

# PHARMACOLOGICAL SCREENING OF ANTI-INFLAMMATORY ACTIVITY OF AYURVEDIC FORMULATION "NIMBADI THAILAM"

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**ABSTRACT: Purpose:** The objective of this present study is designed to evaluate its anti-inflammatory activity of NIMBADI THAILA (an ayurvedic preparation of IMCOPS) by topical application against fresh egg white induced inflammation on Swiss albino rats.

**Methods:** Nimbadi Thailam was investigated for activity in Swiss albino rats against Piroxicam gel as standard reference and normal saline as control by Randall and Baroth method. The time to achieve reduction of inflammation in the rat paw was determined.

**Results:** The topical application of Nimbadi Thailam exhibited significant anti-inflammatory activity when compared with the Piroxicam gel and normal saline.

**Conclusion:** The topical administration of Nimbadi Thailam has anti-inflammatory effect on Swiss albino rats.

**Key words:** Nimbadi Thailam, Swiss albino rats, Piroxicam gel, Fresh egg white, Pletysmograph.

## INTRODUCTION

Inflammation, which is basically, a defense phenomenon yet often leading to serious pathological conditions, is treated by various agents with good to moderate success because of both considerable toxicity and side effects. There are various components to an inflammatory reaction that can contribute to the associated symptoms and tissue injury<sup>1</sup>. Edema formation, leukocyte infiltration and granuloma formation represent such components of inflammation. Although non steroidal anti-inflammatory drugs are the most commonly prescribed drugs in the world, their use as anti-inflammatory, antipyretic, antithrombotic and analgesic agents continues to be principally limited by their undesired side effects<sup>2</sup>. Hence, the traditional medical practioners and scientists are turning towards medicinal plants and traditional system of medicines such as Siddha,

Ayurveda, Unani, homeopathic medicines and formulations to reduce the side effects and toxicity.

Nimbadi Thailam contains Margosa seed oil, chaulmoogra oil and camphor (pure) used as an antiseptic. It is also used as wound healing and antimicrobial property. Neem, the constituent of this formulation possess good anti-inflammatory activity. Hence it is recommended for inflammation, skin lesions and skin diseases.

## METHODS

### Materials:

Nimbadi Thailam, a product of Imcops, is an ayurvedic preparation was purchased from Imcops, Chennai-41, India used as test drug. Piroxicam gel used as reference standard and normal saline was used as control.

**ANTI- INFLAMMATORY ACTIVITY:****Fresh egg white induced paw edema:**

The Swiss albino rats weighing between 150g- 200g were divided into three groups. Each consists of 4 animals, one group served as negative control The second group served as positive control ( received Piroxicam gel) The third group served as test( received Nimbadi Thailam). Edema was induced by administration of 0.05 ml of undiluted fresh egg white in the sub- plantar region<sup>3</sup>. The Nimbadi Thailam and Piroxicam gel were applied topically at the site of inflammation. The paw volume was measured at 0hr-3hr after the injection of fresh undiluted egg white using Plethysmograph.

**Statistical analysis:**

The data obtained were expressed as mean  $\pm$  SEM. Statistical analysis were performed by one way analysis of variance (ANOVA) followed by student's test<sup>4</sup>. At 95% confidence interval, P values < 0.001 were considered significant (table-1).

**RESULTS AND DISCUSSION**

Nimbadi Thailam produced a potent anti-inflammatory activity against the paw edema in Swiss albino rats when compared with reference standards ( $p < 0.001$ ). The potency was found to be inversely proportional to the time (table-1) taken for reduction in the paw volume (figure-1). The inflammatory response is a physiological characteristic of vascular tissue. Increased permeability seen in the inflammatory reaction leads to exudation of fluid rich in plasma proteins, coagulation factors and injured tissues with subsequent edema at the site<sup>5</sup>. Exudation which is a consequence of vascular permeability is considered as major features of acute inflammation<sup>6</sup>. Histamine and other mediators of inflammation increase vascular

permeability at various times after injury. Chemically induced vascular permeability can causes an immediate reaction and its inhibitions suggests that the topical administration of test formulation Nimbadi Thailam may effectively suppress the exudative phase of acute inflammation induced by undiluted fresh egg white. The results also shows the effect of formulation on edematous response to egg white induced paw edema, provoking an inhibitory effect equal to that of standard Piroxicam gel.

**CONCLUSION**

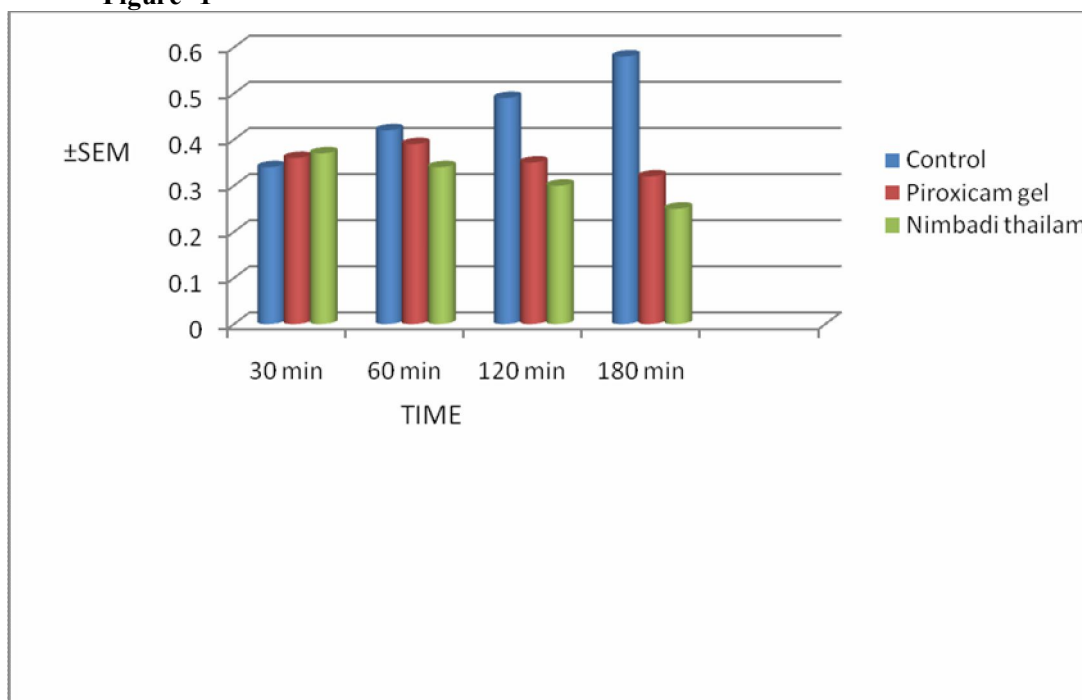
Determination of anti-inflammatory activity is based on plethysmographic measurement of oedema produced by sub planar injection of egg white in the hind paw of rat. The increase in oedema in animals treated with standard drug (piroxicam) and test formulation were compared with increase in oedema of untreated control animals at constant intervals of 0, 30, 60, 120 and 180 mins. Thus percentage inhibition of oedema at known intervals in treated animals was used for the purpose of calculating percent inhibition of oedema of control. The present study revealed that the test formulation showed better anti-inflammatory activity. The maximum activity was observed during 2nd and 3rd h, and the results are significant ( $P < 0.001$ ) and are comparable to standard piroxicam. The anti-inflammatory activity may be due to the inhibition of release of histamine, serotonin and kinins in the first three hour after the injection of carrageenan, and this also retarded the release of prostaglandin-like substance in 2-3 h<sup>7</sup>, showing anti-inflammatory potential of test formulation. The above obtained evidences for the antiinflammatory study verify the objective of the present study.

**Table - 1**

Drug	Time in intervals (min)				
	0 min	30 min	60 min	120 min	180 min
Control drug (Normal saline)	0	0.34 $\pm$ 1.4	0.42 $\pm$ 1.03	0.49 $\pm$ 2.15	0.58 $\pm$ 2.15
Standard drug (Piroxicam gel)	0	0.36 $\pm$ 0.85	0.39 $\pm$ 0.75	0.35 $\pm$ 0.70	0.32 $\pm$ 1.4
Test drug (Nimbadi Thailam)	0	0.37 $\pm$ 0.85	0.34 $\pm$ 0.9	0.30 $\pm$ 1.03	0.28 $\pm$ 1.25

The data obtained were expressed as mean  $\pm$  SEM. Statistical analysis were performed by one way analysis of variance (ANOVA) followed by student's test.<sup>(4)</sup> At 95% confidence interval, P values < 0.001 were considered significant.

Figure -1



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