

Anti inflammatory effect of methanolic extract of *Hedyotis Umbellata* Linn

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Citation

S Mahibalan, S Jasemine, M Jesupillai. *Anti inflammatory effect of methanolic extract of Hedyotis Umbellata* Linn. The Internet Journal of Alternative Medicine. 2008 Volume 7 Number 1.

Abstract

Objective: To explore anti-inflammatory activity of *Hedyotis umbellata* Linn. Method : Anti inflammatory activity of methanol extract of aerial parts of *Hedyotis Umbellata* (MEHU) Linn was studied using Carrageenan induced paw edema model. MEHU reduced paw edema significantly ($P < 0.05$) at 250 mg/kg and 500 mg/kg. Diclofenac sodium was included as standard. Report: MEHU at 250 mg/kg and 500 mg/kg produced significant ($P < 0.05$) reduction on paw edema induced by carrageenan. The activity also comparable to the standard anti-inflammatory agent Diclofenac sodium. Conclusion: From the findings we conclude that *Hedyotis umbellata* possess anti-inflammatory activity.

INTRODUCTION

Hedyotis Umbellata Linn. is an annual plant, stems semi woody at the base, 15-25 Cm height, much branched from the base. The leaves are linear, flat, very acute, stipules short and pectinate. Flowers are smaller and irregular. This plant is commonly known as Chay root (English). It belongs to the family Rubiaceae. The roots and leaves are used in traditional medicine for the treatment of asthma, bronchitis, bronchial catarrh and also used as expectorant [1]. Many members of genus *Hedyotis* are used in the Indian system of medicine for the treatment of various ailments. For example *H. Corimbosa* [2] was reported to contain hepatoprotective activity, *H. Diffusa* [3,4] was reported to possess anti inflammatory activity and Hepatoprotective activity. However anti inflammatory activity of *Hedyotis Umbellata* was not reported scientifically. In the present study, we provide scientific data for the anti inflammatory activity of aerial parts of *Hedyotis Umbellata*.

MATERIALS AND METHODS

The plant material was collected in the Nellai district, Tamilnadu, India. It was authenticated by Dr. Stephen, Department of Botany, The American College, Madurai. A voucher specimen has been kept in our laboratory (HU1) for future reference.

PREPARATION OF EXTRACT

The aerial parts of the *Hedyotis Umbellata* was dried under

shade for 15 days. The completely dried plant material was ground into coarse powder. The coarsely powdered material (1.5 kg) was extracted exhaustively with methanol (5 L) using Soxhlet apparatus [5]. The solvent was removed under reduced pressure to obtain a solid mass (0.5 kg). It was then preserved in a desiccator until further use.

ANTI INFLAMMATORY ACTIVITY

The method of Winter CA et al [6] was employed for evaluating Anti inflammatory activity. Albino rats (Wister strain) of both sex (120-160gm) were collected from the animal house of our institute and provided with standard pellet with free access to water ad libitum. The present study was approved by institutional animal ethics committee (Approval no. 509/02/C/CPCSEA).

Twenty four albino rats were divided in to four groups of six each. The group I animals received 10% aqueous tween 80, group II animals received Diclofenac (50 mg / kg), groups III and IV animals received Methanol extracts (Suspended in 10% aqueous tween 80) of *Hedyotis Umbellata* (250mg / kg, 500mg/kg respectively). All the tested drugs were given through intra peritoneal route. All the animals were injected with Carrageenan (0.1 ml/kg) at the plantar region of the left hind paw and the untreated right paw was used for comparison. 30 min after carrageenan challenge, paw volume was measured 3rd and 4th hour using Plethysmometer. Percentage edema inhibition was calculated using the formula % edema inhibition = $(100 - V_t/V_c) \times 100$. Where V_t

is paw volume in the drug treated group and Vc is paw volume in the control group.

STATISTICAL ANALYSIS

The statistical analysis were carried out by student 't' test, P<0.001 was considered significant. All the values are reported as Mean±SEM.

RESULTS AND DISCUSSIONS

MEHU at 250 mg/kg and 500 mg/kg significantly (P<0.05) reduce carrageenan induced paw edema. The percentage edema inhibition was found to be 52.27 % and 60.07 % for MEHU (250 mg/kg and 500 mg/kg respectively) and 71.92 % for Diclofenac sodium. Carrageenan induced paw edema is a acute inflammation model. It is believed that carrageenan induce paw edema by biphasic mechanism. The first phase is attributed to the release of vaso active amines such as histamine and serotonin. [78] and the second phase is continued by the prostaglandins (PG), SRS-A (Leucotrienes) and acidic lipids [9]. From the result we conclude that Hedyotis umbellata possess anti inflammatory activity. The effect may be due to the inhibition of formation of several inflammatory mediators [10]. Further study required to isolate active constituents responsible for the activity.

Figure 1

Table 1: Anti inflammatory effect of aerial parts of Hedyotis umbellata Linn. Mean ± S.E.M, n= 6, *P

Treatment	Paw volume (mm)		% inhibition of paw edema at 4 th hour
	3 rd hr	4 th hr	
Normal	12.81±0.20	12.82±0.20	-
Diclofenac sodium (50 mg/kg)	7.33±0.09	3.60±0.06*	71.92 %
MEHU 250 mg/kg	9.56±0.03	6.12±0.56*	60.07 %
MEHU 500 mg/kg	8.49±0.36	4.61±0.81*	52.27 %

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