabilization of lysosomal membranes and
- c) inhibition of connective tissue metabolism

Three medicinal plants were screened for anti-inflammatory activity in Carrageenin induced inflammation in rats⁹. The screened medicinal plants are:

1. *Andrographis alata* Nees
2. *Andrographis lineate* Nees
3. *Andrographis paniculata* Nees.

MATERIALS AND METHODS

Male wistar albino rats from inbred stock weighing approximately 100 – 120 gm were used throughout the experiments. They were given commercial rat-feed and tap water ad libitum. For each experiment, the rats were arranged randomly into five

groups, each group comprising of six animals as follows:

- i) Control group
- ii) *A. paniculata* treated group
- iii) *A. alata* treated group
- iv) *A. lineate* treated group
- v) Standard group (Phenylbutazone treated group)

Leaf samples of *A. paniculata*, *A. alata* and *A. lineate* collected during their preflowering period were dried in shade; powdered and subjected to soxhlet extraction using 50% ethyl alcohol for 12 hours. The extracts obtained were subjected

to solvent evaporation by vacuum distillation and dried in a dessicator. The dried extracts were given to animals orally at a dose of 500 mg/kg body weight at 24 and 1 hour prior to carrageenin injection by suspending in 2 percent gum acacia solution. The animals in the control group received orally 2 percent gum acacia solution.

Edema was induced by injecting 0.1 ml of 2 percent Carrageenin in physiological saline / 100 gm body weight into the subplant tissue of the hind paw of rats. Swelling of the Carrageenin injected and the contralateral saline injected feet were measured at 1, 5 hours and 5 hours by the mercury displacement method⁹ and the percentage of anti-inflammatory activity was calculated using the relation.

$$\text{Percentage of anti-inflammatory activity} = \left(100 - \frac{A}{C} \times 100 \right)$$

Where,

A = anti-inflammatory activity

C = control reading

Phenylbutazone, a non-steroidal anti-inflammatory drug was also tested as a reference compound.

RESULTS AND DISCUSSION

The anti-inflammatory activities of *A. paniculata*, *A. alata* and *A. lineata* were studied and the results are presented in Table – 1. Among the extracts of *A. paniculata*, *A. alata* and *A. lineata*, the extracts of *A. alata* showed the maximum effect (52.84 percent of activity) in the histamine phase. *A. paniculata* showed 39.76 percent of activity and that of *A. lineata* showed 12.54 percent. All the three extracts were moderately effective in the prostaglandin phase. Compared to other extracts *A. lineate* showed 29.18 percent of inflammatory activity in the prostaglandin phase. In the present work *A. paniculata*, *A. alata* and *A. lineata* were screened for their anti-inflammatory activities in Carrageenin induced inflammation in rats. *A. paniculata* showed 39.76 percent anti-inflammatory activity in the I phase. It can be understood that the extracts of *A. alata* and *A. paniculata* alone exerted anti-inflammatory activities in the histamine phase. But all the extracts exerted their anti-inflammatory activity in the II phase of Carrageenin induced

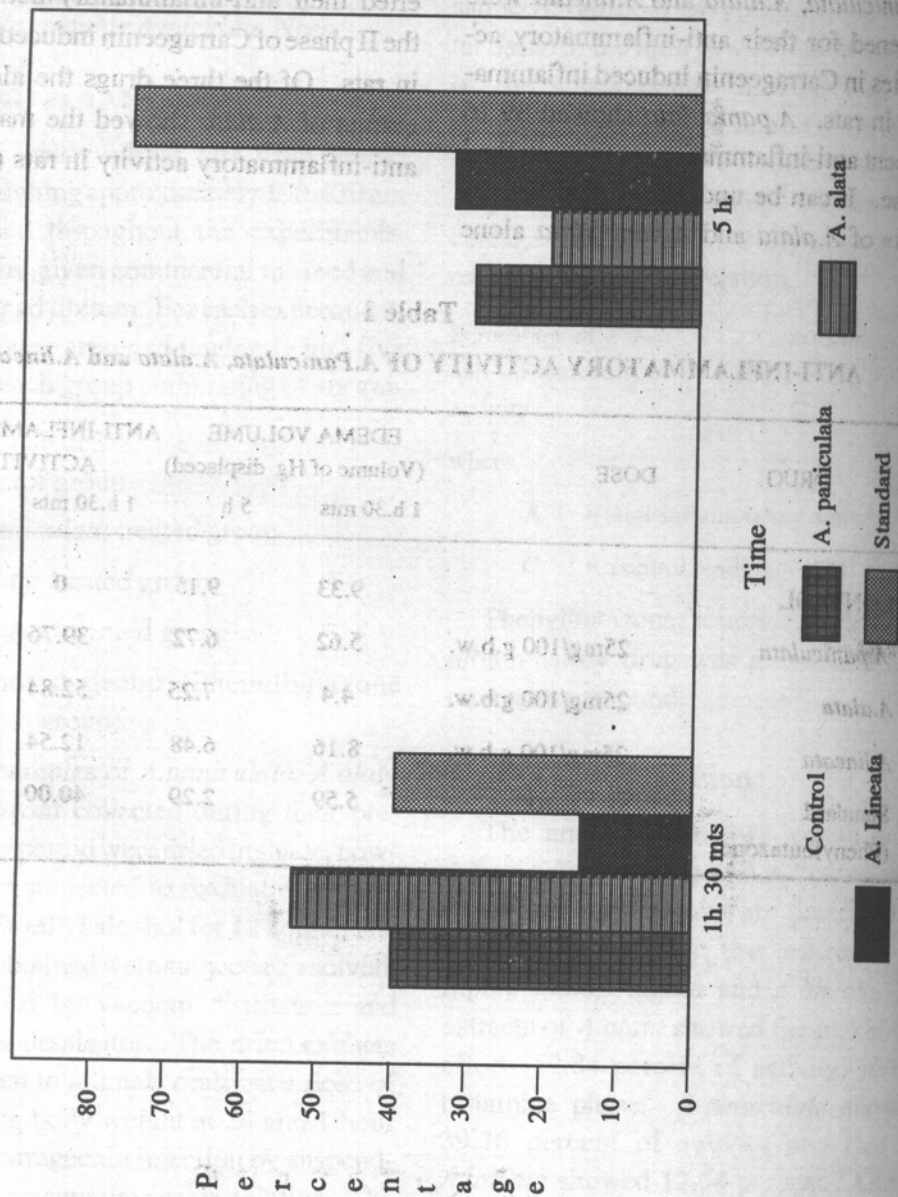
edema in rats. Of the three drugs the alcoholic extract of *A. alata* showed the maximum anti-inflammatory activity in rats (Fig.1).

TABLE 1

ANTI-INFLAMMATORY ACTIVITY OF *A. paniculata*, *A. alata* and *A. lineata*

NO.	DRUG	DOSE	EDEMA VOLUME (Volume of Hg displaced)		ANTI-INFLAMMATORY ACTIVITY (%)	
			1 h .30 mts	5 h	1 h .30 mts	5 h
1	CONTROL		9.33	9.15	0	0
2	<i>A. paniculata</i>	25 mg / 100 g.b.w.	5.62	6.72	39.76	26.55
3	<i>A. alata</i>	25 mg / 100 g.b.w.	4.4	7.25	52.84	20.76
4	<i>A. lineata</i>	25 mg / 100 g.b.w	8.16	6.48	12.54	29.18
5	Standard (Phenylbutazone)	100	5.59	2.29	40.00	75.00

Figure 1
Anti-inflammatory activities of some species of *Andrographis* Wall



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