ABSTRACT

*Siddha* medicine is a form of South Indian Tamil traditional medicine. This system of medicine was popular in ancient India. The medicine in this system prepared from raw drugs which is obtained from herbals, metals, minerals and animal products. *Mahalavangathi chooranam* is a herbal preparation and consists of 8 herbals. It is used to treat the respiratory disorders particularly for "Eraippu noi" (Bronchial asthma). This review is aimed to bring out scientific evidence for the therapeutic usage of "*Mahalavangathi chooranam*" in respiratory disorders particularly in *Eraippu noi* (Bronchial asthma) and focused on the pharmacological activity responsible for the curative nature of the drug in *Eraippu noi* (Bronchial asthma). Most of the raw drugs used for the preparation of *Mahalavangathi chooranam* have anti-histamine activity and anti-inflammatory activity and broncho-dilator activity hence justifying its usage in *Eraippu noi* (Bronchial asthma).

**KEYWORDS:** *Siddha medicine, Mahalavangathi chooranam, Eraippu noi, Bronchial asthma, pharmacological activity.*

**INTRODUCTION**

*Siddha* medicine is a traditional medicine originated in South India. It is one of the oldest system of medicine in India. There were 18 important *Siddhars* with us in olden days and they developed this system of medicine. Hence it is called *Siddha* medicine. *Siddhars* are portrayed as having received their knowledge of *Siddha* system indirectly from the deity Shiva. Three of the elements air, fire and water are emphasized in *Siddha* medicine because they are believed to form the three fundamental components that make up the human
constitution. These three components vata, pitha and kapha (representing air, fire and water respectively)—are known as humours and their inharmonious interaction produces various pathological States.

Mahalavangathi chooranam is a classical Siddha compound drug which is mentioned in Siddha textbook of Kosayi anuboga vythia Brahma rahasiyam (Part-III, page no:81). This drug is used for respiratory disease. The drug review of Mahalavangathi Chooranam reveals that it is a polyherbal drug which gives sound for its therapeutic action mentioned in literature. This review focused on the pharmacological activities of each ingredient which supports the traditional claim and the literature search is confined to that area. The search was made from the textbooks in the library of Govt. Siddha Medical College of Palayamkottai, journals, internet database etc.

MATERIALS AND METHODS
Collection of raw materials
All herbal ingredients were purchased from ASN herbal Drug Shop, Melapalayam, Tirunelveli.

Authentication of raw materials
Raw drugs were authenticated by faculties of Department of Gunapadam, Govt. Siddha Medical College, Palayamkottai.

Standard operating procedure for preparation of mahalavangathi chooranam:

Purification of raw drugs
All the raw drugs are purified as per the methods mentioned in siddha literature.

Preparation of drug mahalavangathi chooranam
The mentioned ingredients in the table 1 are powdered separately and mixed well together then taken in a tightly closed container.

Table 1: Method of preparation of mahalavangathi chooranam.

<table>
<thead>
<tr>
<th>S. no.</th>
<th>Tamil Name</th>
<th>Botanical Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lavanga pattai</td>
<td>Cinnamomum verum</td>
<td>Lauraceae</td>
<td>Bark</td>
<td>Pagam 1 (5g)</td>
</tr>
<tr>
<td>2</td>
<td>Nagkesaram</td>
<td>Mesua ferrea</td>
<td>Clusiaceae</td>
<td>Flower bud</td>
<td>Pagam 2 (10g)</td>
</tr>
<tr>
<td>3</td>
<td>Elakkai</td>
<td>Elattaria</td>
<td>Zingiberaceae</td>
<td>Seed</td>
<td>Pagam 4 (20g)</td>
</tr>
<tr>
<td>S. no.</td>
<td>Botanical name</td>
<td>Vernacular name</td>
<td>Tamil</td>
<td>English</td>
<td>Hindi</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------</td>
<td>-----------------</td>
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<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1</td>
<td>Cinnamomum verum</td>
<td>Lavanga pattai</td>
<td>Bark of Cinnamon</td>
<td>Dar-chini</td>
<td>Twak</td>
</tr>
<tr>
<td>2</td>
<td>Mesua ferrea</td>
<td>Sirunaga poo</td>
<td>Ceylon iorn wood</td>
<td>Nag-kesar</td>
<td>Naga-kesara</td>
</tr>
<tr>
<td>3</td>
<td>Elattaria cardamomum</td>
<td>Elakkai</td>
<td>Cardamon seeds</td>
<td>Elachi</td>
<td>Ela</td>
</tr>
<tr>
<td>4</td>
<td>Piper nigrum</td>
<td>Milagu</td>
<td>Black pepper</td>
<td>Kali-mirch</td>
<td>Mircha</td>
</tr>
<tr>
<td>5</td>
<td>Piper longum</td>
<td>Tippili</td>
<td>Long pepper</td>
<td>-</td>
<td>Pippali</td>
</tr>
<tr>
<td>6</td>
<td>Zingiber officinale</td>
<td>Chukku</td>
<td>Dried ginger</td>
<td>Sonth</td>
<td>Nagaram</td>
</tr>
<tr>
<td>7</td>
<td>Withania somnifera</td>
<td>Amukkara kilangu</td>
<td>Winter cherry</td>
<td>Habdul kaknaje</td>
<td>Aswagandda</td>
</tr>
<tr>
<td>8</td>
<td>Saccharum officinarum</td>
<td>Sarkkarai</td>
<td>Sugar cane</td>
<td>Ukh-Ganna Ganna</td>
<td>Rasalah</td>
</tr>
</tbody>
</table>

Table 2: Information of herbal ingredients as per siddha the text gunapadam mooligai vaguppu.

RESULTS AND DISCUSSION
Pharmacological activities of ingredients of mahalavangathi chooranam
1. Lavanga pattai (Cinnamomum verum)
   It is widely used in food preparations and industrial products like candies, chewing gums, mouthwash and toothpaste. It is also used to treat asthma, bronchitis, diarrhea, headache, inflammation and cardiac disorders.

   Cinnamaldehyde, eugenol, caryophyllene, cinnamyl acetate and cinnamic acid are the major compounds found in its essential oil. These compounds exhibit a wide range of pharmacological activities including antioxidant, antimicrobial, anti-inflammatory, anticancer, antidiabetic, wound healing, anti-HIV, anti-anxiety and antidepressant, etc.\textsuperscript{[4]}
Anti-inflammatory activity
The methanolic and ethanolic extracts of C. zeylanicum inhibited the lipoxygenase (LOX) enzyme activity in mice, resulting in anti-inflammatory action. Collagen-mediated arthritis was artificially produced in the animals. In the model, both extracts were observed to lower the production of pro-inflammatory cytokines. Another study looked at the anti-inflammatory efficacy of ethanolic extracts of C. zeylanicum and C. longa in polymorph nuclear cells that had been exposed to lipopolysaccharide (LPS)-induced interleukin-6 (IL-6) and tumour necrosis factor (TNF-α). Cinnamic acid was found to have anti-inflammatory properties in vitro by lowering the levels of IL-6 and TNF-α in the cells.[14]

2. Nagkesaram (Mesua ferrea)
Anti-inflammatory activity
Mesuaxanthone A and mesuaxanthone B (MXA and MXB) from M. ferrea were evaluated using albino rats by carrageenan induced hind paw oedema, cotton pellet implantation and granuloma pouch tests. In all the methods, xanthones were administered at the dose level of 50 mg/kg. M. ferrea xanthones upon oral administration in carrageenan induced hind paw oedema test showed MXA (37%) and MXB (49%) reduction when compared to normal control group. The xanthones produced significant anti-inflammatory activity in normal, as well as in adrenalectomised rats, as the inflammation reduced significantly by MXA (38%) and MXB (22%) when compared to normal control group. In granuloma pouch tests, these xanthones showed MXA (46%) and MXB (49%) reduction in inflammation, and 47% reduction was observed in cotton pellets granuloma tests. The xanthones used in the present study have been found to produce significant anti-inflammatory activity (Gopalakrishnan et al., 1980).[5]

3. Elakkai (Elettaria cardamomum)
Cardamom (Elettaria cardamomum) is widely used in folk medicine for the treatment of asthma. This study describes its airways relaxant potential, with elucidation of possible underlying mechanism. Crude extract of cardamom which tested positive for alkaloids, flavonoids, saponins, sterols and tannins, when tested against carbachol-mediated bronchoconstriction in rats under anesthesia, it dose-dependently (10-100 mg/kg) suppressed the carbachol (1 µmol/kg)-evoked increase in the inspiratory pressure. In isolated rabbit trachea tissues, crude extract of cardamom caused relaxation of both carbachol (1 µM) and high K+ (80 mM)-induced contractions, like that caused by verapamil, suggesting its Ca++
channel blockade action. These results indicate that cardamom exhibits bronchodilatory effect, mediated through Ca++ antagonist mechanism, which provides sound mechanistic background for its medicinal use in asthma.\[13\]

**Anti-inflammatory activity**

Cardamom oil from seeds of *E. cardamomum* (175-280 µl/kg) was evaluated for anti-inflammatory activity against carrageenan-induced hind paw oedema in male albino rats and indomethacin at 30 mg/kg, i.p. (76% inhibition) was used standard drug. Cardamom oil (280 µl/kg) exhibited 86.4% inhibition, while at 175 µl/kg oil showed 69.2% inhibition, concluded that cardamom oil (175 µl/kg) provoked a significant suppressive action on carrageenan-induced oedema but to a slightly lesser extent than indomethacin. However, at a dose of 280 µl/kg, oil exerts a more potent anti-inflammatory effect than indomethacin 25.\[6\]

4. **Milagu (Piper nigrum)**

**Anti-inflammatory activity of black pepper**

The piperine was evaluated for the anti-inflammatory, analgesic, and anti-arthritic activities. The in vitro anti-inflammatory activities were evaluated on interleukin 1β stimulated fibroblast like synoviocytes obtained from rheumatoid arthritis, while anti-arthritic including analgesic activities were evaluated on carrageen an induced acute paw model of pain and arthritis in rats. The prostaglandin E2, cyclooxygenase 2, interleukin 6 and matrix metalloproteinase levels were evaluated by ELISA and RT-PCR methods of analysis. Piperine treated groups were found to reduce the synthesis of prostaglandin E2 in a dose dependant comportment at the concentrations of 10-100 μg/mL. It significantly inhibited the synthesis of prostaglandin E2 even at 10 μg/mL. The expression of interleukin 6 and matrix metalloproteinase 13 were also inhibited. The migration of activator protein1 into the nucleus in interleukin 1β treated synoviocytes was inhibited by piperine while migration of nuclear factor κB was not affected by piperine. The pain and arthritic symptoms in rats were significantly reduced by piperine. It was concluded that piperine showed anti-inflammatory, analgesics and anti-arthritic activities in arthritis model of rats.\[11\]

**Anti-Histamine activity**

Compound 48/80-Induced Histamine Release from Rat Peritoneal Mast Cells Mast cells were prepared from the peritoneal cavity fluid of male Wistar strain rats by a slight modification of the method described by Uvnäs and Thon.12) The cells were suspended in Hanks’ solution containing heparin (10 U/ml), then layered on 40% Ficoll in a test tube for 30 min. After
centrifugation at 150g and 4 °C for 10 min, the layer containing mast cells was pipetted out. The cells were washed three times with 5 ml of phosphate-buffered saline (pH 7.0) and suspended in the same medium at 2.9106 cells/ml. The cell suspensions contained 85—90% or more viable mast cells, as determined by the toluidine blue (0.1% in 50% EtOH) staining test of Bray and Van Arsdel.13) The test substances dissolved with 5% dimethyl sulfoxide (DMSO) were added to the mast cell suspension, and then the mixture was incubated at 37 °C. After 10 min, 0.1 ml of compound 48/80 solution (0.2 mg/ml) was added, and the mixture was incubated at 37 °C for 10 min in a final volume of 2 ml. Cooling the mixture on ice terminated the reaction. The mixture was centrifuged at 150g and 5 °C for 5 min, then histamine in the supernatant fluid was assayed fluorometrically according to the method of Shore et al.14) The activity of the test substance on histamine release from mast cells induced by compound 48/80 was expressed as histamine release percentage. SCG was used as a reference drug.

It has been known that the inhibition of histamine release from the mast cells plays an important role in the mechanism of anti-allergic effect against type I allergy such as IPR. Therefore we examined in vitro histamine release inhibitory activity of PN-ext by an assay with compound 48/80-induced histamine release from rat peritoneal mast cells. Sodium cromoglycate (SCG) was used as a reference drug[10]

5. Thippili (Piper longum)

A prominent effect caused by histamine leads to sever bronchoconstriction in the guinea pigs that causes asphyxia and death. Bronchodilators can delay the occurrence of these symptoms. In histamine induced bronchospasm all extracts showed the significant (p<0.01) activity and increase in dose of extract increased the % protection. The maximum percentage protection i.e 83.33% observed at 200mg kg-1 dose of PF for bronchorelaxant study comparable with that of standard CMP 88.36%. the results of the study confirmed the bronchodilator properties of the piper longum, justifying its traditional claim in the treatment of asthma.

The fruit of piper longum Linn are used in allergic skin disorders and asthma. The effect of petroleum ether, alcoholic and decoction of the fruits of p.longum was studied for antihistamine activity using Guinea pig ileum preparation (in vitro), histamine induced bronchospasm in Guinea pigs and haloperidol induced catalepsy in mice (in vivo).[9]
6. **Chukku (Zingiber officinale)**

**Broncho dilator activity:**

The aqueous extract of Zingiber officinale Roscoe exhibits strong bronchodilator effect against histamine-induced bronchospasm in guinea pigs. The bronchodilator activity may be directly due to smooth muscle relaxation, inhibition of PDE4D enzyme or anti-inflammatory effect. Thus, 5 % gingerol-based aqueous extract of Zingiber officinale Roscoe has potential for clinical application in asthma treatment.\[^{12}\]

**Anti-inflammatory activity**

The traditional use of ginger in respiratory diseases. Data showed that ethanol and aqueous extracts of ginger significantly reduced allergic airway inflammation by decreasing the infiltration of inflammatory cells in airways, pathological lesions, goblet cell hyperplasia, mucus hypersecretion, edema with vascular congestion, and total and differential number of eosinophils and neutrophils in blood and BALF, which could possibly be attributed to the suppression of Th2-mediated cytokines.\[^{8}\]

7. **Amukkara kilangu (Withania somnifera)**

**Anti-inflammatory activity**

The whole plant was extracted with ethanol (80%) and administered intraperitoneally to rats in which paw edema was induced by carrageenan using acetylsalicylic acid as a standard drug. The plant extract demonstrated significant anti-inflammatory potential at LD50 of 10 ml/kg of body weight. The anti-inflammatory activity of W. somnifera was found higher than M. communis, M. chamomilla, A. graveolens, and A. santolina. In another study, the extract of plant delayed the analgesic effect induced by morphine. It also suppressed the rebound hyperalgesia induced by morphine in the tailflick test probably.\[^{7}\]

**CONCLUSION**

From this literature review it is evident that the most of ingredients of *Mahalavangathi chooranam* has pharmacological activity of anti-inflammatory ativity, anti-histamine activity and broncho dilator activity, which are responsible for its therapeutic activity claimed in literature.

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REFERENCE


