Therapeutic effectiveness of a Siddha Polyherbal formulation Nilavaagai Chooranam: A Drug review

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ABSTRACT

Siddha system of medicine is one of the ancient systems of medicine practiced among Tamil speaking community particularly in southern parts of India. The medicines in this system prepared from ingredients which is obtained from herbals, mineral, metals and animal products. “Nilavaagai chooranam” is one of the Sastric Siddha Poly herbal formulation containing 5 herbal ingredients. It is indicated for Eraippu Erumal (Bronchial asthma). This review is aimed to bring out scientific evidence for the therapeutic usage of “Nilavaagai chooranam” in Eraippu Erumal (Bronchial asthma) and focused on the pharmacological activity responsible for the therapeutic nature of the drug in Eraippu Erumal (Bronchial asthma) Most of the ingredients used for the preparation of Nilavaagai chooranam have antiasthmatic, antihistamine, anti-inflammatory and immunomodulatory activities. Hence justifying its usage in Eraippu Erumal (Bronchial asthma)

KEYWORDS
Siddha Medicine, Nilavaagai chooranam, Eraippu Erumal, Pharmacological activity.

INTRODUCTION

Siddha system of medicine is the traditional medicine and is originated and practiced in southern India particularly in Tamilnadu. It is also called Tamil Maruthuvam because it evolved with Tamilan’s culture. Siddha medicines are known for its efficacy and safety. The reason for popularity of the Siddha system is attributed to its effective with minimal side effects. Siddhars, the founder of Siddha system possessed Yoga siddhi powers (supernatural powers). They have left their imprints in many disciplines like medicine, alchemy, philosophy, Yogam and Varmam. “Nilavaagai chooranam” is Siddha Poly herbal compound drug which is mentioned in Siddha text of Aagasthiyar Vaidhiya rathina choorukam, Which is indicated for Eraippu Erumal ( Bronchial asthma).

The drug review of “Nilavaagai chooranam”, a herbal drug gives evidence 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 National Institute of Siddha, journals, internet, databases. Standard operating procedure for preparation of Nilavaagai chooranam and Purification of its ingredients. All the ingredients are purified as per the methods mentioned in Siddha literature. The ingredients are dried and powdered separately then mixed well together and then added with quadrigeminal amount of Palm sugar and preserved in a tightly closed container. The drugs are mentioned in Table 1.

Table 1: Method of preparation of “Nilavaagai chooranam”[1]

<table>
<thead>
<tr>
<th>Tamil name/ Botanical name</th>
<th>Part used</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nilavaagi/ Cassia senna</td>
<td>Whole plant</td>
<td>35g</td>
</tr>
<tr>
<td>Milagu/ Piper nigrum</td>
<td>Seed</td>
<td>35g</td>
</tr>
<tr>
<td>Chukku/ Zingiber officinale</td>
<td>Dried rhizome</td>
<td>35g</td>
</tr>
<tr>
<td>Oomam/ Carum copticum</td>
<td>Seed</td>
<td>35g</td>
</tr>
<tr>
<td>Vaavidangam/ Embelia ribes</td>
<td>Seed</td>
<td>35g</td>
</tr>
</tbody>
</table>

Pharmacological activities of ingredients of Nilavaagai Chooranam

Nilavaagai (Cassia senna)

Laxative and purgative, used in constipation, loss of appetite, hepatomegaly, splenomegaly, indigestion, malaria, skin diseases, jaundice and anemia[1] Purgative. Externally powdered leaves mixed with vinegar and made into a plaster are applied locally in certain skin diseases.[2]

Milagu (Piper nigrum)

Anti asthmatic activity

Most of the herbal practioners and old people believed that addition of powdered peppercorn to green tea reduced asthma.[3-4] Kim et al. reported that oral administration of piperine in different proportion to mice suppressed and reduced the infiltration of eosinophil, hyper responsiveness and inflammation due the suppression of the production of histamine, interleukin-5, immunoglobulin E and interleukin-4.[5]

Anti-inflammatory activity

The in vitro anti-inflammatory activities were evaluated on interleukin 1β stimulated fibroblast like synoviocytes obtained from rheumatoid arthritis, while anti-artrhitic including analgesic activities was evaluated on carrageen an induced acute paw model of pain and arthritis in rats. Te prostaglandin E2, cyclooxygenase 2, interleukin 6 and matrix metalloproteinase levels were evaluated by ELISA and RTPCR 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 metallo-proteinase 13 were also inhibited[6].

Immu-no-modulatory activity

In vitro immunomodulatory activity of piperine was evaluated to enhance the efficacy of rifampicin in a marine model of Mycobacterium tuberculosis infection. Mouse splenocytes were used to evaluate in-vitro immunomodulation of piperine for cytokine production, macrophage activation and lymphocyte proliferation. Piperine treated mouse splenocytes demonstrated an increase in the secretion of T-1 cytokines (IFN-γ and IL-2), increased macrophage activation and proliferation of T and B cell. Protective efficacy of piperine and rifampicin (1 mg/kg) combination against Mycobacterium tuberculosis was reported due to immunomodulatory activity.[7]
### Table 2: Chemical constituents and uses

<table>
<thead>
<tr>
<th>Tamil name</th>
<th>English name</th>
<th>Chemical constituents</th>
<th>Action</th>
<th>Uses in Siddha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nilavagai</td>
<td>Tinnelvelly senna</td>
<td>flavanols, Rhein, Emodin, Aloe – emodin, Sennidin diglucoside, Dianthrone diglucoiside</td>
<td>Laxative</td>
<td>Constipation, dyspepsia, cough, bronchitis, Jaundice and Anemia.</td>
</tr>
<tr>
<td>Milagu</td>
<td>Black pepper</td>
<td>Alpha-pinene, acid amides, Sabinene, Limonene</td>
<td>Antidote, Carminative, Resolvent</td>
<td>Bronchial, asthma, insomnia, jaundice and viral hepatitis</td>
</tr>
<tr>
<td>Chukku</td>
<td>Dried ginger</td>
<td>Gingerin, Gingerol, Paradols, Shogaol, Glycosides</td>
<td>Digestive, Carminative, Stomachic</td>
<td>Cold, cough, asthma, throat, stomach ache and respiratory diseases.</td>
</tr>
<tr>
<td>Oomam</td>
<td>Bishops weed</td>
<td>Thymol, P-cymene, Y-terpinene</td>
<td>Carminative, Stimulant</td>
<td>Sore throat and bronchitis</td>
</tr>
<tr>
<td>Vaividangam</td>
<td>Embelia</td>
<td>Vilangin(0.06%), Methylenebis</td>
<td>Carminative, Stomachic, Stimulant</td>
<td>Skin disease and leprosy anthelmintic, astringent,</td>
</tr>
</tbody>
</table>

#### 4) Chukku (Zingiber officinale)

**Antiinflammatory activity**

Recent study documented the ability of a hexane fraction of dried ginger methanolic extract to suppress proinflammatory gene expression in LPS activated BV2 microglial cells, thus displaying anti-neuroinflammatory activity.\(^8\) Gingerol and structurally related pungent principles of ginger including shogaol exert inhibitory effects on biosynthesis of prostaglandins and leukotrienes through suppression of prostaglandin synthase or 5-lipoxygenase.\(^[9,10]\) Several reports have addressed the anti-inflammatory effects of whole ginger extract on the production of NO/iNOS, PGE2/COX-2, TNF-α, IL-1β, and macrophage chemo attractant protein-1 (MCP-1) in murine macrophages, such as RAW264.7 cells and J774.1 cells, as well as human monocytes, U937 cells.\(^[11,13]\)

The proposed mechanism behind 6- shogaol inhibition of NO evolution in stimulated macrophages involves down regulation of inflammatory iNOS and COX-2 gene expression by inhibition of the activation of NF-jB, because NF-jB plays a critical role in the coordination of the expressions of pro-inflammatory enzymes.\(^[14]\) For the human being, the consumption of fresh ginger demonstrated promising results for the decrease of arthritis-induced.\(^[15]\) These results show that ginger could be used as anti-inflammatory agent and thus as anti-pain.\(^[16]\)

**Immunomodulatory activity**

The beneficial effects of ginger in treating coughs, colds and flu is probably linked to immune boosting properties of the plant.\(^[17]\) Few studies have examined the potential immune modulatory activity of ginger. Non-specific immunity was increased in rainbow trout eating a diet containing 1% of a dried aqueous ginger extract for three weeks.\(^[18]\) Mice fed a 50% ethanolic ginger extract (25 mg/kg) for seven days had higher haemagglutination antibody titre and plaque-forming cell counts, consistent with improved humoral immunity.\(^[19]\) One in vitro study found that ginger suppressed lymphocyte proliferation; this was mediated by decreases in IL-2 and IL-10 production.\(^[20]\)

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Review
5) Omam (Carum copticum)
Bronchodilator activity

Saeed Alitaneh reported that oral administration of boiled extract from C. copticum and theophylline in asthmatic patients was also examined. Different pulmonary function tests (FEV1, PEF MMEF, MEF75, MEF50, MEF25) were measured 15 min after administration of different drugs and continued until 180 min after drug administration. The results showed that C. copticum has a relatively bronchodilatory effect on asthmatic airways which was comparable with the effect of theophylline at concentrations used. The results of this study suggest that this plant could be of therapeutic value as a bronchodilatory drug in patients with obstructive airway diseases.[21]

6) Vaividangam (Embelia ribes)
Antihistamine Activity

Anupama A 2012, Ethanolic extract of Embelia ribes was tested on histamine induced contraction in goat tracheal chain preparation and in histamine induced bronchospasm in guinea pig. It was seen that E. ribes inhibited contraction in goat tracheal chain and also showed significant protection in induced bronchospasm by prolonging the preconversion dyspnoea time. Hence E. ribes possesses potential role in the treatment of asthma.[22-23]

CONCLUSION

From this literature review it is evident that the most of ingredients of Nilavaga chooranam has pharmacological activity like anti asthmatic anti histamine activity, anti-inflammatory activity, immunomodulatory activities which are responsible for its therapeutic activity claimed in literature.

CONFLICT OF INTEREST

None declared.

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REFERENCES


