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EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF NAAGA SANGU PARPAM IN WISTAR RATS

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ABSTRACT

The aim of the present study was to explore the probable anti-inflammatory activity of *Naaga Sangu Parpam* using Carrageenan induced inflammation in wistar albino rats. First group (vehicle control) received 1ml of Ghee, second group (Standard drug) received 10 mg/kg of indomethacin p.o., third group received 12mg/kg of *Naaga Sangu Parpam* and fourth group received 24mg/kg of *Naaga Sangu Parpam* respectively. The results were expressed as the Mean ±SEM and the statistical significance of differences between groups was analyzed by One Way Analysis of Variance (ANOVA) followed by Dunnett's test. The study revealed that *Naaga Sangu Parpam* has significant Anti-inflammatory property.

KEYWORDS: *Naaga Sangu Parpam*, anti-inflammatory, carrageenan.

INTRODUCTION

Inflammation is defined as the local response of living mammalian tissues to injury due to any agent. It is a body defence reaction in order to eliminate or limit the spread of injurious agent, followed by removal of the necroses cells and tissues.[1] The primary treatment of inflammation and pain is to use nonsteroidal anti-inflammatory drugs, but long-term use could lead to a lot of side effects, such as cardiovascular and gastrointestinal complications. Therefore, it is necessary to develop new drugs for treatment of inflammation and pain.[2,3,4]

Nonsteroidal anti-inflammatory drugs are generally used to treat inflammation but these drugs are associated with harmful side effects like GI irritation, ulceration, bleeding etc, in the same manner opioids which are used as powerful analgesics are accompanied with side effects such as addiction and dependence. As a result, researcher's interest have been increased towards herbal medicines which can be more safe and efficacious then the conventional analgesics and NSAIDS.[5] The drug *Naaga Sangu Parpam*, is a Siddha herbo-metallic preparation, mentioned in *Siddha* text *Kannusamy paramparai vaithiyam*, pg.no: 414, indicated for *Moolam* (Hemorrhoids), *Powthiram* (Fistula in ano), *Vellai* (Leucorrhoea) and *Vettai* (Venereal disease).[6]

MATERIALS AND METHODS

Collection of the raw drugs

Naagam and *Sangu* were procured from a well reputed country shop in Parrys, Chennai. *Uthamani* was freshly collected from Tambaram sanatorium. *Naagam and Sangu* were purified and the medicine was prepared in the *Gunapadam* laboratory of National Institute of Siddha.

Identification and Authentication of the drug

Sangu (Conchshell) was authenticated at Marine Biology Regional Centre, Zoological Survey of India, Chennai. Metal drug *Sangu* (Zinc) was authenticated at Department of Geology, University of Madras, Chennai. *Pergulaeria daemia* Linn. was Identified and authenticated by Botanist, National Institute of Siddha, Tambaram Sanatorium, Chennai.

Selection of animals

Healthy Wistar albino rats (150-200gm) of both sexes were used for this study with the approval of the Institutional Animal Ethics Committee and obtained from the animal laboratory. IAEC approved no: NIS/IAEC-III/04/29092016 The animals were kept in plastic cages and maintained at 24-28°C. All the rats were housed individually with free access to food, water and libitum. They were fed with standard diet and kept in well ventilated animal house and they were also maintained with alternative dark-light cycle of 12hrs throughout the study. Rats were allowed an acclimatization period of 7 days before actual experiment. The rats were closely observed for any infection and if they show any signs of infection they were excluded from the study. The animal experiment was performed with accordance legislation on welfare.

Screening of Anti-inflammatory activity

Carrageenan induced paw edema in rats

The animals were divided into 4 groups of six animals in each group. First group (vehicle control) received 1ml of Ghee, second group (Standard drug) received 10 mg/kg of indomethacin p.o., third group received 12mg/kg of *Naaga Sangu Parpam* and fourth group received 24mg/kg of *Naaga Sangu Parpam* respectively. After 1hr, the rats were administered with subcutaneous injection of 1ml of 1% w/v solution of carrageenan into the plantar side of the right hind paw.[7] The paw was marked with ink at the level of lateral malleolus and immersed in plethysmograph apparatus. The paw volume was measured initially after the administration of carrageenan at 0 th, 1 st, 2nd and 3rd hr by using plethysmographic method. The difference between the initial and subsequent reading gave the actual oedema volume.

Statistical analysis

Results were analysed using One-way analysis of variance (ANOVA) and expressed as Mean ± SEM. Data was further subjected to Dunnett's test and differences between means were regarded significant at *P < 0.05, **P < 0.01, ***P < 0.001.

RESULTS AND DISCUSSION

Naaga Sangu Parpam at 12 mg/kg dose showed significant anti-inflammatory activity (P < 0.05) at 1st, 2nd and 3rd hour when compared to control group. At 24 mg/kg the drug showed more significant (P< 0.001) at 2nd and 3rd hour. Among the two doses of *Naaga Sangu Parpam*, 24mg/kg have shown better anti- inflammatory activity (P < 0.001) when compared with control group (Fig.1). A study revealed excellent anti-inflammatory activity of ZnO by dose-dependently suppressing both mRNA and protein expressions of iNOS, COX-2, IL-1β, IL-6 and TNF-α.[8] Hence, this drug which has *Naagam* (Zinc), possess Anti-inflammatory property and ultimately it has the potency of reducing the inflammation of haemorrhoids.

Table 1: Effect of *Naaga Sangu Parpam* on carrageenan induced paw edema method.

Treatment	Percentage of inflammation after carrageenan injection at hr			
	0 hr	1 hr	2hr	3hr
Control	0.85±0.05	1.21±0.05	1.35±0.06	1.46±0.08
Indomethacin 10mg/kg	0.90±0.02	1.03±0.03±***	1.12±0.07***	1.17±0.07***
NSP 12mg/kg	0.90±0.05	1.14±0.05*	1.26±0.05*	1.35±0.04*
NSP 24mg/kg	0.93±0.05	1.10±0.03**	1.19±0.04***	1.26±0.06***

N= 6, Values are expressed as mean ± SD, analysis was done by using One-Way ANOVA followed by Dunnett's method. Test for significance is *P < 0.05, **P < 0.01, ***P < 0.001.

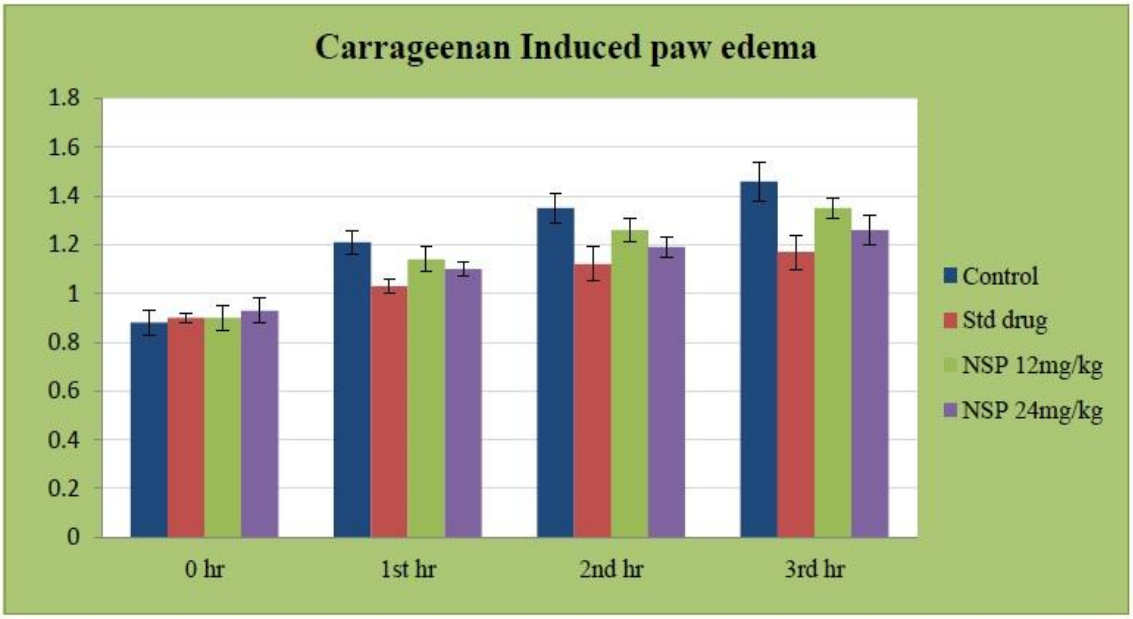

Figure 1: Anti-inflammatory activity of Naaga Sangu Parpam by carrageenan induced paw edema method.

CONCLUSION

It is concluded that administration of *Naaga Sangu Parpam* at the dose of 24 mg/kg exhibits significant ($p<0.001$) anti-inflammatory activity in Wistar albino rats when compared with control group.

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