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EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF GANDHAGA SARKKARAI IN WISTAR RATS

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ABSTRACT

The aim of the present study was to explore the probable anti-inflammatory activity of *Gandhaga Sarkkarai* using Carrageenan induced inflammation in wistar albino rats. First group (vehicle control) received 1ml of honey, second group (Standard drug) received 10 mg/kg of indomethacin p.o., third group received 100mg/kg of *Gandhaga Sarkkarai* and fourth group received 200mg/kg of *Gandhaga Sarkkarai* respectively. The results were expressed as the Mean ±SEM and the statistical significance of differences between groups was analysed by One Way Analysis of Variance (ANOVA) followed by Dunnett's test. The study revealed that *Gandhaga Sarkkarai* has significant Anti-inflammatory property.

KEYWORDS: *Gandhaga Sarkkarai*, 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 *Gandhaka Sarkkarai*, is a Siddha herbo-mineral preparation mentioned in *Siddha* text *Anuboga vaithiya navaneetham*, Part VI, indicated for *Megam (Syphilis), Premegham, Kiranthi, Purai (Whole Abscess), Kai kaal kudaichal (Joint pain).*[6]

MATERIALS AND METHODS

Collection of raw drugs

Gandhagam was purchased from a well reputed country shop in Parrys, Chennai. *Karisalai and Vellai vengayam* were freshly collected from Tambaram sanatorium, Tamilnadu.

Identification and Authentication of the drug

Mineral drug was authenticated by Dr.M.Suresh Gandhi, Department of Geology, University of Madras, Chennai. Herbal drugs were identified and authenticated by Dr. D. Aravind M.D(s), Botanist, National Institute of Siddha, Tambaram Sanatorium, Chennai.

Selection of animals

Healthy Wistar albino rats (150-200gm) of both sex 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/02/29092016** 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 feed with standard diet and kept in well ventilated animal house they also maintained with alternative dark-light cycle of 12hrs throughout the studies. Rats were allowed an acclimatization period of 14 days before actual experiments. The rats were closely observed for any infection and if they show signs of infection they were excluded from the study. The animal experiment was performed with accordance legislation on welfare.

Experimental Design for Carrageenan induced paw oedema method

The animals were divided into 4 groups. Each group contained 6 animals. Group 1 received Vehicle control (Honey). Group II received Indomethacin (10mg/kg). Group III and group IV

received test drug *Gandhaga Sarkkarai*, 100mg/kg and 200mg/kg respectively. One hour after the administration of drugs, acute inflammation is produced by sub plantar injection of 0.1 ml of 1% suspension of carrageenan with normal saline in the right hind paw of the rats. Then the paw oedema is measured plethysomometrically at 0, 1, 2 and 3 hours after the carrageenan injection.

RESULTS AND DISCUSSION

Table 1: Effect *Gandhaga Sarkkarai* on carrageenan induced paw edema method.

Treatment	Percentage of inflammation after carrageenan injection at hr			
	0 hr	1 hr	2hr	3hr
Control	0.89±0.48	1.18±0.42	1.5±0.45	1.65±0.45
Indomethacin 10mg/kg	0.90±0.21	1.03±0.03***	1.12±0.07***	1.17±0.07***
GS 100mg/kg	1.23±0.33	1.38±0.23*	1.54±0.15*	1.58±0.19*
GS 200mg/kg	1.23±0.48	1.28±0.50**	1.48±0.38***	1.40±0.46***

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.

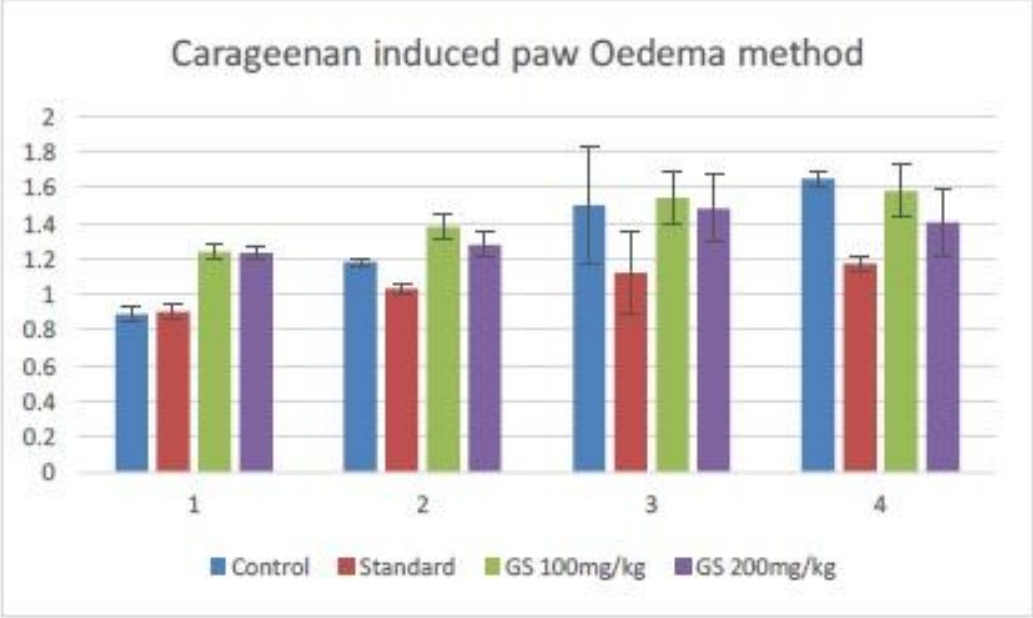

Figure 1: Anti-inflammatory activity of Gandhaga sarkkarai by carrageenan induced.

Paw edema method

Gandhaga sarkkarai at 100 mg/kg dose showed significant anti-inflammatory activity (P < 0.05) at 1st hour when compared to control rats. At 200 mg/kg the drug showed significant (P<0.01) at 1st hour and (P < 0.001) at 2rd hour. Among the two doses of Gandhaga

sarkkarai, 200 mg/kg have shown better anti- inflammatory activity ($P < 0.001$) when compared with control rats.

CONCLUSION

Thus, it was concluded that administration of *Gandhaga sarkkarai* at the dose of 360 mg/kg exhibited significant ($p<0.001$) anti-inflammatory activity in Wistar albino rats when compared with control.

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