



Therapeutic effect of Siddha herbomineral formulation “Kasthuri Karuppu” – A review

Archana G^{1*}, Rajasri R², Manjari V^{3*}, Madhavan R⁴

^{1,2}PG Scholar, ^{3*} Associate Professor & ⁴ Associate Professor, Head of the Department/c.
Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium,
Chennai 600047, Tamil Nadu, India.

***Corresponding Authors:**

Archana G, PG Scholar,

E-mail: archuarchana6024@gmail.com

Dr. V. Manjari, Associate Professor

E-mail: drmanjarimd@gmail.com

Abstract

Respiratory diseases have become a major threat to the mankind. Respiratory diseases are globally evolving which includes infectious and non-infectious diseases. Recently Covid-19 outbreak has turned scientific community's attention towards the Traditional Systems of Medicine. Kasthuri Karuppu is one of the Siddha herbomineral formulation use for the treatment of Respiratory infections. In this study to review the therapeutic effect of ingredients of “KASTHURI KARUPPU” through literature search. The review results showed, the ingredients of Kasthuri karuppu were found to possess Antitussive, Anti-inflammatory, Bronchodilator, Antibacterial, Antiviral activities. Any drug act against respiratory diseases which have bronchodilator, Cough suppressant, Anti Inflammatory, Expectorant, Antibiotic and Decongestant action. In conclusion this review enlightens about the sufficient pharmacological data of the formulation to against respiratory diseases.

Keywords: Literature review, Kasthuri Karuppu, Respiratory Disease, Siddha

Introduction

Siddha system of medicine uses herbs, minerals, metals, salts in the preparation and formulation of drugs. Parpam, Chendhuram, Kattu, Kalangu, Karuppu are the unique features of the Siddha system of medicine which are called the life saving medicines in general⁽¹⁾. One such among

them is Kasthuri karuppu which is a classic Siddha herbomineral formulation⁽²⁾. Kasthuri Karuppu has been in practice for the treatment of a various respiratory diseases since diseases. Respiratory diseases are globally evolving which includes infectious and non-infectious diseases.

Recently Covid-19 outbreak has turned scientific community's attention towards the Traditional Systems of Medicine⁽³⁾.

Undoubtedly there is definite need to strengthen the scientific evidence of pharmacological properties of the Siddha medicinal preparations. Being the most prescribed Siddha medicine for a long period of time, Kasthuri karuppu has to be reviewed in this article.

Materials and methods:

Morphological description, phytochemical constituents, Pharmacological activities of ingredients of KASTHURI KARUPPU were reviewed in literatures and in published articles in journal.

Drug profile - Kasthuri Karuppu:

Ingredients:

1. Purified Rasam (Mercury) – 2 ½ varagan (10.5 grams)
2. Purified Rasa chendhuram (Red sulphide of Mercury - 2 ½ varagan(10.5 grams)
3. Purified Lingam (Red sulphide of Mercury) - 2 ½ varagan (10.5 grams)
4. Purified Puram (Hydragyrum subchloride) - 2 ½ varagan(10.5 grams)
5. Purified Gandhagam (Sulphur) - 2 ½ varagan (10.5 grams)
6. Purified Thalagam (Arsenic trisulphide) - 2 ½ varagan(10.5 grams)
7. Purified Manosilai (Arsenic disulphide) - 2 ½ varagan(10.5 grams)
8. Purified pachaikarpooram (Bomeo camphor)
9. Thippili(Piper longum) – 3 ¾ varagan
10. (15.7 grams)
11. Omam (Carum capticum) – 3 ¾ varagan
12. (15.7 grams)
13. Kungumapoo (Crocus sativus)
14. Kasthuri (Moschus moschiferus musk) – ½ varagan (2.1 grams)
15. Korosanai (Purified Ox gall)

Method of preparation:

The above purified mineral drugs(1-8) will be taken and grind together and then the purified raw drugs-Thippili, Omam, Kungumapoo. Kasthuri and Korosanai will be add to the above and grind together until it attains fine powder.

Route of administration: Oral

Dose: ½ - 1 Kundriyalavu (65 - 130 mg) - two times a day.

Adjuvant: Honey, Breast milk and Ginger juice

Indications: Sali (Cold), Suram (Fever), Irumal (Cough), Iraippu (Asthma), Kabanoigal (Kaba diseases).

Results and Discussion:

1. Kasthuri:

Chemical name: Moschus moschus musk

Source:

Musk deers only produce musk to attract females. Chinese dealers claim that the best musk is produced in China. It is rarely seen on the market due to its difficulty in obtaining. Artificially it is made with the chemical composition of natural musk. Musk proper is a dried secretion (testicular extract) from the preputial, follicles of the male musk deer (*Moschus moschiferus*).

Taste: Bitter

Action:

Stimulant, Anodyne, Antispasmodic, Cardiac, Expectorant, Diaphoretic, Diuretic, Laxative, Antiseptic and Aphrodisiac.

Medicinal uses:

It acts principally on the heart and the nervous system. It exhilarates the mind and stimulates the brain, spinal cord and the peripheral nerves. It improves the circulation and raises arterial tension. It is a stimulant of the urino-genital organs. It is also reputed to stimulate the respiratory centre⁽⁴⁾

Scientifically validated pharmacological action:

Anti-inflammatory activity: It reduced the inflammation against carrageenan induced paw edema and arthritis in rats⁽⁵⁾.

Antimicrobial activity: Naturally occurring musk inhibits the microbes by the prevention of synthesis of nucleic acids responsible for the construction of abnormal proteins⁽⁶⁾.

2. Rasam :

Chemical name: Hydragryum

Taste: All six tastes predominantly Sweet

Potency: Hot, Cold

Division: Division of the adjuvant added along with it⁽⁷⁾.

Source:

Mercury in the metallic state is a rare mineral. It is secondary in origin and intimately associated with cinnabar

It is commonly in small isolated drops but at times has been found in larger fluid masses occupying cavities in the rocks of the deposits. Mercury ores occur in rocks of various kinds and ages but usually in regions of volcanic activity. Mercury in small fluid globules scattered through in gangue crystallizes at 400c.

According to geology the volcanos which existed in mid Asian regions centuries ago had turn to be the sources of mercury in the present Himalayan ranges. However there are not the mercury resources now⁽⁸⁾.

Action:

Nutrient, Alternative, Diuretic, Cholagogue, Sialagogue

Scientific validated pharmacological action:

Antiasthmatic activity: Acharya Balkrishna et.al conducted a study on a mercury based

herbomineral preparation in asthma induced Balb/C mice at 4.3 mg/kg, 13 mg/kg, 39 mg/kg dose levels. Results suggested that it was proved to be an effective antiasthmatic and anti-inflammatory by the mechanism of reduced cytokines⁽⁹⁾.

Antibacterial activity: Mercury derivatives such as 2-(2-hydroxynaphthylazo) phenyl mercuric chloride and 4-(2-hydroxynaphthylazo) phenyl mercuric chloride was tested against two standard strains of Staph. aureus and E. coli, by using disc diffusion method. Results exhibited a potent antibacterial activity⁽¹⁰⁾.

3. Gandhagam⁽¹¹⁾:

Chemical name: Sulphur

Taste: Bitter, Acrid with a peculiar smell

Action: Laxative, Diuretic, Insecticide. Purgative (in large doses).

Medicinal uses:

Sulphur is used almost in all diseases in conjunction with mercury. It is frequently combined with mercury because it easily reacts with and fixes metallic mercury. When combined with cream of milk or jaggery, Sulphur is used to treat conditions like prolapse, hemorrhoids and in chronic skin diseases.

Sulphur helps with chronic fevers, enlargement of the liver and spleen, consumption, cough, asthma, and general malaise.

A preparation Chaturmukha Rasa which includes Gandhagam as main ingredient, is helpful in treating neurological illnesses like epilepsy, asthma, and phthisis. It can be given to patients with persistent bronchitis.

Scientific validated pharmacological action:

Antimicrobial activity: A study conducted on the determination of antimicrobial activity of raw Gandhagam, purified gandhagam, Gandhi

mezhu by agar well diffusion method. It revealed that gandhagam has significant antimicrobial property by exhibiting MIC (Minimum inhibitory concentration) ranging from 2 to 11 mm against various micro organisms such as *E.coli*, *Pseudomonas vulgaris*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Streptococcus mutants* and *Candida albicans*⁽¹²⁾

4. Rasa Chendhuram⁽¹¹⁾:

Pharmacological properties and medicinal uses of Rasa chendhuram are similar to that of the Mercury.

Source:

It is identical with the Red sulphide of mercury. This sulphide occurs in nature as the mineral ore called 'cinnabar' in many parts of the world, particularly in California, China and Spain.

Medicinal uses:

It is mixed with various drugs as adjuvants. In cases of indigestion and diarrhoea it is mixed with, powdered *Aegle marmelos* fruit. For fever and cough it is given with the juice of ginger, pepper, betel leaves and leaves of Ocimum. It is combined with musk for the treatment of cardiac diseases.

5. Pooram⁽¹³⁾:

Chemical name: Hydrargyrum subchloride

Taste: Salt, Acrid

Potency: Hot

Division: Pungent

Source:

It is prepared artificially by melting the mixture of Sulphur and mercury.

Action:

Alternative, Sialogogue, Antiseptic

Scientific validated pharmacological action:

Anti-inflammatory activity:

A siddha herbomineral preparation rasa karpoorakuligai provides significant anti-inflammatory activity against the carrageenan induced paw edema in rats⁽¹⁴⁾

Karpoora sindhamanimathirai proved its maximum anti-inflammatory effect in both acute as well as chronic experimental inflammatory conditions which can be due to its inhibition of cyclooxygenase enzymes⁽¹⁵⁾.

6. Lingam⁽¹⁶⁾:

Chemical name: Mercuric sulphide

Potency: Hot

Source:

Cinnabar has been produced artificially. The black mercury sulphide formed by the direct union of mercury and sulphur is sublimed, cinnabar is the Product. The black Sulphide when treated with solutions of alkaline sulphides is converted into cinnabar. Cinnabar is found in southern Russia, Italy, Spain, Peru, China, Mexico and California⁽¹⁷⁾.

Action: Tonic

Scientific validated pharmacological action:

Immunomodulator activity: Assessment of immunomodulatory activity of Red sulphide of mercury in healthy individuals in healthy individuals revealed significant immunomodulator effect⁽¹⁸⁾

7. Thalagam⁽¹¹⁾:

Chemical name: Yellow Arsenic trisulphide

Action:

Emmenagogue, Febrifuge, Antiperiodic

Medicinal uses:

It is generally used in combination with other ingredients composed of orpiment, sulphur and asafoetida recommended in asthma, chronic skin diseases such as eczema, psoriasis. It is used to treat asthma, paraplegia, hemiplegia, monoplegia, and, facial paralysis, cough, chronic fever, gonorrhoea, epilepsy.

Scientific validated pharmacological action:

Anti-cancerous activity: Thaalagam is proved to be effective and act as a chemotherapeutic agent to treat Acute Promyelocytic leukemia. It may reduce the excessive immune response in which Covid-19 triggers in some patients and can block the inflammatory response⁽¹⁹⁾

Bronchodilator effect: Pharmacological studies revealed the bronchodilator effect of Thalagaparam, in histamine induced bronchoconstriction model of about 35% and 57% at 200 mg/kg and 400 mg/kg drug concentrations respectively in preclinical study⁽²⁰⁾

8. Manosilai⁽¹¹⁾:

Chemical name: Arsenic disulphide

Source:

It is obtained by the mixture of sulphur and arsenious acid.

Action:

Alternative, Febrifuge, Tonic

Medicinal uses:

It is mixed with the ashes of *Achyranthes aspera* and applied to patches of leukoderma. It is used in the treatment of fever, cough, asthma and skin diseases. Locally it is applied to fistulous sores.

Scientific validated pharmacological action:

Anti-tumour activity: Shudan wang conducted Invitro and Invivo study to find the anti-tumour

effect of Arsenic sulfide in human hepatocellular cell lines. Results proved that arsenic has an anti-tumour activity and promising therapeutic agent in Liver cancer management⁽²¹⁾.

9. Pachai karpooram⁽²²⁾:

Chemical name : Bornea camphor

Source:

It is a terpenoid which is waxy, white, transparent solid with an aromatic odour, melting point of 180 c and sublimates at room temperature.

It is insoluble in water while soluble in ether chloroform and other organic solvents.

Synthetic camphor is made from turpentine oil, while the natural camphor is obtained through the distillation of wood from tree *Cinnamomum camphora*.

Scientific validated pharmacological action:

Antitussive effect: Cough reflex in guinea pigs were studied in which camphor vapour was exposed at three different concentrations. Test vapours were pretreated in guinea pigs and after exposed to aerosolized citric acid for 2 mins. Frequency of the cough was significantly reduced at dose level of 50 mg/L, 133 mg/L, and 500 mg/L of camphor to 28 %, 56 %, and 33 % respectively⁽²³⁾.

Antiviral activity: Aromatic plants and their essential oils were found to exhibit antiviral properties. An essential oil made from the plant *Santolina insularis* rich in camphor deactivated type 1 and type 2 herpes simplex virus by Plaque reduction assay⁽²⁴⁾.

Antimicrobial activity: A supercritical fluid extracted from the essential oil, Rosemary which includes camphor proved its antimicrobial activity against numerous microorganisms where *Streptococcus aureus* being the most susceptible and least is *Aspergillus niger*. All microorganisms tested exhibited a inhibition zone and minimum bactericidal, fungicidal activity at 17 to 33 mm and 2.25 to 0.25 mg.ml concentration of extract respectively⁽²⁵⁾.

10. Thippili⁽²⁶⁾:

Botanical name: *Piper longum*

Taxonomical classification:

Kingdom : Plantae
 Class :Magnolidae
 Order :Piperales
 Family :Piperaceae
 Genus : Piper
 Species : longum

Plant description:

Piper longum is a climber that grows wild in India, Malaysia, Nepal, Sri Lanka and Vietnam.

Parts used: Seeds

Important phytoconstituents:

Piperine, Piperlongumine, Pipernonaline

Scientific validated pharmacological action:

Anti-asthmatic activity: A study conducted on Asthma induced ovalbumin sensitisation and inhalation in Balb/C mice. Piperine was administered orally as 5 times/week(4.5 and 2.25 mg/kg). It was observed that piperine treated groups had suppressed eosinophil infiltration, allergic airway inflammation and airway. Thus this therapeutic mechanism strongly suggests that piperine effectively treats asthma by the reduction of cytokines⁽²⁷⁾

Bronchodilator activity:A study conducted on histamine induced bronchospasmic guinea pigs treated with the extracts of Piper longum exhibited a relief in the bronchospasm⁽²⁸⁾.

11.Kunguma poo⁽²⁶⁾:

Botanical name: *Crocus sativus*

Taxonomic classification:

Kingdom : Plantae
 Class :Monocotyledonae

Subclass :Liliidae
 Order :Liliales
 Family : Iridaceae
 Genus :Crocus
 Species :Sativus

Botanical Description:

Crocus sativus is a perennial stemless herb that is widely cultivated in Iran and other countries such as India and Greece. Commercial saffron comprises the dried red stigma with a small portion of the yellowish style attached⁽²⁹⁾.

Parts Used: Flower

Important phytoconstituents:

Crocin, Safranal, Picrocrocin

Actions:

Stimulant, Stomachic, Anodyne, Antispasmodic, Emmenagogue

Scientific validated pharmacological action:

Antitussive activity: The extract of *Crocus sativus* petals and its plant components and its phytoconstituents such as Safranal and Crocin were evaluated for its antitussive effect in guinea pigs and is proved to be effective in reducing cough⁽³⁰⁾.

Bronchodilator and anti-inflammatory effect: Saffron is proved to have the anti-inflammatory and bronchodilator activity. It is effective in the treatment of lung inflammatory diseases like Asthma and COPD⁽³¹⁾.

12.Omam⁽²⁶⁾

Botanical name: *Trachyspermum ammi*

Taxonomic classification:

Kingdom : Plantae
 Class :Tracheophyta
 Order :Magnolipsida
 Family :Apiaceae
 Genus : Trachyspermum
 Species : ammi

Botanical description:

Trachyspermum ammi is an annual herbaceous plant having greyish brown fruits or seeds. Mostly grown in the temperate regions of the world but species which are cultivated in tropics regions.

Parts used: Seeds

Important phytoconstituents:

Thymol, Palmitic acid, Oleic acid

Actions:

Stomachic, Antispasmodic, Antiseptic, Carminative, Stimulant, Tonic, Sialagogue

Scientific validated pharmacological action:

Antitussive activity: Two differently made carumcopicum extracts were tested for their antitussive effect in comparison with the codeine. Both the extracts significantly reduced number of cough when compared to standard⁽³²⁾.

Bronchodilator activity and Histamine inhibition: Essential oil as well as the extracts of Carumcopicum was proved to have bronchodilatory effect and it inhibits the histamine receptors (H1) in guinea pigs⁽³³⁾.

Antibacterial activity: A study conducted on antibacterial property of the essential oil from *Trachyspermum ammi* by microtitre plate method. It was proved to be potential antibacterial against many bacterial strains⁽³⁴⁾.

Antiviral activity: An essential oil obtained from the seeds of *Trachyspermum ammi* by hydrodistillation method has significant antiviral activity against the Japanese encephalitis virus (JEV) in invitro-cell line study⁽³⁵⁾.

13.Korosanai⁽²⁶⁾:

Chemical name: Fel Boyinum Purifca

Source:

It is prepared by evaporating ox-gall to one-third, after adding alcohol, filtering, distilling off and

evaporating until it acquires a suitable consistency.

Taste: Bitter

Action:

Laxative, Anti-spasmodic, Cholagogue, Coolant, Aromatic

Medicinal uses:

It is indicated in measles and smallpox and to reduce excessive heat in the body; also in whooping cough and watery stools and choleraic symptoms. It is used in convulsions, hysteria, spasmodic diseases, melancholia and intestinal disorders with deficient secretion of bile, in jaundice. It is given to Infants for stopping green stool and act as a laxative in small doses. It enters into the composition of some 'medicines used for skin diseases.

Conclusion

Several studies conducted in the minerals and the herbal ingredients of KASTHURI KARUPPU to assess the pharmacological effect. According to the review of literature and published research article shows almost all the ingredients of KASTHURI KARUPPU proven to have a wide variety of pharmacological activities which includes Antibacterial, Antimicrobial, Antiviral, Anticancerous, Antihistamine, Antitussive, Immunomodulator, Bronchodilator activity. Particularly Mercury, Camphor, Yellow arsenic, *Crocus sativus*, *Piper longum* and *Trachyspermum ammi* possess Antitussive and Bronchodilator activity. These strongly concludes that the Siddha herbomineral formulation "KASTHURI KARUPPU" is a potent therapeutic effect against respiratory diseases like Asthma, Rhinitis and Sinusitis .

Conflict of interest: Nil

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How to cite this article:

Archana G, Rajasri R, Manjari V, Madhavan R. (2023). Therapeutic effect of Siddha herbomineral formulation “Kasthuri Karuppu” – A review. *Int. J. Curr. Res. Med. Sci.* 9(9): 15-23.

DOI: <http://dx.doi.org/10.22192/ijcrms.2023.09.09.002>