Research Article

Anti-Inflammatory Activity of Uthamathali Girutham – A Poly Herbal Formulation in the Management of Sinusitis

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ABSTRACT

Objective: To investigate the effect of extract of Uthamathali Girutham on change of paw volume after carrageenan in mice.

Methods: In present study extract of Uthamathali Girutham at doses of 0.1ml, 0.2ml, 0.3ml and 0.4ml/kg I.P were evaluated for change of paw volume after carrageenan in mice.

Results: The results of present investigation showed that the Dose of 0.4 ml of Uthamathali girutham reduced paw edema from 85.61% to 12.39% in 6 hours.

Keywords: Anti - inflammatory, Carrageenan, Paw edeme, Uthamathali girutham.

INTRODUCTION

Sinusitis is an acute or chronic inflammation of the paranasal sinuses. Maxillary sinusitis is the most common type of sinusitis. The ethmoid, frontal and sphenoid sinuses are affected less frequently.

Sinusitis is caused by a variety of bacteria such as streptococci, staphylococci, pneumococci, Haemophilus influenzae and anaerobic bacteria. Viruses such as the influenza and the parainfluenza virus and less commonly fungi such as aspergillus also may produce sinusitis.

Infection reaches the sinuses from the nose, mouth, tonsils, naso pharynx, and the upper canines or molars. The lining mucosa of the nose and sinuses is inflamed. Obstruction of the opening of the sinus leads to accumulation of secretion, which may get infected. Sinuses may become filled with pus.

Chronic sinusitis leads to recurrent headache, which shows a diurnal periodicity. The headache starts in the morning and worsens by mid-day, and subsides by evening. Foul-smelling purulent nasal discharge may occur. Once established, the condition persists for months or even years

Sinusitis affects a tremendous proportion of population, accounts for millions of visits to primary care physicians each year and in the fifth leading diagnosis for which antibiotics are prescribed accounting for 0.4% ambulatory diagnosis. According to the National Ambulatory Medical Care Survey (NAMCS) approximately 14% adults report having an episode of sinusitis each year. [1]

IEC Approval: The Institutional Ethical Committee, Government Siddha Medical College, Chennai reviewed and approved the study.

IEC No: GSMC – CH – 1234/ME – II/022/2023

CTRI No: This trial was registered in Clinical Trial Registry India

CTRI No: CTRI/2024/07/070431

MATERIALS AND METHODS

PLANT MATERIAL:

Polyherbal formulation Uthamathali Girutham was prepared and the raw drugs was authenticated by The department of Gunapadam, Government Siddha Medical College, Chennai.

GROUPING AND RANDOMISATION

A total of 30 mice (male) were selected and based on the body weight they were randomly distributed into six groups, i.e., Model control (Group 1), Reference control (Group 2) and four treatment groups (Group 3, 4, 5 & 6) for study.

INTERNAL ANIMAL ETHICAL COMMITTEE APPROVAL NUMBER: MB/IAEC/2024/04/01 Dated 04.09.2024

Preparation of test item and administration:

The formulation was given as ready to dose. The test item was administered in a single dose by gavage using stainless steel ball tipped oral intubation needle at the desired dose level.

Study Design:

An outline of the study design is presented in the following table 1. The animals were weighed and randomly separated into 6 groups. 50 ul of 1% carrageenan was injected to induce paw edema after 1 hr of dosing the test items. The animals' right hind paw will be marked at about distance of 2 cm from the tip of the paw for volume measurement. The volume of the paw was measured before carrageenan, after

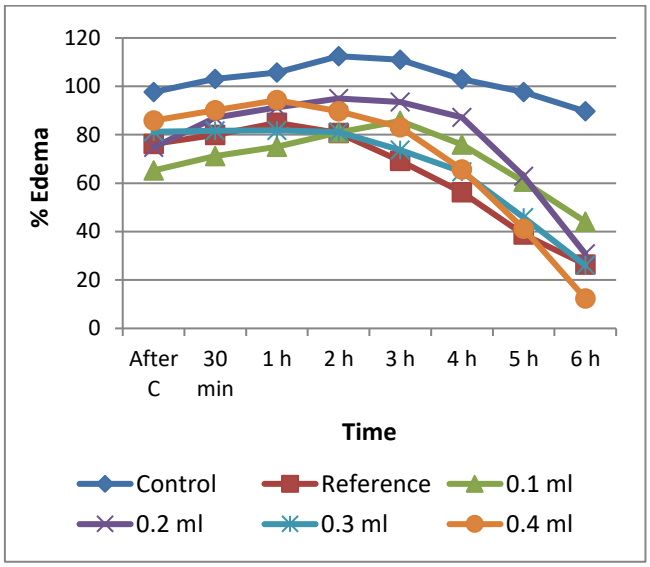
carrageenan, 30 min, 1, 2, 3, 4, 5, and 6 hr after carrageenan. [2,3]

Table 1: Study group

Group No.	Number of animals	Dosing
1	5	Model control
2	5	Reference control
3	5	Treatment – I (0.1 ml)
4	5	Treatment – II (0.2 ml)
5	5	Treatment – III (0.3 ml)
6	5	Treatment – IV (0.4 ml)

RESULTS AND DISCUSSION

When considering the graph 1, which shows the % change of paw volume after carrageenan, it is evident that dose level of 0.4 ml reduces the inflammation from 85.91% to 12.39 % and acts best.



Graph 1: % Change of paw volume after Carrageenan

Table 2: % Change of paw volume after Carrageenan

	Animal No	After Carrageenan	30 min	1 h	2 h	3 h	4 h	5 h	6 h
Control	1	93.33	106.66	106.66	113.33	106.67	100	93.33	8.67
	2	114.28	121.42	121.42	128.57	121.42	114.28	107.14	100
	3	100	100	106.67	120	113.33	100	100	93.33
	4	87.5	87.5	87.5	93.75	100	93.75	87.5	75
	5	93.33	100	106.67	106.67	113.33	106.67	100	93.33
Reference	1	61.11	61.11	66.67	72.22	55.56	33.33	22.22	16.67
	2	61.90	61.90	66.67	52.38	42.86	38.09	14.28	9.52
	3	100	107.14	121.43	121.43	107.14	92.86	71.3	50
	4	100	106.67	106.67	100	93.33	80	60	40
	5	57.89	63.16	63.16	57.89	47.37	36.84	26.31	15.79
0.1 ml	1	52.63	57.89	57.89	63.16	63.16	57.89	47.37	31.58
	2	52.63	57.89	57.89	63.16	63.16	52.63	36.84	26.31
	3	58.82	58.82	58.82	70.59	94.12	88.23	58.82	41.18
	4	100	100	107.14	114.28	114.28	100	78.57	71.43
	5	62.5	81.25	93.75	93.75	93.75	81.25	81.25	50
0.2 ml	1	80	86.67	86.67	86.67	93.33	86.67	60	26.67
	2	52.63	47.37	47.37	52.63	57.89	52.63	31.58	10.53
	3	86.67	106.67	113.33	113.33	106.67	100	66.667	26.67
	4	68.75	87.5	87.5	93.75	81.25	75	56.25	18.75
	5	85.71	107.14	121.43	128.57	128.57	121.43	100	71.43
0.3 ml	1	92.86	100	100	100	100	92.86	57.14	28.57
	2	92.86	92.86	92.86	107.14	85.71	71.42	50	21.42
	3	47.37	36.84	26.31	31.58	26.31	26.31	10.53	5.26
	4	80	85	90	80	70	60	45	35
	5	93.33	93.33	100	86.67	86.67	73.33	66.67	40
0.4 ml	1	92.31	100	115.38	123.08	123.08	107.69	69.23	23.08
	2	92.86	100	92.86	92.86	78.57	57.14	42.86	14.28
	3	86.67	86.67	93.33	86.67	80	60	26.67	0
	4	81.25	87.5	87.5	81.25	75	62.5	43.75	18.75
	5	76.47	76.47	82.35	64.70	58.82	41.18	23.53	5.88

Table 3: Average and standard deviation of % increase in paw oedema

Group	After Carrageenan	30 min	1 h	2 h	3 h	4 h	5 h	6 h
Control	97.69±10.27	103.11± 12.36	105.78± 12.05	112.4± 13.23	110.95± 8.05	102.94 ±7.81	97.59±7.46	89.66± 9.45
Reference	76.18±21.79	79.99± 24.57	84.91± 27.13	80.78± 29.2	69.25± 29.0	6.22± 27.99	38.85± 25.22	26.39± 17.56
0.1 ml	65.31± 19.84	71.17± 18.95	95.10± 23.61	80.98± 22.44	85.69± 22.44	76.0± 20.16	60.57± 19.31	44.09± 17.77
0.2 ml	74.95± 14.27	87.06± 24.30	91.25± 28.97	94.99± 28.84	93.54± 26.55	87.14± 25.88	62.89± 24.61	30.80± 23.66
0.3 ml	81.28± 19.77	81.60± 25.58	81.83± 31.34	81.07± 29.66	73.73± 28.56	64.78± 24.53	45.86± 21.36	26.05± 13.55
0.4 ml	85.91± 7.08	90.12± 10	94.28± 12.61	89.71± 21.38	83.09± 23.89	65.70± 24.90	41.20± 18.15	12.39± 9.40

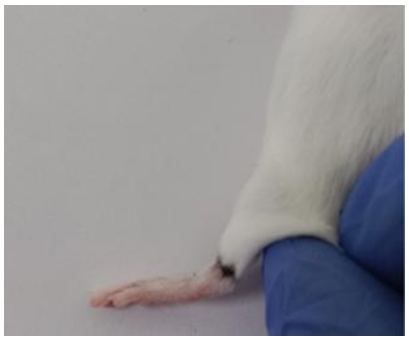


Figure 1: Before Carrageenan

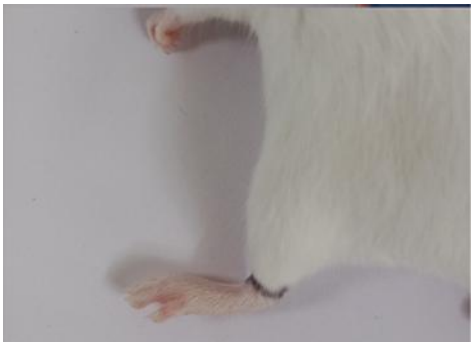


Figure 2: After Carrageenan

Figure 3: After treatment

DISCUSSION

Uthamathali girutham at doses of 0.4ml/kg significantly reduces the paw edema when compare to control group as shown in figure 1,2 and 3. Control group showed reduction in paw oedema from 97.69% to 89.66% in 6 hours while Uthamathali Girutham at dose 0.4ml/kg showed reduction in paw oedema from 85.91% to 12.36% in 6 hours as shown in table 2 and table 3. Hence Uthamathali Girutham shows Anti – inflammatory activity by reducing the paw oedema in mice.

CONCLUSION

The results obtained from this study substantiated the use of Uthamathali Girutham in the management of Sinusitis. The extract of Uthamathali Girutham shows a significant Anti - inflammatory activity by reducing the paw oedema in mice.

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