Journal Homepage: -www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI:10.21474/IJAR01/9132
DOI URL: http://dx.doi.org/10.21474/IJAR01/9132
ISSN NO. 2320-5407

RESEARCH ARTICLE

ANTI-INFLAMMATORY AND ANTISEPTIC ACTIVITY OF ANCIENT TRADITIONAL SIDDHA DRUG THIPPILI RASAYANAM IN PEDIATRIC CARE.

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Manuscript Info

Manuscript History
Received: 24 March 2019
Final Accepted: 26 April 2019
Published: May 2019

Key words:-
Thippili rasayanam, Traditional medicine,Anti inflammatory activity,Antiseptic activity.

Abstract

Background: Inflammation of the tonsils usually occurs secondary to viral or bacterial origin.The objective of this study was to assess the anti inflammatory and antiseptic potential of traditional drug Thippili Rasayanam against tonsillitis in pediatirc care.

Materials and Methods: Wistar rats of either sex weighing 180-220g are procured from Central Animal House, J.S.S. College of Pharmacy, Ootacamund,India. Experimental protocol was approved from Institutional Animal Ethical Committee and carried out as per CPCSEA guidelines The anti inflammatory of the drug was evaluated using carrageenan- induced paw oedema method. .The anti septic activity was studied in excision wound healing model in Wistar rats.

Results: The anti-inflammatory activity of traditional drug at 100mg/kg dose level showed significant ($p<0.01$, $p<0.001$) anti-inflammatory activity from 60 minutes onwards and it was maintained up to 240 minutes. The results were comparable with that of standard drug indomethacin 10 mg/kg.The antiseptic activity of traditional drug showed a better healing pattern with complete wound closure with significant change ($p< 0.05$) in % wound contraction was observed in standard and treated group within 12 and 15 days respectively while it was about 21 days in control rats.

Conclusion: The results indicate that the traditional drug Thippili rasayanam has a distinct approach to care neonate and children suffering from tonsillitis. It act as a preventive medicine that keep children healthy.

Introduction:-

Siddha system of medicine is the ancient, unique, potent and well defined system of pre-vedic origin. Siddha system of medicine was originated in the Lemurian continent and followed by Dravidians. Siddha system of medicine has been written in the beautiful Tamil language in poetic form on cudgeon palmyrah leaves.One could even be emboldened to say that the Siddha system of medicine is the most ancient medicine which is inexpensive, easy to use and highly efficacious. Tamilnadu has a rich tradition of many Arts and Science, of which Siddha system of medicine is unique to Tamilnadu which has been the medicine for several centuries,been part of Tamil's lives and of the folk and traditional healing practice of rural Tamilnadu.

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Management of paediatric illness in Traditional Siddha medicine

Siddha medicine is more scientific and it involves high order of chemistry. The exact reaction which are going on in the actual preparation of Siddha medicine processes are highly scientific and has a distinct approach to care specific ailment and also to build up immunity power of the person being treated against all disease.

Specific siddha drug formulations exclusive for paediatric usage are given by Siddhars to combat common childhood diseases and disorders.The textbook dealing with Paediatrics in Siddha system is called as "Balavagadam".Balavagadam is the branch of medicine dealing with the diseases of children and their management[3].

According to Siddha literature, there are about 4448 types of diseases[1].Over a period of 500 years,thipili rassayanam[2] which is a polyherbal formulation is well known for its efficacy against respiratory infections.This novel drug is highly potential in treatment of respiratory problems. Lasunathabitham is one of the respiratory problem in paediatric age group, the clinical features of which are clearly described in various siddhar's paediatric text. This disease most probably corelates with Tonsillitis in modern science.

Manoharan.A et al.,2016 have studied the novel action of Thippili rasayanam which sets a typical example for the effective medication for respiratory pathogens due to its recognised Antibacterial ,Antifungal and Anti-oxidant properties.The study concluded that usage of novel siddha drug thippili rasayanam confers greatest benefit than the precarious,resistance inducing antibiotics [4].

Incidence:

Tonsillitis is a condition that is commonly encountered in primary care.on average 50 per 1000 patients consult their child specialist each year with a sore throat. Tonsillitis is a significant economic distribution,with 35000000 days lost from work or school.Acute tonsillitis commonly effects children from the age of 4 years (highly prevalent between 4 and 8 years old) and young adults aged between 15 and 25 years old [5.]

Anti Inflammatory Activity

Materials and methods:-

The anti-inflammatory activity of traditional siddha formulation Thippili rasayanam at at a dose of 100mg/kg was evaluated using carrageenan- induced paw oedema method [6,7].

Animals

Wistar rats of either sex weighing 180-220g are procured from Central Animal House, J.S.S. College of Pharmacy, Ootacamund. The temperature in experimental room is at 22^0C (± 4^0C) with 60% ±2 relative humidity with appropriate lighting (12h light and dark cycle). Animals are housed in polycarbonate cages with stainless steel metal grades in bottom. Animals are accessed to unlimited water supply and food. Experimental protocol was approved from Institutional Animal Ethical Committee and carried out as per CPCSEA guidelines.

Experimental Grouping of animals:

Wistar rats of 180-220g are divided into 3 groups with 6 animals in each group.
Group-I: Normal control.
Group-II: Indomethacin 10 mg/kg
Group-III: Carrageenan + Siddha formulation Thippili rasayanam (100 mg/kg)

Rat paw edema model

Acute paw edema was produced by injecting carrageenan 1% w/w (0.1ml) into the sub plantar region of the left hind paw in the rats. The siddha formulation Thippili Rasayanam (100 mg/kg) and Indomethacin 10 mg/kg were administered orally one hour before testing. The control group received vehicle 0.1 ml/100gm. The paw volume was measured by using digital plethysmometer (UGO Basile. Italy) at 0, 30, 60, 120 and 240 minutes after carrageenan challenge**.**

Statistical analysis

Data obtained from this study were expressed as mean+-SEM. Statistical analysis was performed using Two-way ANOVA followed by Bonferroni multiple comparison test. $p<0.05$ implies significance.

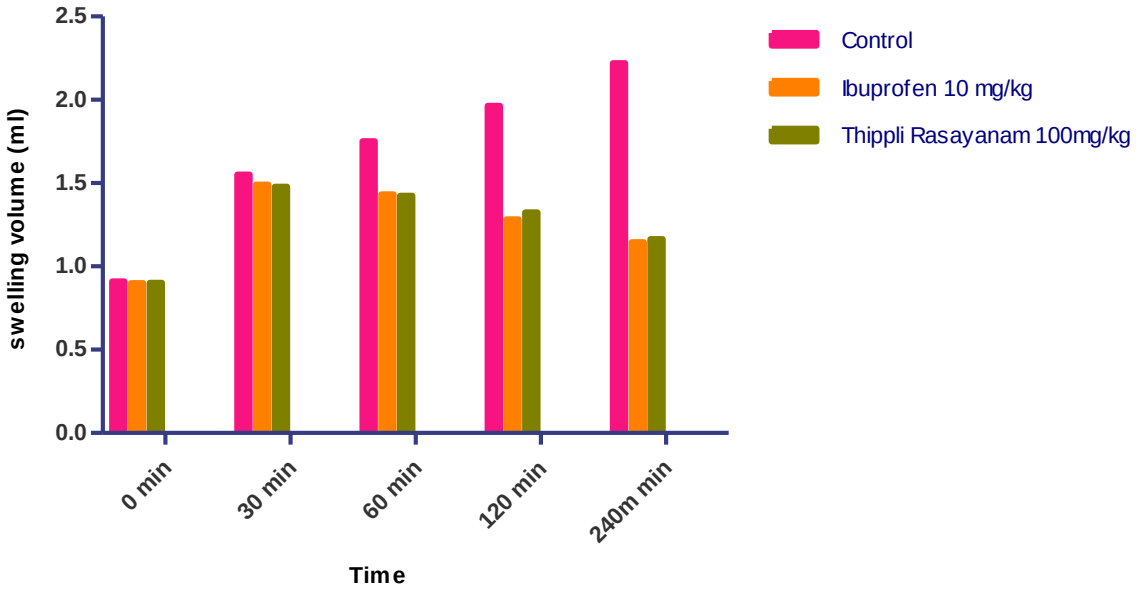
Results:-

The anti-inflammatory activity of traditional Siddha formulation Thippili Rasayanam on carrageenan induced paw oedema indicated that the formulation at 100mg/kg dose level showed significant ($p<0.01$, $p<0.001$) anti-inflammatory activity from 60 minutes onwards and it was maintained up to 240 minutes. The results were comparable with that of standard drug indomethacin 10 mg/kg.

Table 1:-Effect of traditional Siddha formulation Thippili rasayanam carrageenan-induced edema of the hind paw in rats

Sl. No.	Group	Treatment	Swelling volume (mL)				
			0min	30min	60min	120min	240min
1.	Control	1mL/kg 0.3%CMC	0.91±0.02	1.55±0.02	1.75±0.04	1.96±0.04	2.22±0.01
2.	Indomethacin	10 mg/kg	0.90±0.01	1.49±0.04	1.43±0.04**	1.28±0.05***	1.14±0.02***
3.	Thippili Rasayanam	100mg/kg	0.90±0.01	1.48±0.02	1.42±0.02**	1.32±0.02**	1.17±0.01***

Values are expressed in terms of mean ± S.E.M, (n=6)
***P<0.001, **p<0.01 vs control group,
Two-way ANOVA followed by Bonferroni multiple comparison tests



Graph1:-Effect of traditional siddha formulation Thippili Rasayanam on carrageenan -induced edema of the hind paw in rats

Antiseptic Activity

The antiseptic activity of Thippili Rasayanam ointment was studied in excision wound healing model in rats [8].

Preparation of Formulation and Standard Used

Simple ointment was prepared from the 10% Siddha formulation thippili rasayanam by trituration method in a ceramic pestle and mortar using White soft paraffin. About 10 g of semisolid Siddha formulation thippili rasayanam was incorporated into the 100 g of simple ointment base B.P. Simple ointment base was used as the control group and was applied twice per day. Siddha formulation Thippili rasayanam ointment was used twice per day to treat different groups of animals. Silver sulfadiazine (0.01%) obtained from was used as standard drug for comparing the wound healing potential of siddha formulation in different animal models and was applied twice per day.

Grouping of Animals

For excision wound model, animals were divided into three groups in each group consisting of six animals as follows: group I-simple ointment base; Group II- silver sulfadiazine (0.01%) cream was used as standard and Group III-10% siddha ointment of Thippili rasayanam.

Excision wound model

Three groups of animals containing six rats in each group were anesthetized by open mask method with anesthetic ether. The rats were depilated on the back and a predetermined area of 500 mm^2 full thickness skins was excised in the dorsal interscapular region. Rats were left undressed to the open environment. The formulation ointment and standard drug were applied daily until the complete healing. In this model, wound contraction and epithelialization period was monitored. Wound contraction was measured as percent contraction in each 3 days after wound formation.

Measurement of Wound Contraction

An excision wound margin was traced after wound creation by using transparent paper and area measured by graph paper. Wound contraction was measured in each 3 days interval, until complete wound healing and expressed in percentage of healed wound area. The evaluated surface area was then employed to calculate the percentage of wound contraction, taking initial size of wound, 300 mm^2, as 100%, by using the following formula as,

$$\% \text{ wound contraction} = \frac{\text{Initial wound size} - \text{specific day wound size}}{\text{Initial wound size}} \times 100$$

Statistical analysis

Data obtained from this study were expressed as mean+-SEM. Statistical analysis was performed using Two-way ANOVA followed by Bonferroni multiple comparison test. $p < 0.05$ implies significance.

Results

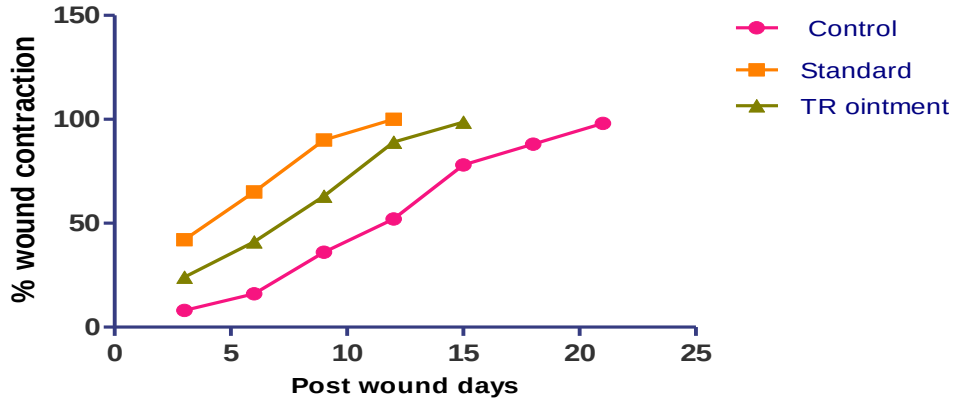
The antiseptic activity of thippili Rasayanam ointment was studied in excision wound healing model in rats. A better healing pattern with complete wound closure with significant change ($p < 0.05$) in % wound contraction was observed in standard and treated group within 12 and 15 days respectively while it was about 21 days in control rats as shown in Tables 2 and Figure 2.

Table 2:-Effect of Thippili Rasayanam (TR) ointment on % wound contraction of excision wound models in rats

Groups	Post wound days						
	3	**6**	**9**	**12**	**15**	**18**	**21**
Group I Control	8.25±0.57	16.34±1.24	35.79±0.42	52.36±1.65	72.18±1.34	87.52±0.92	99.24±0.78
Group II Standard	42.36±0.57	65.82±1.28	90.56±0.92	100			
Group III Thippili rasayanam ointment	25.16±1.44	41.38±1.96	63.12±0.58	89.18±1.22	99.74±0.1.36		

Values are expressed in terms of mean ± S.E.M, (n=6)
*p<0.05 vs control group,
Two-way ANOVA followed by Bonferroni multiple comparison tests

Fig 2:-Effect of Thippili Rasayanam (TR) ointment on % wound contraction of excision wound models in rats



Conclusion:-

From the above two studies,it is concluded that Thippili rasayanam possess significant anti-inflammatory and antiseptic activity. Recent studies on traditional siddha drug Thippili rasayanam by Manoharan.A et al.,2016 revealed that the drug thippili rasayanam had potent anti microbial,anti oxidant,anti fungal activities.Thus,the traditional drug is safe to use and can be prescribed as a drug of choice for treating paediatric tonsillitis in this modern era.

Source of Support
Nil

Conflict of interest
Authors declare that this research presents no conflict of interests.

Acknowledgement:-

The authors would like to thank the Dr.MGR Medical University,Chennai ,India.

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