



ANTIINFLAMMATORY EFFECT OF AQUEOUS EXTRACT OF *MILLINGTONIA HORTENSIS* LINN.F STEM BARK ON RATS

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ABSTRACT

Millingtonia hortensis Linn.F (Bignoniaceae) is found throughout south Asia for its fragrant flowers. The present study aims at exploring the antiinflammatory potential of the stem bark of the tree. Aqueous extract of *Millingtonia hortensis* Linn.F (Bignoniaceae) stem bark was evaluated for its antiinflammatory property by carrageenan induced paw edema. The potency of the extract was evaluated at about two doses of 200mg/kg and 400mg/kg and compared with the standard drug indomethacin 10mg/kg. The results showed that the drug possess significant antiinflammatory potential at both the doses as compared to the control groups and the results were comparable with the standard drugs.

Keywords: *Millingtonia hortensis*, antiinflammatory, carrageenan and indomethacin.

INTRODUCTION

There are about numerous drugs that are prevailing in the world market for inflammation conditions through nonsteroidal antiinflammatory drugs (NSAIDs). These NSAIDs acts through various mechanism of action in bringing down the level of inflammation or elevated body temperature. Most of these drugs were associated with partial to higher level of side or adverse effects.¹⁻² This directs towards safer compounds with less or no side effects,³ where herbal source come into focus and serves us a rich source of natural components with effective medicinal value.

Millingtonia hortensis Linn.F (Bignoniaceae)-is an ornamental tree, grown in gardens and parks as an avenue tree. The tree has its wide spread throughout south Asia, especially in India. The tree is easily identified by its highly scented fragrant flowers and it is a rich source of essential oil, flavonoids, tannins and alkaloids.⁴ In the Thai folkflore medicine, the tree is used as antipyretic, sinusitis, cholagogue and tonic.⁵ In the current study, an attempt had been to make to confirm the antiinflammatory properties of the stem bark of *Millingtonia hortensis* Linn.F (Bignoniaceae), in order to bring it out as an effective drug and to serve the humanity with less or no side effects.

MATERIALS AND METHODS

Plant Material

Millingtonia hortensis Linn.F (Bignoniaceae) trees were identified and authenticated by Dr. N. Ravichandran, Botanist and the herbarium specimen of the same was deposited in, Centre for Advanced Research in Indian System of Medicine, SASTRA University, Thanjavur (Specimen number: SASTRA 103). The barks were collected using coppicing technique in the month of September – October and shade dried.

The extract

Shade dried barks of *Millingtonia hortensis* Linn.F (Bignoniaceae) was coarsely powdered and passed through sieve # 10. 100gms of this sieved powder was weighed

accurately and subjected to aqueous extraction using 0.3% of chloroform as preservative by maceration technique. The extract prepared was filtered and condensed by vacuo evaporator.

Animals

Wistar rats (150-175g) of approximately same age used in the present studies. The animals were fed with standard pellet diet and water *ad libitum*. All the animals were housed in polypropylene cages. The animals were kept under alternate cycle of 12 hours in darkness and light. The animals were acclimatized to the laboratory condition for a period of one week before starting the experiment. The experiment protocols were approved by Institutional Animal Ethics Committee after securitization.

Antiinflammatory studies

Antiinflammatory activity of the extract was evaluated using carrageenan induced paw edema in rat model. Rats were divided into 5 groups of 6 animals each. Group I animals served as vehicle control and received 1% CMC, 1ml/Kg orally, where as Group II and III served as negative and positive control. Group IV and V were treated with the extract at about 200mg/kg and 400mg/Kg respectively. The doses were fixed on the basis of OECD Guidelines 423. After 30 min, the rats were challenged with subcutaneous injection of 0.1 ml of 1% w/v solution of carrageenan into the sub plantar region of left paw. The paw was marked with ink at the level of lateral malleolus and immersed in mercury up to the mark. The paw volume was measured at 1, 2, 3, 4 and 5h after carrageenan injection using digital plethysmometer.⁶⁻⁸ The difference between initial and subsequent reading gave the actual edema volume.

Statistical Analysis

Statistical analysis was performed by one way (ANOVA) followed by using results were expressed as mean \pm S.D for 6 rats in each group. P < 0.05 was considered significant.

Table 1: Effect of aqueous extract of *Millingtonia hortensis* Linn.F stem bark on paw volume

Treatment	Mean paw volume (ml ±SEM)				
	1 st hr	2 nd hr	3 rd hr	4 th hr	5 th hr
Vehicle control	1.139±0.180	1.139±0.180	1.139±0.180	1.139±0.180	1.139±0.180
Negative control	2.615±1.640	2.674±2.346	2.666±1.435	2.604±2.316	2.291±1.415
Indomethacin	1.451±1.245***	1.313±1.265***	1.287±2.365***	1.210±1.256***	1.195±1.654***
Aq. Extract (200mg/Kg)	1.689±1.069***	1.545±1.113***	1.499±1.131***	1.435±1.068***	1.321±1.025**
Aq. Extract (400mg/Kg)	1.573±1.452***	1.533±1.104***	1.416±1.245***	1.402±1.608***	1.310±1.521**

All the values are mean ± SEM and compared to negative control
ns= Non significant *p<0.05 **p<0.01 ***p<0.001, n=6

RESULTS

Antiinflammatory assay was performed on the aqueous extract of stem bark of *Millingtonia hortensis* Linn.F (Bignoniaceae) using carrageenan induced paw edema model. The antiinflammatory property of the extract was compared with respect to the negative control group and found to be effective dose dependently. The results were tabulated in table 1. This result of antiinflammatory effect of the extract was comparable to that of the standard drug indomethacin.

DISCUSSION

Antiinflammatory property of stem bark of *Millingtonia hortensis* Linn.F (Bignoniaceae) stem bark was evaluated using carrageenan induced paw edema. Carrageenan induced rat paw edema model was the most widely used primary method of screening antiinflammatory drugs.⁹ The development of the edema depends upon the kinins and polymorphonuclear leukocytes.¹⁰ The development of paw edema for every hour attributes to various factors such as histamine and serotonin, prostaglandin releases.¹¹⁻¹² The decrease in the paw volume by the standard drug treated and extract treated group may indicates the blockage or inhibition of release of these components. This may account for the antiinflammatory property of the *Millingtonia hortensis* Linn.F (Bignoniaceae) stem bark.

In conclusion, aqueous extract of *Millingtonia hortensis* Linn.F (Bignoniaceae) stem bark possess antiinflammatory and antipyretic properties, which confirms the traditional usage claim.

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