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## Bronchodilator activity of Swasa Kudori Chooranam

Dr. R. Nisha Yadav<sup>1</sup>, Dr. A. Kingsly<sup>2</sup>, Dr.G.Esakkypandian<sup>3</sup>,  
Dr. R. Antony Duraichi<sup>4</sup><sup>1</sup> P.G. Scholar, Dept. of Gunapadam, GSMC, Palayamkottai,  
E-mail : [nishababu3001@gmail.com](mailto:nishababu3001@gmail.com)<sup>2</sup> HOD, Dept. of Gunapadam , GSMC, Palayamkottai.<sup>3</sup> Lecturer, Dept. of Gunapadam , GSMC, Palayamkottai.<sup>4</sup> Asst. Lecturer, Dept. of Gunapadam , GSMC, Palayamkottai.

## Abstract

Among several respiratory diseases of man. Bronchial Asthma is the most common disabling syndrome. It is the most common allergic disease of human beings leading to more complication. Bronchial asthma is an inflammation disorder of the Airways characterized by various airway obstruction. Airway inflammation and bronchial hyper responsiveness and is a global health problem that result from a complex interplay between genetic and environment factors. Nearly 7 – 10% (300 million) of the world population suffers from Bronchial Asthma. In siddha aspect there is a preparation called SWASA KUDORI CHOORANAM which is especially indicated for Eraippu Noi (Bronchial Asthma) in Literature Kannusamy parambarai vaithiyam for its easy availability of drugs which is exclusively indicated for Eraippu Noi (Bronchial Asthma) the ingredients of these formulation are easily available and affordable. The evidence in siddha literature strongly support its bronchodilator activity.

**Keywords:** Bronchial Asthma, SWASA KUDORI CHOORANAM, bronchodilator activity.

## Introduction

Siddha is a holistic medical system that given importance to the mental, the physical, the cultural and the spiritual it has combined all these aspects and diversified in the form of yoga, pranayama, medicine, kalpa, the humours, the 96 thathuvams and so on.

## Materials and Methods

## Ingredients:

1. Chukku (*Zingiber officinale*) Rosc.
2. Milagu (*Piper nigrum*) Linn.
3. Thippili (*Piper longum*)Linn
4. Chitharathi (*Alpinia officinarum*) Linn
5. Akragaram (*Anacyclus pyrethrum*) Dc
6. Valmilagu (*Piper cubeba*) Linn.
7. Thippili ver – Modi (*Piper longum*) Linn.
8. Thalispapthri (*Abeis spectabilis*) D.Don mirb.

9. Vengaram (*Sodium Biboate - Borax*)

## A. Purification

Chukku	:	Remove the outer hard layer
Milagu	:	Roast in until Pungent smell comes
Thippili	:	Roast it until pungent smell comes
Chitharathi	:	Roast it Slightly, until it turns to golden brown
Akraram	:	Roast it slightly
Vaalmilagu	:	Clean the kaambu then dry in the sunlight
Modi (Thippiliver):	:	Wash it and dried
Vengaram	:	Take vengaram fried it, until it lost its humidity
Thalispapthri	:	Roast it slightly

**C. Process of preparation**

The purified drug has to made into powder separately and mixed thoroughly and kept it in the tight container

**D. Indication :**

Kasam, Erumal, Kozhai, Elai (Respiratory disorders)

**E. Dosage:**

Thirikadi pramanam - 800 – 1000mgm.

**F. Adjuvant:**

Honey, Ginger juice, Ghee

**G. Shelf life :**

3 months

**Pharmacological study**

**Effect of swasa kudori chooranam on broncho-alveolar Levage in mice**

**Procedure**

Albino mice of either sex were divided into six groups containing five animals each (n=5).All animals were sensitized by an intraperitoneal injection of 1ml alum precipitate antigen containing 20µg of ova albumin and 8mg of alum suspended in 0.9% of sodium chloride solution. A booster injection of this alum-

albumin mixture was administered 7 days later. Non sensitized animal were injected with alum only (GroupII). Seven days after (15 days) the second injection, animal was exposed to aerosolized oval albumin (1%) for 30 min. Animals belonging to groups I received orally on distilled waterand Group IV, V, VI received orally on rc 0.226mg, 1.134mg and 56.7mg. Animals of group III, as positive control group received dexamethasone (0.27mg/kg p.o.) 5 hr before antigen challenge. The mice were sacrificed at the end of study (24hr after sensitization) and trachea catheter was inserted in trachea. Bronchoalveolar lavage fluid (BALF) was collected by lavaging the lung with two aliquots 5ml of 0.9% of sodium chloride solution. Total recovery volume per mice was approximately 5ml. Total leukocyte Eosinophils and Neutrophils were counted under microscope and histopathologic evaluation of lung tissue was carried out. [1]

1. Connett G. J., Warde C., Wooler E.And Lenney W. Arch Dis Childhood 1994; 70: 170- 173

**Dosage schedule:**

The required dose for mice/rat will be calculated by using the standard dose calculation procedure from recommended clinical dose.

**Conversion formula:** Human dose is 2100mg,BD

Total clinical dose (a) x conversion factor (b) 0.018 = (c) per 200 gm of rat 2100 mg x 2(a) x 0.018 (b) = 37.8 (c) /30gms of MICE

37.8/1000X30 = 1.134mg/kg

**Experimental doses calculated as per the standard procedures.**

S.No	Groups	Dose /kg, weight	Dose /200 gms. weight	Volume of administration
1	Vehicle Control	--	--	0.5 ml
2	Therapeutic Dose	1.134mg	0.226mg	0.5 ml
3	Average Dose	5.67mg	1.134mg	0.5 ml
4	High Dose	11.34mg	56.7mg	0.5 ml

**Experimental design**

- GROUP 1: CONTROL (Normal Saline)
- GROUP 2: ONLY ALUM
- GROUP 3: ONLY ALUM + Dexamethazone
- GROUP 4: ONLY ALUM + SKC 0.226mg/kg
- GROUP 5: ONLY ALUM + SKC 1.134 mg/kg
- GROUP 6: ONLY ALUM + SKC 56.7 mg/k

## Results and Discussion

### Pharmacological results

#### Bronchodilator result

#### Effect of *swasa kudori chooranam* on broncho-alveolar lavage in mice

GPS	Eosinophils	Differential Leukocytes ( $\times 10^6 / \mu\text{l}$ )		Total Leukocytes (per cu.mm)
		Neutrophils	Monocytes	
(Normal) control	42.6667 $\pm$ 1.83787	4.93333 $\pm$ 0.276486	42 $\pm$ 1.46059	1238.67 $\pm$ 1 3.2531
(allergic only Alum	179.333 $\pm$ 5.67255***	16.4667 $\pm$ 0.256472***	61.3333 $\pm$ 2.56472***	1438.67 $\pm$ 17.7739***
Alum +SKC dexamethazone	52.3333 $\pm$ 1.28236*	5.4 $\pm$ 0.0730297*	36.6667 $\pm$ 1.83787*	1024 $\pm$ 24.133**
Alum +S KC LOW DOSE	116.667 $\pm$ 1.83787***	8.66667 $\pm$ 0.787683***	49 $\pm$ 2.39444***	1097.33 $\pm$ 18.2623***
Alum +SKC MIDDLE DOSE	87.3333 $\pm$ 1.52023***	7.4 $\pm$ 0.0966092***	37 $\pm$ 1.09545***	903.333 $\pm$ 29.2878***
Alum + SKC HIGH DOSE	53.3333 $\pm$ 1.11555***	7.36667 $\pm$ 0.147573***	30.3333 $\pm$ 0.557773***	813.333 $\pm$ 30.4047***

Values are expressed as the mean  $\pm$  S.D; Statistical significance (p) calculated by one way ANOVA followed by dunnett's ns- no significant \*P < 0.001, \*\*P < 0.01, \*\*\*P < 0.05 calculate by comparing treated group with CONTROL group.

Increased level of Leucocytes and eosinophils counts in our respiratory system play a vital role to induce bronchial hypersensitivity and produces airway inflammation in allergic and non-allergic asthma. The inflammatory reaction of bronchial walls in asthma is brought about increased level of bronchial eosinophils. It occupied in the later phase reaction of bronchial asthma.

Subcutaneous administration of boiled and cooled milk into the Wister albino rats acts as antigen and

produced allergic response in mice increase the total leucocyte and eosinophil count in 24 hour administration (Limbsiya KK. et al, 2012). During asthmatic inflammation leukocytes release the following inflammatory mediators are cytokines, histamine mainly and basic protein, which promote the endurance of inflammation [Brekman LI et al., 1969]. Eosinophils infiltrating the airway also have an effect on mucus secretion by epithelial goblet cells (Shimizu T et al., 2003). Eosinophils part in bronchial asthma was quite an active in the development of allergic airway inflammation (Elizabeth R. Walsh et al., 2010). Eosinophil creates bronchoconstriction through the secretion of mediators such as eosinophil cationic protein, eosinophil-derived neurotoxin, and prostaglandin, which results in broncho constriction in respiratory tract (Limbsiya KK. et al, 2012).

In this study was observed that leukocytes count was decreased in rat treated with *SWASA KUDORI CHOORANAM* at doses of 200mg/ kg significantly as compared to disease control group. Result suggests that *SWASA KUDORI CHOORANAM* decreases milk induced leukocytes count in rat. And this study was observed that *SWASA KUDORI CHOORANAM* at doses of 200mg/kg significantly decreased milk induced eosinophil count in rat. Eosinophil counts of disease control group was compared with *SWASA KUDORI CHOORANAM* treated group results showed the drug reduces eosinophil counts in rat. Finally the test drug *SWASA KUDORI CHOORANAM* treated group rat leukocytes and eosinophils count was considerably reduced. During bronchial asthma broncho constriction is developed by inflammatory changes of the airways.

If a drug reduces or prevents bronchial inflammation of airways bronchodilation happens. The effect of *SWASA KUDORI CHOORANAM* on reducing bronchial inflammation through reducing the increased leucocytes and eosinophils counts in rat. Finally the *SWASA KUDORI CHOORANAM* results represents reduce bronchial inflammation helps airways to dilate. *SWASA KUDORI CHOORANAM* indirectly proves its broncho dilator activity in the management of asthma.

### Interpretation

The test drug *SWASA KUDORI CHOORANAM* has got significant Bronchodilator Activity.

### Conclusion

*SWASA KUDORI CHOORANAM* was selected for the elaborate study of its efficacy on *Eraippu Noi* (Bronchial Asthma).

Pharmacological analysis, It has been concluded that *SKC* has got a good Bronchodilator activity and hence effective for *Eraippu Noi*.

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