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### EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF MUTHU PARPAM IN WISTAR ALBINO RATS

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#### ABSTRACT

**Aim:** The Main objective of the study is to evaluate the Anti-inflammatory activity of the Siddha formulation Muthu Parpam in Carrageenan induced hind-paw oedema method using rat models. **Introduction:** Muthu parpam(MP), well-known for its therapeutic values and used for a long period of time in the Siddha system of medicine. The Literary evidence spots that the MP-Muthu Parpam is used in the treatment of Cough, Tuberculosis, Respiratory complaints, Skin diseases. **Materials and Methods:** The study was conducted in Wistar albino rats of both male and female under the approval of Institutional Animal Ethical Committee – approval number – AKCP/IAEC/49/ 20-21. The rats in group1- GP1 was treated with Ghee and the groups GP2, GP3, GP4 were treated with Muthu parpam at Low-100mg/kg, Mid-200mg/kg and High dose- 400mg/kg and GP5 was treated with the drug Indomethacin (10 mg/kg) at 1hour prior to the administration of carrageenan injection. Now the carrageenan suspension – 0.1 ml of 1% w/v in normal saline was injected into the sub-planar region of the right hind paw of rats in each group. **Result:** Carrageenan-induced hind paw oedema Two-way ANOVA showed significant influence of MP on carrageenan induced inflammation. Bonferroni Post Hoc tests indicated MP showed time and dose dependent inhibition of paw oedema. **Conclusion:** The prominent anti-inflammatory activity was noted at 5 hours after carrageenan injection. MP at Low-100mg/kg, Mid-200mg/kg and High dose-400mg/kg exhibited percent inhibition of paw oedema 13.95%, 25.12% and 46.05 % respectively whereas indomethacin showed significant percent inhibition of 52.30% at 5 hours after carrageenan administration. Hence the study confirms the Anti-inflammatory action of the Siddha formulation Muthu Parpam.

**Key Words:** Muthu Parpam- Anti-inflammatory activity- Siddha System-Pharmacological Evaluation-Hind paw oedema method.

#### INTRODUCTION

Muthu parpam(MP), well-known for its therapeutic uses, for a long period of time in the Siddha system of medicine. The Literary evidence spots that the MP-Muthu Parpam is used in the treatment of Cough, Tuberculosis, Respiratory complaints, Skin diseases and is here being referred and discussed for its Anti-inflammatory activity. [1]. Hence we decided to study the Anti-inflammatory activity of the medicine MP in Carrageenan induced hind-paw oedema method using rat models

#### MATERIALS AND METHODS:

##### Preparation procedure of the medicine MP:

The Medicine Muthu Parpam was prepared according to the standard procedure mentioned in the Siddha textbook [2]. And the Medicine MP is subjected to various Standard parameters according to the guidelines [3], [4].

#### ANTI-INFLAMMATORY ACTIVITY OF MUTHU PARPAM:

Anti-inflammatory activity was studied in the Carrageenan induced hind-paw oedema method using rat models. The study was conducted in rats of Wistar albino strain with both male and female rats under the approval of

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Institutional Animal Ethical Committee – approval number – AKCP/IAEC/49/ 20-21.

#### TEST PROCEDURE:

Twenty-five rats were randomly selected and divided into five groups each group containing five rats (both male and female).

The rats in group1(GP1) was treated with Ghee and the groups GP2, GP3, GP4 were treated with Muthu parpam with ghee in respective doses and GP5 was treated with the drug Indomethacin (10 mg/kg) at 1 hour prior to the administration of carrageenan injection. Now the carrageenan suspension – 0.1 ml of 1% w/v in normal saline was injected into the sub-planar region of the right hind paw of rats in each group. The paw volume was measured at 0, 1, 3 and 5 hours after carrageenan administration using Plethysmometer. [5]

#### RESULT:

Carrageenan-induced paw oedema Two-way ANOVA showed significant influence of MP on

carrageenan induced inflammation. Bonferroni Post Hoc tests indicated MP showed time and dose dependent inhibition of paw oedema. MP showed time dependent inhibition ( $P < 0.05$  and  $P < 0.001$  at 3 hours and 5 hours respectively) of the mean raise in paw volume compared with vehicle control rats. The high dose of MP (400mg/kg) showed significant [ $P < 0.01$  (3 hours) and  $P < 0.001$  (5 hours)] inhibition of the mean increase in paw volume (oedema) in time dependent manner as indicated by increased percent inhibition of paw oedema compared to control rats. Standard indomethacin also exhibited a similar effect ( $P < 0.001$ ) from 3 hours onwards. The prominent anti-inflammatory activity was noted at 5 hours after carrageenan injection. MP at Low- 100mg/kg, Mid- 200mg/kg and High- 400mg/kg exhibited percent inhibition of paw oedema 13.95%, 25.12% and 46.05 % respectively whereas indomethacin showed significant percent inhibition of 52.30% at 5 hours after carrageenan administration.

**TABLE 1: Dosing of Muthu Parpam**

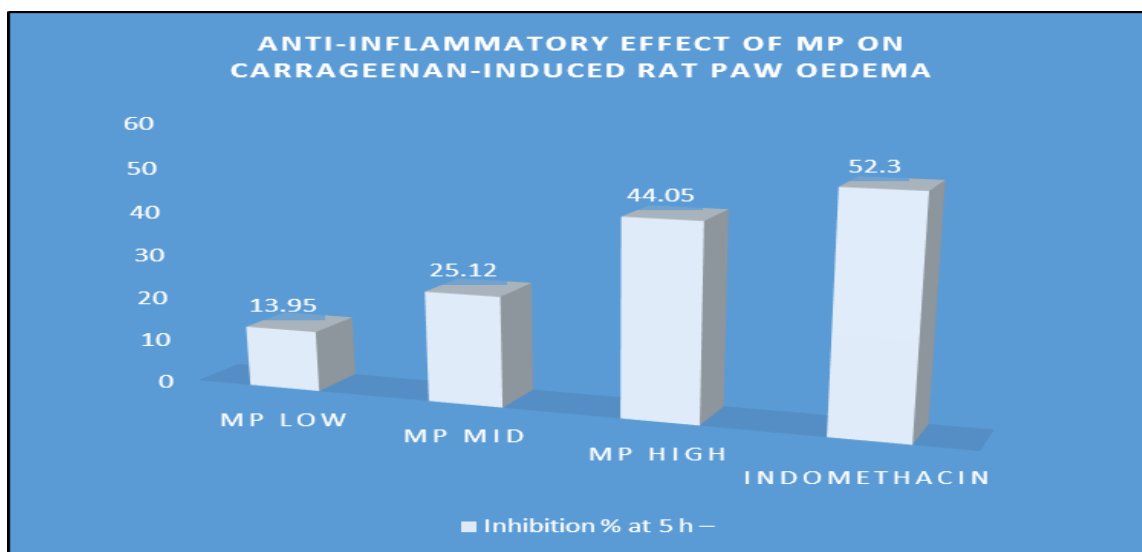
Group 1 (GP1)	Group 2 (GP2)	Group 3 (GP3)	Group 4 (GP4)	Group 5 (GP5)
Vehicle control- Ghee	Muthu parpam- Low dose- 100mg/kg	Mid dose- 200mg/kg	High dose-400mg/kg	Standard control- Indomethacin

**Table:2 Anti-inflammatory effect of MP on carrageenan-induced hind-paw oedema**

Treatment	Dose (mg/kg)	Mean increase in paw volume (ml)			Inhibition % at 5 h
		1h	3h	5h	
Vehicle Control- Ghee	2ml/kg	0.205±0.021	0.527±0.002	0.824±0.021	–
MP	Low- 100mg/kg	0.220±0.021	0.470±0.001	0.709±0.010	13.95
	Mid- 200mg/kg	0.262±0.003	0.551±0.020**	0.617±0.040***	25.12
	High-400mg/kg	0.230±0.043	0.420±0.013**	0.461±0.061***	44.05
Indomethacin	10mg/kg	0.215±0.040	0.370± 0.027***	0.393±0.020***	52.30

Results are expressed as mean±SEM(n=5). \*P<0.05;\*\*P<0.01;\*\*\*P<0.001compared to Control.

**Chart 1: Anti-inflammatory effect of the Muthu Parpam**



### DISCUSSION:

Muthu parpam showed significant inhibition of carrageenan induced inflammation in dose dependent manner. In carrageenan-induced paw oedema model the early phase is not influenced or inhibited by NSAIDs and occurs due to the release of inflammatory mediators like histamine, serotonin and bradykinin while the late phase is marked by elevated production of prostaglandins and induction of cyclooxygenase. [6] Late phase is accelerating phase of swelling due to increased vascular permeability and oedema caused by prostaglandins and can be inhibited by NSAIDs. [7] The exact mechanism of anti-inflammatory action of MP is difficult to interpret, however, it can be contemplated that MP has influence on arachidonic acid pathway and inflammatory mediators like prostaglandins mainly by inhibiting COX enzyme as like indomethacin.

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### CONCLUSION:

The prominent anti-inflammatory activity was noted at 5 hours after carrageenan injection. MP at Low-100mg/kg, Mid-200mg/kg and High dose-400mg/kg exhibited percent inhibition of paw oedema 13.95%, 25.12% and 46.05 % respectively whereas indomethacin showed significant percent inhibition of 52.30% at 5 hours after carrageenan administration. In the present study, treatment with Muthu parpam (MP) and indomethacin showed significant inhibition of increase in paw volume at 3 and 5 hours of carrageenan administration without influencing paw volume at 1 hour. This further confirms the anti-inflammatory action of the Siddha formulation Muthu Parpam.