

Screening of *Kasahara Dasemani* with Special Reference to Anti Tussive Property

Mallikarjuna Rao Polepalli

Department of Dravyaguna, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya University, Chennai, India

Email address:

drmallimday@gmail.com

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Abstract: Cough is a protective reflex that prevents the foreign materials, secretions from bronchi and bronchioles. It is triggered by an inflammation in respiratory tract and hyper sensitivity. The use of cough suppressants is not preferred in treatment as it gives symptomatic relief with various un-wanted effects. It is also observed that recurrence of all the symptoms is very common if patient stops taking medicines. To cure cough a combination or a drug must have mucolytic, expectorant, immune-stimulant, strengthening, digestive, carminative and styptic activities are much needed. Ayurveda is science of life, provides a complete cure by adapting a holistic approach. Acharya Charaka introduced ten ayurvedic drugs and titled as *Kasahara dasemani* used in the treatment of cough. Screening of these ten drugs by compiling information from ayurvedic texts is the main aim of this study. After evaluating these drugs, it has been found that they are potent mucolytic, expectorants, bronchodilators, in addition they prevent frequent attacks, by their immune-modulator effect. These drugs also correct the digestive fire too hence it is concluded that selection of the *Kasahara dasemani* drugs is the best of choice in treatment of cough.

Keywords: *Kasa hara*, Expectorants, Mucolytic, Bronchodilators & Immune-Modulator

1. Introduction

Kasahara dashemani has been elucidated in *Charaka Samhita*, *Sutrasthanam* 4th chapter by name *shad virechana shatashriteeya*, in which 50 such groups has been explained. *Kasa* refers to a disease caused when *vata* is obstructed this results its *pratilomana gati*, also vitiating *pranavaha srotas* and the *dushitavayu* lodges itself in *uras* and *shiras* resulting in pain and repeated coughing. The involvement of other *doshas* determines whether *Kasais shushkaor ardra*. The treatment for *Kasa* is bringing back *doshastosamana avastha* and also increasing the immunity to avoid recurrence.

Recurrent cough is the common manifestation of

respiratory tract infections, which is more akin to the disease *Kasa* delineated in Ayurvedic classics. A few of the drugs which help in the above said cause have been illustrated in *Kasahara dashemani*.

2. Materials and Methods

For screening the *Kasahara dasemani* drugs, are compiled and every drug was screened for their pharmacological effects, as well compared with modern pharmacological expectorants and anti-tussive preparations, for which *Charaka Samhita*, commentary of *Charaka Samhita*, Ayurvedic materia medica etc are referred systemically.

Draksha – *Vitis vinifera*

Amalaka- *Emblica officinalis* Gaertn.

Duralabha- *Fagonia cretica* Linn.

Kantakarika – *Solanum xanthocarpum*

Punarnava- *Boerhaavia diffusa* Linn.

Abhaya – *Terminalia chebula*

Pippali – *Piper longum*

Shrungi- *Pistachia intergerima*

Vrushchira- *Trianthema portulacastrum*

Tamalaki- *Phyllanthus niruri* Linn. [1]

Other than the 10 medicaments drugs like *yashtimadhu*

(*Glycherriza glabra*), *maricha* (*Piper nigrum*), *talispaptra*

(*Abies webbiana*), *sita* (sugar), *ardraka* (ginger) etc. along with *surasadi* and *vidarigandhadi gana* of Sushruta Acharya, and *surasadi* and *vidaryadi ganas* of Vagbhata Acharya are beneficial in treating *kasa*. [2-4]

Draksha- *Vitis vinifera* – Vitaceae [5].

Vernacular names: Hindi- *angoor*, English- grapes, Telugu/ Tamil – *draksha*.

Synonyms: *Svaduphala*, *Gostani*, *Amritaphala*, *Madhuvalli*, *Gucchaphala*, *Mridvika*.

Morphology: It is a deciduous climber, with long tendrils, Leaves-alternate, palmately tri-lobed or penta-lobed, glabrous, thin, membranous, petiole is 3.8-7.5 cm long. Panicle Cymose-inflorescence Flowers are green, 5 petals, covering at the apex. Fruit is berry, variable size, bluish black or greenish; Seeds are 2-4 per fruit, pear shaped, Flowering and fruiting season- autumn to winter

Useful part- Fruit

Chemical composition: Tannic acid, racemic acid, glucose

Formulations: *Drakshasava*, *Draksharishta*, *Mridvikasava*, *Drakshadi lehya*, *Drakshadi kashayam*, *Drakshadighrita*, *Parushakadi ghrita*, *Chayavanaprash*.

Abhaya is *Terminalia chebula* Retz, Combretaceae

Vernacular names: English- chebulic myrobylan, Hindi- *harad*, Tamil- *kadukkai*, *karakkai*

Synonyms: *Haritaki*, *Amruta*, *Pathya*, *Vayastha*, *Shiva*, *Vijaya*.

Morphology: Medium to large deciduous tree up to 30 m, Leaves- elliptic-oblong, acute tip, cordate at the base, margins entire. Flowers- monoecious, dull white to yellow, strong unpleasant odor, borne in terminal spikes or short panicles. Fruits are glabrous, ellipsoid to ovoid drupes, yellow to orange brown in color. Flowering season- April-may, Fruiting season- November- January, Useful part- Fruit

Chemical composition: Chebulinic acid, tannic acid

Formulations: *Abhayarisham*, *Agastya rasayanam*/ *Agastya haritaki*, *Vyagriharitaki avaleha*, *Chitraka haritaki*, *Pathyadi kashayam*, *Triphala churnam*, *Triphaladi ghritam*, *Chayavanaprash*.

Amalaki- *Emblica officinalis* Gaertn, Euphorbiaceae

Vernacular names: English-Indiangooseberry, Hindi- *Amla*, Tamil- *Nelikai*, Telugu- *Usirikai*.

Synonyms: *Amrita*, *Vayastha*, *Dhathriphala*, *Shriphala*, *Jathiphalarasa*, *Dhathri*.

Morphology: Large deciduous tree, reaching 8 to 18 m in height, Leaves- simple, subsessile and closely set along branchlets, light green, resembling pinnate leaves. Flowers are monoecious, greenish-yellow in axillary clusters. Fruit is fleshy, nearly spherical, light greenish yellow, quite smooth and hard on appearance, with six vertical stripes with 1 hexagonal, hard seed. Flowering and fruiting season: autumn to spring, Useful part- Fruit

Chemical composition: Ascorbic acid, linoleic acid, tannins

Formulations: *Chyavanaprash*, *Dhatriloha*, *Amalaki rasayan*, *Amalakyadi churna*, *Nishaamalaki churna*, *Triphala churnam*, *Triphaladi ghritam*, *Triphala guggulu*

Pippali- *Piper longum* Linn. Piperaceae. [6]

Vernacular names: English- long pepper, Hindi- *pipali*, Tamil- *tipplali*, Telugu- *pippallu*

Synonyms: *Krishna*, *Kana*, *Kola*, *Magadhi*, *Chapala*, *Ushana*.

Morphology-Aromatic slender climber, Stem- attached to other plants while climbing, Leaves are cordate, subacute, entire margin, glabrous, and Flowers are monocious, pendulate spikes, Fruit is long, yellowish orange, when dried-black color, Flowering season- Rainy, Fruiting season- autumn, Useful part- Fruit, root

Chemical composition: Piperine, β -sitosterol

Formulations: *Vardhamana pippali*, *Pippalyasava*, *Pippalyadi ghrita*, *Pippalyadi lehya*, *Chyavanaprash*, *Vyoshadi vati*, *Vyoshadi kashayam*, *Trikatu churnam*.

Duralabha: *Fagonia cretica* Linn. Zygophyllaceae

Vernacular names: English- Virgin's mantle, Hindi- *damahan*, Telugu- *chittigara*

Synonyms: *Dhanvayasa*, *Samudranta*, *Kashaya*, *Marudbhava*, *Dirghamula*, *Kacchura*.

Morphology: Small, spin undershrub, Branches- stiff, more or less prostrate, Leaves are opposite, 1-3 foliate, entire, linear or elliptic, Flowers are Solitary, rose colored, imbricate, Fruit is 5 mm long, Flowering and fruiting season- Autumn, Useful part: Whole plant.

Chemical constituents: Ceryl alcohol, Chinovic acid, Harmine, Alanine, Arginine, glycine.

Formulations: *Duralabharisham*, *Duralabadi kvatha*, *Shatyadi kvatha*, *Haritakyadi kvatha*, *Kantakari avalehya*, *Sudarshana churna*.

Shringi: *Pistacia integerrima* Stew. Ex Brandis, Anacardaceae. [7]

Vernacular names: Hindi- *kakara*, Tamil- *kakkata shinigi*, Telugu- *kaakara shinigi*.

Synonyms: *Karkatashringi*, *Ajashringi*, *Mahakosha*, *Vakra*, *Vishani*, *Karkatahvya*.

Morphology: Glabrous tree grows up to 16 m, Bark is dark grey or blackish, Leaves are 15-25 cm long, lanceolate, coracious, Flowers are lateral panicles, and Male flowers compact, pubescent, female flowers are lax, elongate, Fruit is Drupe, globose, dry, stony, grey. Seeds have membranous testa, Flowering and fruiting season – March – May

Useful part- galls

Chemical composition: Resin, Camphene, pistacionic acid, β -sitosterol.

Formulations: *Balachaturbhadra churna*, *Shringyadi churna*, *Chyavanaprasha*, *Shiva gutika*.

Kantakari: *Solanum xanthocarpum* Schard & Wendl, Solanaceae. [8]

Vernacular names: English- Yellow Berried Nightshade, Hindi- *Choti kateri*/ *Bhatakataiyya*, *Rengani*, Tamil - *Kandan kattiri*, Telugu- *Nelamulaka*.

Synonyms: *Dusparsha*, *Vyaghri*, *Kshudra*, *Nidigdika*, *Dhavani*.

Morphology: A prickly, diffuse herb, Leaves are ovate or elliptic sinuate, subpinnatifid, unequal size, hairy, long yellow sharp prickles present, Flowers are lateral cymes, blue colored, Fruits are globose berries, glabrous, whitish and

green blotched, yellow when ripened, Seeds are many, glabrous, Flowering and fruiting season- march- July

Useful part- whole plant

Chemical composition: β -carotene, β -solamargine, Solanocarpine.

Formulations: Kantakari ghrita, Vasakantakari avalehya, Dashamula haritaki lehya, Vyaghriharitaki, Vyaghri taila, Dashamularishta, Khadiradi gutika, Ajamamsa rasayana.

Vrishchira: Trianthema portulacastrum -Aizoaceae

Vernacular name: English - horse weed, Hindi – sabuni, Tamil-sharunnai, Telugu- galijeru.

Synonyms: Varshabhu, Dirgapathri, Kathillika.

Morphology: A diffuse prostrate, glabrous herb, Stems often have purplish tinge, Leaves are opposite, broadly ovate, unequally paired, Flowers are solitary, white or pinkish, calyx tubular, Fruits are capsules, containing one seed, Seeds are reniform, dull black, Flowering and fruiting season is winter

Useful part- whole plant, *Chemical composition*: Trianthemine, Ecdysterone.

Punarnava: Boerhavia diffusa Linn. Nyctaginaceae. [9]

Synonyms: Vishaka, Kathilla, Shivatika, Raktapushpa, Vaishaka.

Morphology: Perennial creeping herb, Roots are stout,

woody, Branches- diffused, Leaves are opposite, nearly triangular in shape, Flowers are small or minute, red, borne in small umbels arranged in axillary or terminal panicles, Fruits is 5-ribbed, spherical, glandular, 1.3 cm long, Flowering and fruiting season is winter, Useful part- whole plant.

Chemical composition: β -sitosterol, oxalic acid, glucose, punarnavoside.

Formulations: Punarnavadi mandura, Punarnavadi kvatha, Punarnavasava, Punarnavadi guggulu, Punarnava ambu, Punarnava ghrita.

Tamalaki: Phyllanthus niruri, Euphorbiaceae

Vernacular names: Hindi- jamgli amla, Telugu- nela usiri.

Synonyms: Bhumyamalki, Bhudhatri, Bahuphala, Bahuvirya, Bahupatra, Vishnuparni.

Morphology: Annual herb, 30-60 cm in height, Stem- glabrous, branched, Leaves are numerous, subsessile, elliptic, oblong, Flowers are yellowish, numerous, axillary, males-1 to 3 flowers, female-solitary, Fruit is capsule 5 mm diameter, depressed, globose, smooth, Seeds are 1.5 mm long, trigonous, rounded, Flowering and fruiting season- Autumn.

Useful part: whole plant.

Chemical composition: Phyllanthin, *Formulations*: Bhumayamaki churna, Chayavaprasha.



Draksha Haritaki Amalaki Pippali Duralabha Bharangi Kantakari Vrischeera Punarnava Tamalaki.

Figure 1. Kasahara dasemani of caraka.

3. Result

Ayurvedic Mode of Action

Some, drugs like Kantakari, Pippali, Shringi, Sweta Punarnava/Vrishchira act by Kapha-Vatahara property.

The teekshna guna of Pippali, Kantakari, and Shringi act locally on kantha and cause vilayana of obstructed kapha, and thus do shroto shodhana, while, drugs such as Haritaki, amalaki andbhumyamalaki cause vatanulomanaand pacify Vimarga gata Vatacaused due to Avarana.

Duralabha, andDrakshabeing vatapittahara helps in reducing symptoms associated with pitta like daha, trushnaa, raktasthivana, etc. along withKaphapittahara dravyas like Bhumyamalaki and amalaki.

The drugs such as Haritaki, Shringi etc., with Kashaya Rasa have local kaphaharaaction on the mucosa, along with these, the drugs like Pippali, Haritaki, vrischira, punarnava

and Kantakari do the action of deepana, pachana and anulomana, which are useful in bringing digestion, assimilation, and metabolism of the body to normalcy, and hence reducing the chances of recurrence of the disease.

Further the drugs such as Amalaki, Punarnava, Haritaki, draksha, and Pippali nourish the body with their rasayana effect. These drugs improve Ojas and thus increase the power to fight against diseases.

4. Discussion

Probable Mode of Action in Terms of Modern Pharmacology

Glucose and other sugars present in draksha help in toning the lungs and act as expectorants.

Piperine, which is the main alkaloid present in pippali, has substantially good effect in increasing the bioavailability of drug, along with its anti-inflammatory action.

Draksha, *haritaki* and *amalaki* contain tannins, which when taken orally cure sore throat, tonsils, persistent coughs, bleeding etc.

Kantakari is found to be beneficial in reducing breathlessness and cough in asthmatic patients owing to the depletion of histamine from lungs and expectorant action due to inorganic nitrate content. β -sitosterol, which is one of the main chemical constituent in *Pippali*, *Shringi* and *Punarnava*, has immunomodulatory effects which can increase the proliferation of peripheral blood lymphocytes and enhance the cytotoxic effect of natural killer cells. Further it has anti-inflammatory properties which have suggested its role in the control of chronic inflammatory conditions. [10]

Haritaki, *Tamalaki*, *Kantakari*, *Shringi*, and *Amalaki* have systemic antiviral and antimicrobial actions which help in controlling systemic infections of different origins [11].

5. Conclusion

On screening *kasahara dashemani* it can be understood that the drugs not only give symptomatic relief but prolonged effect by improving the immunity. On overall observation these drugs are antioxidants [12] in nature, acts actively as bio-scavenging agents [13]. Kapha-vata hara property was common in all these ten drugs. Kaphavata hara property of these drugs is nothing but Antitussives activity [14]. Antimicrobial activity [15] of these drugs also helps to cure and prevent the common complaints of all upper respiratory tract infections.

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