



Shringyadi Leha- An Ayurvedic Remedial Formulation For Infantile Cough: A Review

¹Usha Sharma, ²Karishma, ³Dr. Pandey Reena, ⁴Yadevendra Yadav, ⁵Dr. Khem Chand Sharma

¹Associate Professor, (P.G Department of Rasa Shastra & Bhaishjya Kalpana)

²MD Scholar, (P.G Department of Rasa Shastra & Bhaishjya Kalpana)

³Professor (P.G Department of Kaumarbhritya)

⁴Assistant professor, (P.G Department of Rasa Shastra & Bhaishjya Kalpana)

⁵Professor and H.O.D., (P.G Department of Rasa Shastra & Bhaishjya Kalpana) Uttarakhand Ayurved University, Rishikul Campus, Haridwar, India 249401.

*** Corresponding Author: Karishma**

MD Scholar, P.G Department of RSBK, Uttarakhand Ayurved University, Rishikul Campus, Haridwar.

ABSTRACT

According to Ayurveda, *Kasa* (cough) is an independent disease. The excellency of Ayurveda over other medical sciences is that it had not only mentioned '*Kasa*' as a symptom in various diseases but also described it as an independent *Vyadhi* with its separate etiopathogenesis, symptoms, signs, types and treatment. *Kasa* is one of the *Pranavaha Srotodusti Janita Vyadhi*, i.e. disease of the respiratory tract, which hampers the normal lifestyle. *Kaphaja Kasa* is dominated by *Kapha* and *Vatadushti*. *Shringyadi Leha* is a formulation mentioned in the textbook of *Chakradatta* in *Balrog adhyaya*. It contains the most potent ingredients namely *Karkatshringi* (*Pistacia integerrima*), *Ativisha* (*Aconitum heterophyllum* wall), and *Musta* (*Cyperus rotundus*) and taken with Honey which has proven anti-microbial, anti-inflammatory and immunomodulatory properties and adding to the potency with *Madhu*.

KEYWORDS: *Kasa*, *Karkatshringi*, *Ativisha*, *Musta*, *Chakradatta*, *Shringyadi Leha*.

INTRODUCTION:

Kasa (Cough) is one of the important clinical features of many disease of different pathological conditions explicated in many classical text of Ayurveda and modern medical science. *Kasa* may develop as an independent disease or maybe as a *Lakshana* (Clinical Feature) associative to other diseases and sometimes may develop as *Upadrava* (Sequelae) of a *Vyadhi* (illness). *Kasa* is classified as *Ardra Kasa* (Productive Cough) and *Shushka Kasa* (Dry Cough).^[1] *Kasa* (cough) is a vital symptom related to *Pranavaha srotasa* and found in various disorders or presents as an independent disease. Ayurveda has described and classified *Kasa* broadly into *Vataja*, *Pittaja*, *Kaphaja*, *Kshtaja* and *Kshayaja Kasa*.^[2,3,4,5] Understanding and differentiating *Kasa* is important to treat the condition effectively. Ayurveda explains different approaches to treat *Kaphaja Kasa*. *Nidanaparivarjana*, *Shaman-Aushadhi* and *Shodhana* are various modes of treatment. *Kaphaja Kasa* is a common Upper Respiratory tract ailment prevalent nowadays and it is gradually exasperating and frustrating the individual in his routine activity. Ayurveda has a lot to offer in

this regard. *Vata* and *Kapha* are the two key pathological factors involved in the *Samprapti* of *Kaphaja Kasa* [6]. Infection is considered as one of the main factors responsible for Cough in children.

Kapha dosha is dominating in childhood and it is one of the causes in the production of *Kasa*. In Ayurvedic description of the disease, *Kasa* correlates with the cough. Cough is the most frequent symptom of respiratory diseases. [7] Recurrent cough is the common manifestation of recurrent R.T.I. Which is more similar to the disease *Kasa* delineated in the Ayurvedic classics. In the case of *Kasa*, early intervention is necessary. Children suffering from recurrent R.T.I. exhibit expressively vulnerable growth. In classics, descriptions of disease *Kasa* correlate with cough and its pathophysiology accurately correlates with the mechanism of the cough reflex.

In Ayurvedic texts, various formulations and treatment modalities have been described in the management of *Kasa Roga* in children. *Shringyadi Leha* [8] is a formulation indicated in Balaroga Adhyaya in the textbook of *Chakradatta* which contains the most potent ingredients namely *Karkatshringi* [9] (*Pistacia integerrima*), *Ativisha* [10] (*Aconitum heterophyllum*), *Musta* [11] (*Cyperus rotundus* Linn.), in equal quantity and *Madhu* [12] which are mostly accountable for its anti-microbial and anti-inflammatory properties and helps to decrease illness in children.

Table No. 2: The Rasa-Panchaka of Contents of Shringyadi Leha According To A.P.I. [13]

S.No.	Drugs Name	Rasa	Guna	Virya	Vipaka
1.	Karkatshringi	Katu, Tikta	Laghu, Ruksa	Ushna	Katu
2.	Ativisha	Tikta, Kasaya	Guru	Ushna	Katu
3.	Musta	Tikta, Katu, Kasaya	Laghu, Ruksa	Sheeta	Katu
4.	Madhu	Madhura, Kasaya	Laghu(Sushruta), Guru(Charaka), Ruksha, Picchila, Yogavahi	Sheeta	Katu

Table 4. Different Karma of All Active Component of Shringyadi Lehe: [13]

Drug	Karma Of Drug	
Karkatshringi	<i>Deepan, Pachana, Sangrahika,</i>	<i>Kaphapittahara</i>
Ativisha	<i>Kasahara, hikkani-grahana.</i>	<i>Kaphavatahara</i>
Musta	<i>Deepana, Pachana, Grahi, Jwaraghna, Vishghna, Sothhara, Sthoulyahara, Krmighna, Tvakadosahara.</i>	<i>Pittakaphahara</i>
Madhu	<i>Agnideepan, Caksushya, Prasadana, Ropana, Sandhana, Sodhana, Vishghna</i>	<i>Tridosaprasaman, Vatapittaghna</i>

Table 5. Phytochemical Found In The Ingredients of Shringyadi Lehe:

Drug	Phytochemical
Karkatshringi	Pinene, Camphene, Dllinonene, Cineole, Terpeneol, Aromadendrone [14]
Ativisha	Norditerpenoid, Lycoctonine, Delphatine, Lappaconitine [15]
Musta	Sesquiterpene Hydrocarbons, Sesquiterpene Epoxides, Sesquiterpene Ketones, Monoterpene [16]
Madhu	Riboflavin, Niacin, Folic Acid, Pantothenic Acid, Vitamin B6. Glucose Oxidase, Catalase, Disaccharides Sucrose, Maltose, Isomaltose, Maltose, Turanose and Kojibiose. [17]

MATERIAL AND METHODS:

Data and evidence were collected from secondary sources, which include books, articles, reference materials, Wikipedia etc.

KARKATSHRINGI

- (i) Various studies conducted on the aqueous extract of *P. integerrima* leaf galls exhibited anti-bacterial activity. [18]
- (ii) A study on ethanol and aqueous fractions of *P. integerrima* were evaluated for anti-bacterial activity using the agar well diffusion method. This study reveals that the anti-bacterial activity was more pronounced against Gram-positive bacteria, while it showed moderate activity on Gram-negative bacteria strains. The ethanol extract shows a better activity profile than the aqueous extract. [19]
- (iii) In vitro study of methanol extract and ethyl acetate fraction of methanol extract of *P. integerrima* reveals the antioxidant activity of gall. [20]
- (iv) Analgesic and anti-inflammatory effects of *P. integerrima* extracts in vivo-study. [21]

ATIVISHA

- (i) Among different extracts, Methanolic extract of aerial parts of *A. heterophyllum* was found to exhibit the highest anti-microbial activity. Methanolic extract at a concentration of 50 mg was significant to inhibition of the growth of Gram-positive bacteria *Staphylococcus aureus* and *Bacillus subtilis*. [22]
- (ii) Ahmad M. found two novel alkaloids 6-dehydroacetylsepaconitine (1) and 13-hydroxylappaconitine (2) along with three known norditerpenoid alkaloids lycoctonine, delphatine and lappaconitine were isolated from the root of *A. heterophyllum*. These compounds also exhibited significant anti-bacterial activity. [23]
- (iii) Aconitine, an alkaloid was identified and isolated by Sinam Y M, from the root of *A. heterophyllum*. This alkaloid has anti-bacterial activity against *S. aureus*, *B. bronchiseptica*, *B. subtilis*, *P. putida* and *X. campestris*, while this activity is negligible against *S. typhimurium*, *E. coli* and *P. fluorescence*. [24]

MUSTA

- (i) In vitro study on ethanolic extract of *Cyperus rotundus* Linn. rhizome was found to exhibit the highest anti-microbial activity against the pathogenic bacteria viz. *Staphylococcus epidermidis*, *Bacillus cereus*, *Pseudomonas aeruginosa* & *Escherichia coli* and also on the fungal strain of *Aspergillus niger* and *Candida albicans*. [25]
- (ii) In another, In vitro study on the aqueous and ethanolic extracts of *C. rotundus* was evaluated for anti-microbial activity against more genera of bacteria than previous study. *Staphylococcus epidermidis*, *Bacillus cereus*, *Pseudomonas aeruginosa*, & *Escherichia coli* were also tested in this study. The new list of genus of bacteria are as *Alcaligenes faecalis*, *Bacillus subtilis*, *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Proteus vulgaris*, *Pseudomonas pseudoalcaligenes*, *Salmonella typhimurium*, *Staphylococcus aureus*, and *Staphylococcus subfava*. *Candida tropicalis* is species of yeast responsible for infection of various sites of mucous membrane. *C. tropicalis* also show susceptibility. [26]
- (iii) The oil present in the tubers of *Cyperus rotundus*, showed comparatively more anti-bacterial activity against in Gram-positive bacteria e.g., *Staphylococcus aureus* than Gram-negative bacteria. [27]
- (iv) In an in vitro study of acetone and ethanol extracts of *C rotundus* by disc diffusion method, it shows that significant broad spectrum anti-bacterial activity. which were carried out on human pathogenic

bacteria (gram negative and gram positive) and Fungi viz. *C.albicans* and *A. niger*. The positive controls were Amoxicillin 20µg/ml (Antibiotic) and ethanol 70% (fungicide). The maximum inhibition was observed against *K. pneumoniae* (133.33%) than moderate inhibitions were observed for *A. niger* and *S. aureus* which is 90 % and 70% respectively. No zone of inhibition was observed in *Acintobacter* and *Candida*.^[28]

- (v) In another *in vivo* study the triterpenoid obtained by chromatographic separation from petroleum ether extract of the rhizomes showed anti-inflammatory activity against carrageenan induced oedema in albino rats. It was also found to possess significant antipyretic and analgesic effects similar to acetyl salicylic acid.^[29]

MADHU

- (i) Honey has proven anti-bacterial activity against four bacterial species, *Klebsiella pneumoniae*, *Pneumococci*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* causing respiratory tract infections. Thus, Honey showed promising anti-bacterial activity against R.T.I. bacteria with a relatively higher sensitivity against *Pneumococci*.^[30]
- (ii) Shadkam MN et al, performs a comparative study between Honey, Dextromethorphan and Diphenylhydramine to see the effect on nocturnal coughing and sleep quality in children. It was seen that a dose of 2.5-mL Honey before sleep has a more alleviating effect on URIs (Upper respiratory tract infections)-induced cough compared with Dextromethorphan and Diphenylhydramine doses.^[31]
- (iii) Pourahmad and Sobhanian perform, a clinical trial to evaluate the role of Honey as adjuvant medicine in common cold. It was seen that those receiving Honey as well as conventional treatment had a smaller duration of signs and symptoms (1-2 days less) than those only receiving conventional treatment. The study concluded that Honey might be reduced the time of treatment of common cold.^[32]
- (iv) Honey has anti-bacterial and antifungal activities as well as antioxidant properties. A range of bacterias (*Staphylococcus aureus*, *Bacillus cereus*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Micrococcus luteus*, *Staphylococcus epidermidis*, *Streptococcus pyogenes*, *Listeria monocytogenes*, *Proteus mirabilis*, *Klebsiella pneumoniae*, methicillin-resistant *Staphylococcus aureus*, *Serratia marcescens*, *Salmonella typhimurium* and *Propionibacterium acnes*) and two species of yeasts^[33] (*Candida albicans* and *Saccharomyces cerevisiae*).^[33] are susceptible to microbes. The bacteriostatic and bactericidal property of Honey is due to osmotic effect of its high sugar content and low moisture content, acidic properties of gluconic acid and the bacterial cell wall destruction effect of H₂O₂. Moreover, methylglyoxal, bee defensing-1 (an anti-microbial peptide), are also involved in the anti-bacterial action. Antioxidant property of Honey is due to the presence of total phenols and flavonoids. These phytochemical come in the Honey from floral sources, not prepare by bees. Color of Honey is a good indicator of Phenolic content; it means dark colored Honey has more phenolic content. Ether and water extract of Honey also show good antioxidant activity.^[33]

DISCUSSION

Cough is the commonest clinical feature of R.T.I. diseases; this is inevitable circumstance in the life. It is having greater impact of environmental factors such as pollutants, allergens, smoke, dust,^[34] etc and these factors may be etiological cause or aggregate factor of the disease. The drug *Shringyadi Leha* consists of *Karkatashringi*, *Ativisha* & *Musta* & *Madhu* which excellently equilibrium each other in *Rasa Panchaka* and enrich the *Vatakaphahara*, *Deepana*, *Pachana* properties. *Shringyadi Leha* encounters *Vata* & *Kapha*

Dosha by virtue of its *Katu Rasa* dominance, *Ushna-Virya* and *Snigdha* property. The *Gunas* of the drug are *Laghu*, *Ruksha* which are antagonistic to the *Gunas* of *Kapha Dosha*, thereby normalizing *Kapha Dosha*. The *Virya* (potency) of this drug is *Ushna* (hot). By these properties, *Samprapti Vighatana* of disease is done.

Shringyadi leha is having *Ushna Veerya* which mitigates the *Vata* and *Kapha*, which directly antagonizing the *Sheeta Guna* of the *Vata* and *Kapha*. *Deepana* and *Pachana* property of the *Ativisha Agnivardhana* and *Ama pachana* at the *Amashaya*, therefore, the ultimate goal is achieved i.e. *Kapha* gets mitigate at its own seat. Hence, the vitiation of the *Kapha* is under control.

The pharmacological studies already stated on the individual drugs also nepotisms the effectiveness of various contents of *Shringyadi leha* in disease *Kasa* as given below in the table.

Table No. 5: The Pharmacological Properties of The Ingredients Are Summarized In The Table Below.

Name of Drug	Pharmacological Properties
<i>P. integerrima</i>	Anti-allergic, Anti-inflammatory, analgesic and antioxidant ^[35]
<i>A. heterophyllum</i>	antibacterial activity, antimicrobial activity, anti-inflammatory activity ^[36]
<i>C. rotundus</i>	Anti-inflammatory ^[37] , spasmolytic ^[38] , anti-viral ^[39] , anti-bacterial ^[40]
<i>Honey</i>	anti-bacterial activity, Anti-inflammatory, anti-microbial activity, ^[41]

CONCLUSION

The present administration strategy is to allow the patient to live a normal life as possible and to prevent severe *Kasa*. *Kaphaja Kasa* is one of *Pranvaha Srotodusti Janita Vyadhi* where *Kasavega* is associated with *Bahul ghananishthivan*. Probably, these drugs act as cough suppressant, expectorants and mucolytic. In future scope there is a need to prove the action of these drugs experimental pharmacology and clinical trial.

The satisfying effectiveness of this drug is possibly due to symbiotic cellular and mediator networks supporting and elaborate in the inflammatory process of *Kasa*. The pharmacological properties like anti-inflammatory and immunomodulation may activate the action of *Kaphahara* and *Vatahara* as described in Ayurveda. Anti-microbial action of the ingredients may make complete the regime of the cough treatment. The drug review indicates that the ingredients of formulation have wide therapeutic activities viz. potent anti-inflammatory, anti-microbial, anti-allergic, and expectorant. These drugs also have *Kaphavataghna*, *Ushna & Deepan*, *Pachan* properties. Thus, it is useful in speed up the treatment of cough. So this medicine has a perfect blend of active molecules. This might be the reason for the use of this preparation in efficient management of *Kasa*.

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