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# ANTI INFLAMMATORY ACTIVITY OF THE PLANT OF *BALIOSPERMUM MONTANUM* (WILLD)

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## ABSTRACT

The plant of *Baliospermum montanum* (Willd.) was shaded dried, and then these were made into coarsely powdered by using dry grinder. The powdered roots of the plant (200gm) was packed in soxhlet apparatus and continuously extracted with petroleum ether (40-60$^0$C) till complete extraction. After completion of extraction, the solvent was removed by distillation and then concentrated extract obtained was dried under reduced pressure using rotatery evaporator at temperature not exceeding 40$^0$C and then moderate heating on water bath. A dark brown extract approximate 2 gm. was obtained. From the drug petroleum ether was removed and the defatted drug was extracted with ethanol (95%) till complete extraction, after completion of extraction the solvent was removed by distillation and then concentrated extract obtained dried under reduced pressure at temperature not exceeding 40$^0$C and then give moderate heating on water bath. The ethanol extract obtained was dark brown in colour weighed about 18gm. The ethanolic extract was kept in petridish and it was stored in desiccators at cool place.

## INTRODUCTION

In the traditional systems of medicine, the plant of *Baliospermum montanum* (Willd) belonging to Euphorbiace family commonly called Danti are used in headace and respiratory tract[1]. The plant root have also shown to possess heapatoprotective and analgesic activity[2]. One of the main constituents of the plant of *Baliospermum montanum* is flavanoids[3] The free flavanoids present in plant of *Baliospermum montanum* have been reported to have prohealing activity. In view of these has been designed the present work to study the possible effect of deffrent extracts of the plant of *Baliospermum montanum* on wound healing process. An ointment prepared from the plant is cure wounds and ulcer[4]. A survey of literature reveoted that the plant of *Baliospermum montanum* has not been scientifically investigated for its wound healing activity[5].

## MATERIAL & METHODS

### Plant Material :

*Baliospermum montanum* was collected from Barabanki District U.P. in the month of September 2009 and were authenticated by Dr. Tariq Husain (Head & Scientist Herbarium), National Botanical Research Institute, Lucknow with assession no. 97306.

### Animals :

Albino rats (Either six) procured from the disease free animal house, Institute of Pharmacy Bundelkhnad University, Jhansi with reference no of BU/PHARM /IAFC/09/002.

The rat were fed a standard diet and water. A group of six rats (150-200g) each were used in all set of experiments[4].

### Preparation of Extract :

In the present study the plant of *Baliospermum montanum* (Willd) were dried and shade around 900g were reduced to powder and was subjected to hot continuous extraction in soxhtet extractor successively with petroleum ether and ethanol (95%). Each extract was the concentrated by distilling of the solvent and than evaporated to dryness on water bath. All the extracts were kept in desiecator and stored in a refrigerator for chemical and pharmacological studies[6].

**PHARMACOLOGICAL CARRAGEENAN – INDUCE RAT PAW OEDEMA METHODS**

Both in-vivo and in-vitro methods are available for the evaluation of the anti-in flammatory agents. Among the in-vivo methods the carrageenan induced rat paw oedema method assay is believed to one of the most reliable and also the most widely used method. Carrageenan is a mixture of polysaccharides composed of sulphated galactose units and is derived from Irish Sea moss, Chondrus cripsus: Its use as an endemogen was introduced by C. A. Winter el 01. in 1962[14].

The oedema that develops in a rat paw after carrageenan injection is a biphasic event. The initial phase is attributed to the release of histamine, 5-HT and serotonin the oedema maintained between the first and the second phase to kinin like substances and the second phase to prostaglandin like compounds.

Subcutaneous injection of carrageenan into the rat paw produces inflammation resulting from plasma extravasation, increased tissue water and plasma protein exudation along with neutrophil extravasations ail due to metabolism of arachidonic acid, either by cyclooxygenase and/or lipoxygenase enzyme pathways. The response in carageenan-induced edema is biphasic, the first phase beginning immediately after injection and diminishing in 1 hr. and remains throughout 3 hrs.

It has been suggested that the early hyperemia of carageenan induced odema results from the release of histamine and serotonin.

On the other hand, the delayed phase of carageenan-induced rat paw edema results mainly from the potentiating effect prostaglandins on mediator release, especially of bradykinin.

Hydrocortisone and some anti-in flammatory drugs strongly inhibit the second phase of carrageenan-induced odema. However, some antiinflammatory drugs are effective against both phases. Steroids and exert their effects by inhibition of inflammatory mediator's formation.

The important advantages of carrageenan assay can be summarized as follows. The oedema is specifically inhibited by anti-inflammatory compounds.

1. Single oral dose of drugs at non-toxic levels are effective.
2. It has variability.
3. This method has better reproducibility.
4. Carrageenan itself is neither antigenic nor causes any systematic effects

1 % solution or carrgeenan is prepared. 0.1 ml of this solution is to be injected into the right hind paw of the rats. The test drug/plant extract at varying doses based on the design of the experiment and control vehicle are given orally 30 min. prior to the injection of carrangeenan. The paw volume is measured just before and 1, 2, 3, 4,5th after administration of carrageenan by the volume displacement methods using a plethismometer.

**Procedure :**

Albino rats weighing between 150-200 gm bodies weights were selected for anti-inflammatory activity. The rats were divided into different groups each group consisting of 6 animals. Group-I was treated as negative control (received 5% Gum acacia 5 ml/kg), Group-II served as positive control, (received ibuprofen 100 mg/kg p.o.) while the other groups received extracts from plants under study in different doses by oral route; one hour before the sub plantar injection of 0.1 ml of 1% carrageenan.

Odema was produced by the method described in Winter et al. An injection was made of 0.1 ml of 1% carrageenan (SIGMA, USA) suspension into the right hind foot each rat in the sub plantar region. The paw volume was measured using Plethysmometer immediately (measured within 30 sec and referred as initial paw volume) i.e. 0 hr. and (final volume) 3 hrs after injection of carrageenan. The difference between these two observations gave the amount of edema developed. The percent inhibition of odema for the treated groups was calculated by following formula compared with the control group:

$$\% \text{ Inhibition} = 100 \times \left[1 - \frac{Vt}{Vc}\right]$$

Where,

Vt and Vc are the mean changes of paw volume in the treated and control respectively. Results of paw volume changes are presented .

**Table:1 Effect of test compound on carrageenan induced rat paw edema increasing in paw volume**

| Treatment | Dose (p.o) | Paw volume (ml)± SEM | | | |
|---|---|---|---|---|---|
| | | **0 hr** | **1 hr** | **3 hr** | **5 hr** |
| **Control** | 5 ml/kg | 0.0351 ± 0.0005 | 0.0396 ± 0.00053 | 0.047 ± 0.00075 | 0.04 ± 0.00091 |
| **Ibuprofen** | 100 Mg/kg | 0.030 ± 0.00072 | 0.034 ± 0.00081 | 0.036 ± 0.00023 | 0.034 ± 0.00082 |
| **Ethanolic extract** | 200 Mg/kg | 0.038 ± 0.0010 | 0. 384 ± 0.0012 | 0.045 ± 0.0011 | 0.047 ± 0.0012 |
| **Ethanolic extract** | 400 Mg/kg | 0.033 ± 0.009 | 0.320 ± 0.0011 | 0.038 ± 0.0010 | 0.042 ± 0.0011 |

**RESULT AND DISCUSSION:**

In carrageenan induced acute model, Ibruprofen with a dose of 100 mg/kg p.o. served a standard, resulted in 68% inhibition of inflammation.

The Ethanolic extract of *Baliospermum montanum* 200 mg/kg p.o. resulted in 42% inhibition and 400 mg/kg p.o. resulted in 58%.

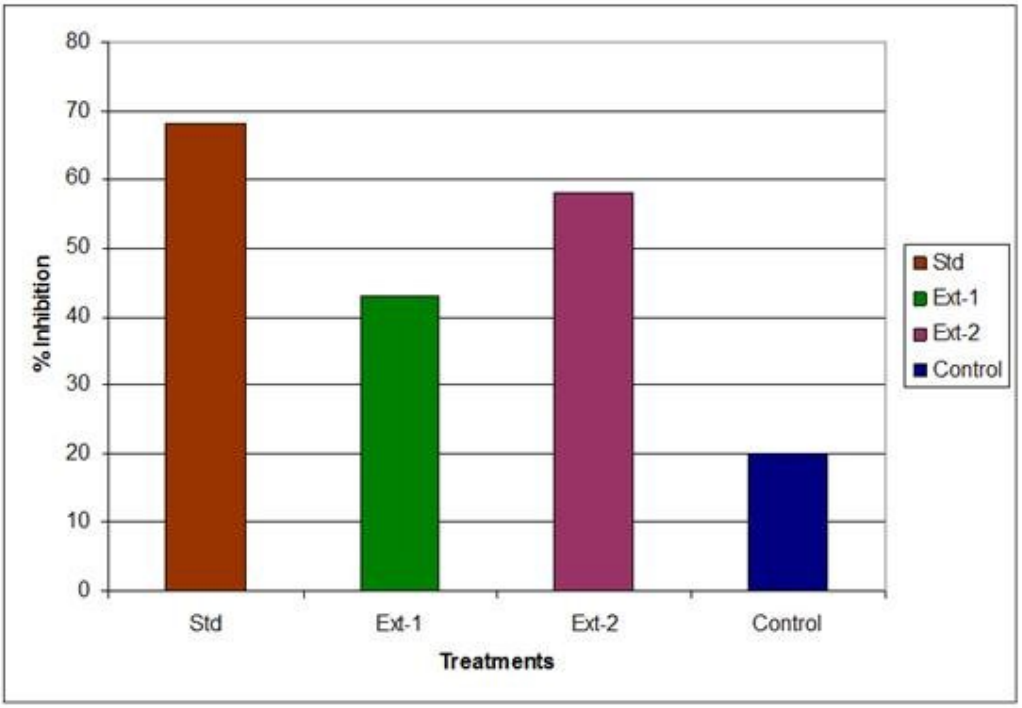


**Fig 1. Percentage inhibition of test compound**

**CONCLUSION :**

In conclusion, the plant of *Baliospermum montanum* (Willd) has been shown to be effective against acute inflammation (carrageenan paw edema, and Ibuprofen-induced paw edema) in a dose related manner but without any significant inhibitory effect on chronic inflammation. This present study supports the claim in the use of the plant of *Baliospermum montanum* (Willd) in traditional medicine for the treatment of inflammatory conditions.

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