



Anti-Inflammatory Activities of Plant *Acalypha Indica* Extracts

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ABSTRACT

Acalypha Indica is a species of plant having catkin type of inflorescence¹. It occurs throughout tropical Africa and South Africa, in India and Sri Lanka, as well as in Yemen and Pakistan. This plant is held in high esteem in traditional Tamil Siddha medicine as it is believed to rejuvenate the body. Pharmacological investigation has shown that the plant has potent anti-bacterial, anti-fungal, anti-arthritic, anti-osteoporotic, anti-oxidant, neuroprotective, wound healing, post-coital antifertility activities. The present review article attempt to summarize the anti-inflammatory activity of the plant.²

Keywords: Euphorbiaceae, Acalyphine, Pharmacological, And Anti-Inflammatory

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Received 28 January 2016, Accepted 17 February 2016

Please cite this article as: George M *et al.*, Anti-Inflammatory Activities of Plant *Acalypha Indica* Extracts. American Journal of Pharmacy & Health Research 2016.

INTRODUCTION

Inflammation is a part of the complex biological response of vascular tissues to harmful stimuli, such as pathogens damaged cells or irritants³. The classical signs inflammation are pain, heat, redness, swelling, and loss of function. Inflammation is a protective attempt by the organism to remove the injurious stimuli and to initiate the healing process. Inflammation is a stereotype response, and therefore it is considered as a mechanism of innate immunity, as compared to adaptive immunity, which is specific for each pathogen⁴. Traditional plants have been used over conventional drugs as a cure for inflammation for many years due to their less side effects. Many traditional plants have been reported to have anti-inflammatory activity such as *Acalypha Indica*. The present work is aimed to evaluate the anti-inflammatory effect of plant *Acalypha Indica* extract by carrageenan induced paw oedema in rats.⁵

MATERIALS AND METHOD

Plant extract

Plant *acalypha Indica* extracts (IIIM P06 A001 and A002)

IIIM-P006-A001-250mg/kg of *Acalypha Indica* in ethanolic extract

IIIM-P006-A002-250mg/kg of *Acalypha Indica* in water extract

Experimental animals

Balb/c mice (8-2 weeks old, weighing between 18-22mg)

Wister rats (12-16 weeks old, weighing between 130- 150 mg)

All the studies were conducted after obtaining prior approval from the institutional ethical committee in accordance with the National Institute Of Health“ Guide for care and use of laboratory animals”.(NIH publication no.86-93,1985). IIIM /CA/1045/08(Registration number that was approved for animals for this project.)

Chemicals

Ibuprofen (standard drug), carrageenan, normal saline.

Anti-inflammatory activity and evaluation

Oedema was introduced in rats in a group of 5 by injecting 0.1 ml of carrageenan (1%w/v) solution in normal saline into the sub plantar region of the left hind paw after 45 minutes of drug administration. Paw volume was measured immediately and after 4 hours of carrageenan injection⁶.

Paw oedema measurement

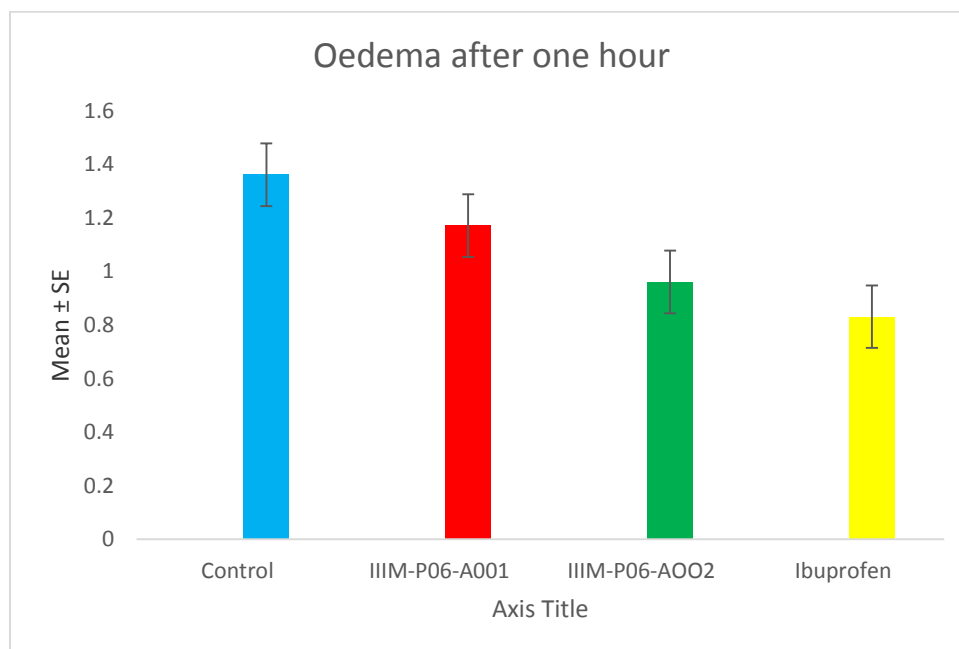
Paw oedema was measured by using volume differential meter in rats and by screw gauze in mice. 11 Readings were taken both in injected and un-injected paws. The paw thickness was measured in millimeters using vernier calipers. Plant extracts and ibuprofen were administered 45 minutes before sc injection of 0.1ml of 1% carrageenan in normal saline and the final reading were taken after 4 hours of carrageenan injection. From the mean oedema volume, the percentage inhibition of the oedema was calculated between the treated and control groups⁷.

RESULTS AND DISCUSSION

Table 1: Anti-inflammatory activity and evaluation of plant extracts by carrageenan induced paw oedema in group of six rats (paw volume taken after 1 hour of carrageenan injection)

Treatment	Dose mg/kg	Initial paw volume(_cm)	Final paw volume	Oedema	%inhibition
control	-	1.48+0.082	2.84+0.127	1.36+0.088	-
M-P06-A001	250	1.46+0.073	2.63+0.045	1.17+0.094	13.97
M-P06-A002	250	1.45+0.028	2.42+0.175	0.96+0.033	29.41
Ibuprofen	100	1.47+0.034	2.30+0.285	0.83+0.079	56.46

Anti-inflammatory activity of plant extracts by carrageenan induced paw oedema (Paw volume taken after one hour of carrageenan injection)



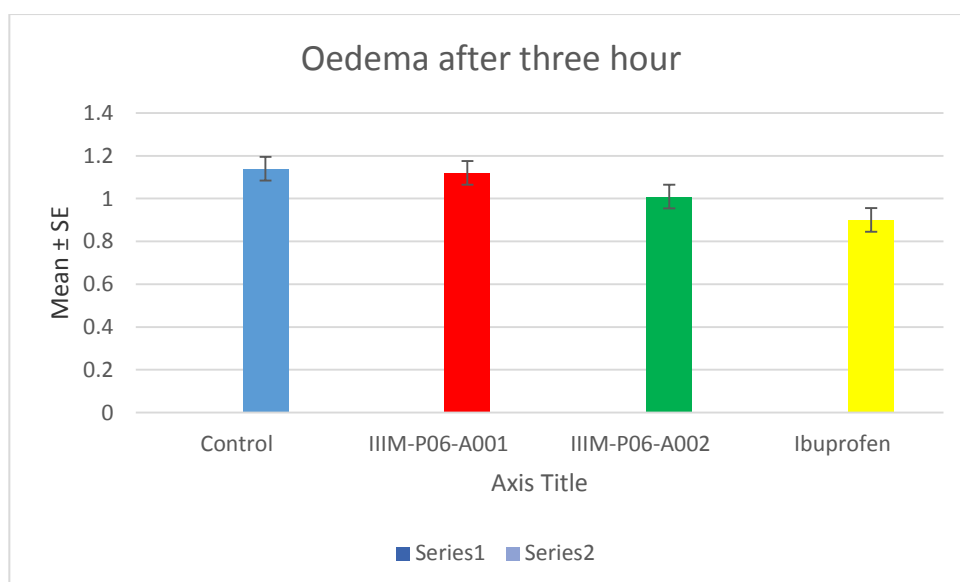
Percentage inhibition of paw oedema by plant extracts (Paw volume taken after one hour of carrageenan injection)



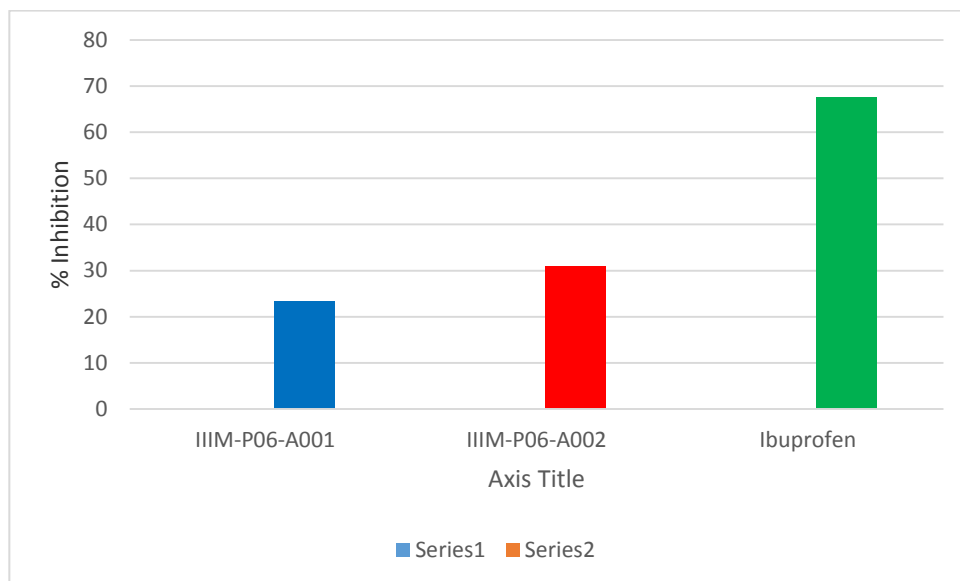
Table 2: Anti-inflammatory activity and evaluation of plant extracts by carrageenan induced paw oedema in group of six rats (paw volume taken after 3 hour of carrageenan injection)

Treatment	Dose mg/kg	Initial paw volume(_cm)	Final paw volume	Oedema	%inhibition
control	-	1.47+0.082	2.93+0.127	1.46+0.038	-
M-P06-A001	250	1.45+0.028	2.57+0.045	1.12+0.093	23.28
M-P06-A002	250	1.48+0.073	2.49+0.145	1.01=0.048	30.82
Ibuprofen	100	1.45+0.034	2.47+0.145	0.09+0.051	67.58

Anti-inflammatory activity of plant extracts by carrageenan induced paw oedema (Paw volume taken after three hour of carrageenan injection)



Percentage inhibition of paw oedema by plant extracts (Paw volume taken after three hour of carrageenan injection)



IIIM-P06-A001 AND A002 were administered at a dose level of 250 mg/kg body weight in different groups of mice. The result of the study shows that extract **IIIM-P006-A001** showed an inhibition of 13.97% at first hour and 23.28% at third hour and extract **IIIM-P06-A002** showed an inhibition of 29.41% at first hour and 30.82% at third hour. Standard drug Ibuprofen administered at 100mg/kg body weight produced inhibition of 56.486% at first hour and 67.58% at third hour.

CONCLUSION

Inflammation is the protective and defense mechanism of the body. Animal models have been used for evaluation of anti-inflammatory activity. Commonly employed techniques for screening anti-inflammatory drugs is based upon the ability of such agents to inhibit the edema produced in the hind paw of the rat after injection of phlogistic agent (carrageenan). carrageenan is a mixture of polysaccharides composed of sulphated galactose units, which initially release histamine and serotonin followed by release of prostaglandins, protease and lysosomes producing oedema⁸. The present work is aimed to evaluate the anti-inflammatory effect of plant *Acalypha Indica* extract by carrageenan induced paw oedema in rats. Both the extracts showed inhibition of paw volume after one and three hours of carrageenan injection⁹.

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