

# A Key Role of *Bhallataka* (*Semecarpus anacardium* Linn.) in the Management of Respiratory Tract Disorders: A Review

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**Abstract**— Respiratory tract disorders are the leading problem of recent era and the reasons are increased pollution, smoking habits, dust, poor digestion etc. There are several traditional remedies used since ancient times to manage acute episodes of respiratory tract disorders but most of them are with maximum and irreversible adverse effects. So we have to use ayurvedic herbs which have significant potential in respiratory tract disorders and minimum side effects. *Bhallataka* is one of them and is widely used by traditional healers in disorders like common cold, cough, asthma etc. In ayurvedic literature use of *bhallataka* oil with milk has been elaborated to cure respiratory disorders, as it is said that there is no any *kapha dosha vikruti* which cannot be cured by *bhallataka*. This plant is also known as *geeru beeja* locally and *marking nut* in english. It is easily available, cost effective and has many ethno-medicinal uses. *Semecarpus anacardium* Linn. is a botanical name of *Bhallataka* belongs to family *Anacardeaceae*. It contains phytoconstituents like *bhilawanol*, *bioflavonoids*, *phenolic compounds* etc. There are several studies, which have been conducted for anti- inflammatory, antimicrobial, anti- oxidant, anti-reproductive and anticancerous activities of *bhallataka*. Current review aims to study the anti- inflammatory and antimicrobial action of *bhallataka* w.s.r. to respiratory tract disorders as well as its ayurvedic aspect to cure *kapha dosha vikruti*.

**Keywords**— *Bhallataka*, respiratory tract disorders, Ayurveda, phytoconstituents.

## I. INTRODUCTION

In order to feel alive, we need to breathe. The breathing process occurs in every instant of life but we rarely realize the importance of respiratory system of body. Although we don't even notice the process of breathing in our routine life, sometimes it becomes a complicated task to breathe. This is the condition where respiratory system of body is defected. Millions of people are suffering from different kind of respiratory tract disorders like common cold, cough, pneumonia, bronchitis, asthma etc. and it became most commonly reported medical health issues of the current era. Causes of these diseases commonly include genetic issues, infections and smoking habits along with today's western life style. Increasing air pollution has become a serious global concern. The air we breathe is full of impurities, dust particles, micro-organisms and harmful gases which result into respiratory system infections. Poor digestion can also leads to such disorders in which fast food plays an important role.

These diseases are commonly treated with medications like antibiotics, bronchodilators, corticosteroids etc. These medicines have their adverse effects on body. There are also several traditional remedies used since ancient times to manage acute episodes of respiratory disorders but most of them are with maximum adverse effects. So we have to use ayurvedic herbs which have significant potential in respiratory tract disorders along with minimum side effects. *Bhallataka* is one of them and is widely used by traditional healers in disorders like common cold, cough, asthma etc. *Semecarpus anacardium* Linn. is a botanical name of *Bhallataka* belongs to family *Anacardeaceae*. It is well known and rapid acting

ayurvedic herb. The plant is distributed in sub- Himalayan region, tropical and central parts of India. It is commonly known as *marking nut*, *geeru beeja* and *bhilwa*. The fruit, gum and oil of the *bhallataka* plant are used for their medicinal properties. Current review aims to study the anti-inflammatory and antimicrobial action of *bhallataka* w.s.r. to respiratory tract disorders as well as its ayurvedic aspect to cure *kapha dosha vikruti*.

### *Understanding Bhallataka*

It is medium sized deciduous tree. 15-25m in height. Bark is grey in colour with irregular flakes over it. On incising an irritant secretion exudes from bark. Leaves are simple, alternate, rounded at the apex, glabrous above and pubescent beneath. Flowers are greenish white in colour. Fruit is 2-5cm long, ovoid, fleshy, orange red in colour with cup shaped upper portion. The plant is easily recognized by large leaves and red coloured resin excluding from bark, on exposure it turns to black.<sup>[1]</sup>

It contains phytoconstituents like *bhilawanol*, *bioflavonoids*, *phenolic compounds* and *sterols*.<sup>[2]</sup> *Bhilawanol* from fruits was shown to be mixture of *cis* and *trans* isomers of *ursuhenol*. Kernel of the nut contains a small quantity of sweet oil. The kernel oil contains *oleic acid*-60.6%, *linoleic acid*-17.1%, *palmitic acid*-16%, *stearic acid*-3.8%, *arachidic acid*-1.4%. Pericarp of fruit contains black corrosive juice consisting 90% of *anacardic acid* and 10% of non-volatile alcohol called *cardol*.<sup>[3]</sup> The pharmacological activities of *bhallataka* have been attributed to some flavonoids present in the drug those are related to their anti-inflammatory properties.<sup>[4]</sup>

Ayurvedic Point of View:



Image no. 1. Semecarpus anacardium<sup>[5]</sup>

In ancient scriptures of Ayurveda i.e. *Charaka Samhita*, *Sushruta Samhita*, *Ashtangasangraha*, *Bhavprakash Nighantu*, *Raj Nighantu*, medicinal properties of *bhallataka* has been described. *Acharya Charaka* has included *bhallataka* in *deepaniya gana*, *kushtaghna gana* and *mutrasangrahaniya gana*.<sup>[6]</sup> *Sushruta Samhita* describes it in *nyagrodhadi gana* and *mustadi gana*.<sup>[7]</sup>

In the *Dravyaguna Vigyan* of *Acharya Priyavat Sharma* *Bhallataka* is described with its synonyms, *Arushkara*, *Shophkrita*, *Agnimukha*, *Anal*, *Vatari*, *Mahatikshna* etc. *Bhallataka* has *katu*, *kashaya*, *madhur ras*. *Ushna veerya* and *Madhur vipaka* but in *Bhavprakash Nighnatu* *Acharya* has explained *kashaya* and *madhur ras* of *bhallataka* with its *agnideepana*, *chedana*, *bhedana* and *medhya karma*. *Bhallataka* possess *laghu*, *tikshna*, *snigdha guna* and *vata-kaphaghna* properties.<sup>[8]</sup>

*Purification of Bhallataka:*

Since *bhallataka* is extremely hot it may cause allergic reaction on contact with skin or soft tissues. To reduce its toxicity, it should be used after purification. Procedure of purification of *bhallataka* is explained in *Raj Nighantu*. According to that ripen fruits are taken and put into water. Only sink fruits are taken for purification. The seeds are then cut into two halves and kept immersed in dry brick powder for nearly 7 days. Brick powder will absorb all the strong pungent oil from seeds and reduces its toxicity. After that the seeds are boiled in cow milk and at last washed with luke warm water. The only seeds which are purified with this procedure should be used on patients.<sup>[9]</sup>

II. DISCUSSION

*Semecarpus anacardium* Linn. is one of the most popular medicinal herb in the world of *Ayurveda*. Respiratory system disorders are mostly due to the inflammation of soft tissue of lungs and skeletal muscles. Other common causes are infection of various micro-organism, bacteria's, viruses etc.

There are several studies, which have been conducted for anti-inflammatory, antimicrobial activities of *bhallataka*.

1. Satyavati and others have established that *Semecarpus anacardium* Linn. is effective against immunological and non-immunological origin inflammation.<sup>[10]</sup>
2. Monocyte infiltration and fibroblast proliferation occurs in chronic inflammation. It was studied that non-steroidal anti-inflammatory drugs (NSAIDS) acts by inhibiting granulocyte infiltration and decreases the inflammation with preventing generation of collagen fibres. The study conducted by Ramprasathet and others has observed that SA nut extract also inhibits monocyte infiltration and fibroblast proliferation and concluded the anti-inflammatory efficacy of *Semecarpus anacardium* Linn. against all phases of inflammation. It is also observed that there is no ulceration of gastric mucosa occurs in the animal treated with extract of *Semecarpus anacardium* Linn.<sup>[11]</sup>
3. Anti-microbial action of *Semecarpus anacardium* Linn. is studied by Mohanta and others against *Staphylococcus aureus*, which is a one of the causative organism of pneumonia. They prepared the aqueous and organic solvent extracts of the plant and observed its anti-microbial activity.<sup>[12]</sup>
4. Nair and others have shown the antibacterial properties of plant extract in alcoholic extract.<sup>[13]</sup>
5. Sharma and others established that nut oil of *Semecarpus anacardium* Linn. shows anti- microbial action against several gram negative and gram positive bacteria.<sup>[14]</sup>
6. But some other researchers studied that Monoene and dienebphilawanols inhibit only gram positive anaerobes not gram positive aerobic bacteria, as bhillawonols are lipophilic in nature and cannot penetrates lipoprotein layer of cell membrane<sup>[15]</sup>
7. There is one another reference available for the traditional use of *bhallataka* in respiratory disorders in the area of Nepal. It has been using in bronchitis and asthma by the people of Nepal.<sup>[16]</sup>

According to *ayurveda* respiratory system disorders can be correlated with the diseases of *Pranavaha srotas dushti*. *Mulasthanas*' (main locations) of this *srotas* are *Hrudaya* (Heart) that means *Hrudaya samipa pradesh* called as lungs or *Phupphusa* and *Rasavahi dhamanya*. It means that, in *pranavaha srotas dushti rasa dhanvagnimandya* and *rasa dushti* occurs. *Kapha dosha* is labelled as *mala* of *Rasa dhatu* in *Ayurveda*. Thus *rasa dhatu dushti* is directly related with *kapha dosha* which is a leading factor for respiratory tract disorders. Episodes of respiratory tract disorders or *kaphaj vyadhi* of *Pranavahsrotas dushti* occurs during *kaphavardhak kala*, such as *varsha kala*, *sheet hritu*, *pragvatkala* (early morning) or when patient is having diet full of *kaphavardhak dravyas*. Accumulated *dushit kapha dosha* in lungs tissues, causes *srotorodha* of *pranavaha srotas* i.e. blockage in the respiratory tract due to increased and infected cough. This again lead to interruption of *pran vayu* i.e. difficulty in respiration. Due to causative factors, when pathogenesis occurs in *pranavaha srotas snigdha, guru guna* of *kapha* get aggravated and causes *pranavaha srotas dushti*. Due to repeated attack *vayu-kosha* loses its elasticity and shows symptoms like difficulty in breathing, chest congestion, cough

etc. *Bhallataka* is one of the commonly used and significantly effective herbs for diseases of *pranavah srotas dushti*, as *Acharya* said that, there is no any *kaphavikruti* with cannot be cure by *bhallataka*.<sup>[17]</sup>

TABLE 1. Attributes of kapha dosha and bhallataka

Properties	<i>Kapha dosha</i> <sup>[18]</sup>	<i>Bhallataka</i> <sup>[19]</sup> ( <i>Semecarpus anacardium</i> )
Gunās	<i>Guru Snigdha Sheet</i>	Laghu Tikshna Ushna
Panchamahabhuta	Prithvi Jal	Katu Rasa - Tej, Vayu Kashaya - Prithvi, Vayu Madhur - Prithvi, Jal

In above table we have observed that properties of *bhallataka* are opposite to that of *kapha dosha*. In *Panchabhautik* sense, here we have observed that *kapha dosha* is *Prithvi, Jal mahabhuta Pradhan*, whereas *bhallataka* having *Tej and Vayu mahabhuta* in maximum quantity. According to the *Siddhanta* of *Vishesa* in *Ayurveda* properties of *bhallataka* which are opposite of *kaphadosha* will decreases the alleviated *Vikrut kapha dosha*. *Chedan* and *bhedan karma* of *bhallataka* also help to remove the *srotovibandha*. *Rasa-dhatvagnimandhya* is cured by *deepaniya karma* of *bhallataka*. Hence *bhallataka* oil given with milk is effective in various *pranavaha srotas* diseases.

In ayurveda texts it is advised to take 4-5 drops of *bhallataka* oil (*Shevate*) with milk. *Snigdha* and *sheet* guna of milk will be helpful to prevent corrosive action of *bhallataka* due to its *ushna, tikshnaguna*. Milk is *balya* and also used for *Bruhana* will help to recover strength of patient<sup>[20]</sup>

There are several other uses of *bhallataka* also given in *ayurveda*. *Bhallataka* used as folk medicine since ancient times for externally as well as internally. The fruits, oil and seeds of *bhallataka* have great medicinal value. Along with respiratory tract disorders it's also useful in skin diseases, malignant growth, constipation, excessive menstruation, etc. Although *bhallataka* is very useful herb, it should be used cautiously as it possesses extremely hot and sharp attributes. It must be used after purification. It is contraindicated in pregnant women, small children, old age person, haemorrhagic disorders, diarrhoea, dysentery, gastritis etc. According to *Ayurveda* it should be contra-indicated in *pittaj prakuti* person, *pittaj vikara* and *Ushna kala*. Any allergic reaction or rash due to *bhallataka* should be treated with antidotes that are coriander leaves pulp; coconut oil, ghee and butter with *musta*.<sup>[1]</sup>

### III. CONCLUSION

From the above study, it can be concluded that *kapha dushti* and *rasa dhatu dushti* are leading factors in causing respiratory tract disorders. *Bhallataka* is mentioned as significant medicinal herb for respiratory tract disorders both

in *Ayurveda* and modern science. Due to its, antimicrobial, anti-inflammatory, anti-pyretic and analgesic properties as well as due to its *ushna, tikshna* attributes it can be useful in respiratory tract disorders. Also there is a scope to study, which flavonoids from *bhallataka* are useful in the respiratory tract disorders.

### REFERENCES

- [1] Mansoria Poornima, Sharma Anita, Gothecha Vinod Kumar, Dept. of P.G. studies in Agad Tantra, N.I.A. Jaipur Rajasthan *Semecarpus Anacardium*: A review, International ayurvedic medical journal ; IISN : 2320 0591.
- [2] Rao NS, Row LR, Brown RT, Phenolic constituents of *Semecarpus Anacardium*. *Phytochemistry* 1973; 12:411.
- [3] Paras Jain, HP. Sharma, Laboratory of Plant Physiology and Biotechnology, University Department of Botany, Ranchi University, Ranchi, Jarkhand, India, A potential Ethnomedicinal plant: *Semecarpus Anacardium* Linn.- A review, International journal of research in pharmacy and chemistry ; IISN : 2231-2781.
- [4] Jose.A.D.S.E, Alaide B.O,Autonio J.L, J. Pharma. Pharmacol, 46,118-122 (1994).
- [5] Dr. Pranita Mali PG Scholar dravyguna, pranitamali2050@gmail.com clicked on 17/12/17
- [6] Acharya Vidyadhar Shukla & Prof. Ravidatta Tripathi. Charak Samhita (Hindi Translation). Delhi; Chaukhamba oriental. 1979. Vol. 1.p.72, 73, 75.
- [7] Kaviraj Ambikadutta Shashtri Sushrut Samhita (Hindi Translation), Chaukhambha Sanskrit Sansthan, Varanasi. Vol. 1. p. 187.
- [8] Prof. Priya Vrat Sharma. Dravyaguna-Vigyan (Hindi). 2nded Varanasi; Chaukhambha Bharti Academy. 1956. Reprinted 2006. Vol. 2. p.
- [9] Dr. Indradev Tripathi Ayurvedacharya & Acharya Vishwanath Dwivedi. Raj Nighantu (Hindi Translation), 1st edition.Chaukhambha Krishnadas Academy, Varanasi. 1998. p. 352, 353
- [10] Satyavati GV, Prasad DN, Das PK, Singh HD. Antiinflammatory activity of *Semecarpus Anacardium* Linn. A preliminary study. *Indian J Physiol Pharmacol*. 1969; 13:37-45.
- [11] Ramprasath VR, Shanti P, Sachdanandam P. Immunomodulatory and anti-inflammatory effects of *Semecarpus Anacardium* Linn. nut milk extract in experimental inflammatory conditions. *Biol Pharma Bull*. 2006; 29:693-700.
- [12] Mohata TK, Patra JK, Rath SK, Pal DK, Thatoi HN. Evaluation of antimicrobial activity and phytochemical screening of oils and nuts of *Semecarpus Anacardium* Linn. *Sci Res Essay*. 2007; 2:486-90.
- [13] Nair, A. and Bhide, S. V. 1996. Antimicrobial properties of different parts of *Semecarpus Anacardium*. *Indian Drug* 33: 323-8.
- [14] Sharma, K. Shukla, S.D. Mehta. P. and Bhatnagar, M.2002. Fungistatic activity of *Semecarpus Anacardium* Linn. Nut extract. *Indian Journal of Experimental Biology* 40 (3): 314-318.
- [15] Patwardan, B., Ghoo, R.B. and David, S.B.1988. A new anaerobic inhibitor of herbal origin. *Indian Journal of Pharmaceutical Science* 5: 130-132.
- [16] Manandhar. N. P. Plants and People of Nepal. Timber Press. Oregon, ISBN: 0-88192-527-6. 2002.
- [17] Vd. G. A. Fadake, Vd. N. H. Joshi, Dyavya-Guna-Shashtram, Shudhayurveda patthya Samiti Prakashana, 1881, Vol. 2. p. 267.
- [18] Acharya Bramhanand Tripathi, Ashtang Hridayam (hindi Translation), Chaukhambha Sanskrit Pratishthan, Delhi, p. 8.
- [19] Gangashay Pandey & Krushnachandra Chunekar. Bhavprakash Nighantu (Hindi Translation). 7th ed. Varanasi; Chaukhambha Bharti Academy.1986.p.
- [20] Vd. Vishnu Mahadev Gogate. Vaidyamitra Prakashan. p. 543.