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RESEARCH ARTICLE

BHALLATAKA (*Semecarpus anacardium* Linn.f.): A comprehensive Ayurveda review

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Abstract

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Bhallataka is identified botanically as *Semecarpus anacardium* Linn.f. comes under the family Anacardiaceae. It is commonly known as Indian marking nut and used extensively in the system of Ayurveda to cure many diseases like Arshas (piles), Arbuda (cancer) etc. *Bhallataka* is mentioned under *Upavisha* group in Ayurvedic classics and it is described as a poisonous medicinal plant in Drugs and Cosmetics Act (India), 1940. *Bhallataka* should be used after proper *shodhana* (purification/processing). Different *shodhana* methods are mentioned in the Ayurvedic literature. Here an attempt has been made to compile the detail information of the drug *Bhallataka* including its *pariyaya* (synonyms), *guna* (property), *karma* (actions), different indications, *shodhana* methods, properties of good quality *bhallataka*, antidotes of *Bhallataka* etc.

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Introduction:-

The word *bhallataka* describes the sharp attribute of the herb, in comparison to that of a javelin. It has various synonyms, describing the different properties, like *anala* – a fire, *shophakrita* one which causes oedema, *krimighna* - vermicide, *vadari* - enemy of *vata* etc.

Bhallataka grows throughout India in hot weather and in Himalaya's upto 1000 metres height. The plant is found in abundance in Bihar, Bengal and Orissa. It is a medium sized tree growing upto 10-15 metres in height. The bark is grey in colour and exudes an irritant secretion on incising. The leaves are 30-60 cm long and 12-30 cm broad. They are glabrous above and pubescent beneath. The flowers are greenish white, in panicles. Fruits are 2-3 cm broad. The flowering occurs in June and then onwards the plant bears fruits.

The botanical name of *bhallataka* is *Semecarpus anacardium* Linn.f. and it belongs to family Anacardiaceae. An alkaloid, Bhilawanol, has been isolated from oil and seeds. Bhilawanol from fruits was shown to be a mixture of cis and Trans isomers of urushiol (Naure 1960, 186, 389). Other components isolated are anacardic acid, cardol, catechol, fixed oil, anacardol and semecarpol. From the defatted nuts, three biflavonoids A, B and C have been isolated. A new biflavonoid jeediflavone and galluflavone isolated from nut shells

Bhallataka is used both, internally as well as externally. The fruits, their oil and the seeds have great medicinal value, and are used to treat the wide range of diseases. Internally, *bhallataka* is widely used in a vast range of diseases because of its multifarious properties.

From medical history one can know about recognition of the continuity of medical thoughts. It tells us about the conception and misconceptions of the past from which one can draw inferences for the present and future times. History of any drug gives insight into its morphology, properties and therapeutic or dietary utility as conceived by various authors at different stages of the history. Thus here historical review of *Bhallataka* has been put forward in chronological order:

Vedic kala: (2500 B.C. – 600 B.C.):

The foremost ever documents, regarding plants are the “*Vedas*”. Superfluous information seems consisted in them, and the herbal medicine is not an exception. Being specific to the plant *Bhallataka*, There is no reference regarding the drug '*Bhallataka*' in *Vedas*. However there are references of *Bhallataka* in other *granthas* of vedic period, which are summarized as follows

Earliest references about *Bhallataka* are found in *Panini sutra*.¹

A. Ramayana period: In the epic of *Ramayana*, references of *Bhallataka* are found in *Ayodhyakanda*² and *Aranyakanda*.³

Purana (Puranik Kala: 1500 B.C – 300 B.C.):

A. Agni purana: There are references found in this text which indicate that *Bhallataka taila* was used as *kushthaghna* and *rasayanadravya*. *Paryaya* are given in the text which indicate that *Bhallataka* was widely used for medicinal purposes.⁴

B. Garuda purana: In *prathamakhanda* of *Garuda purana*, various references about the qualities and medicinal uses of *Bhallataka* are found.⁵

C. Brahma purana: In *Avantikavarnanam* of *Brahma purana*, reference of *Bhallataka* is found.⁶

D. Kautilya Arthashastra: References of *Bhallataka* are found in the 14th part i.e. *Aushnishadikam*, in the chapters named *Parbalaghataprayoga*, *Sadhyapranaharadhupa*, *Ardhamasikamaraka yoga*, *Masikamaraka yoga* and *Dansha yoga*.⁷

E. Varaha Mihir samhita: Use of *Bhallataka* in the treatment of horses has been mentioned.⁸

Samhitakala: (2000 B.C. - 1300 A.D.):

The *Samhitakala* is the important landmark in the history of *Ayurveda*. In this *kala*, the *Ayurveda* came in the glimpses of the common man. In this period various *Samhitas* and compiled work of various *Acharyas* have been done and kept forward. These are following

A. CharakaSamhita (1000 - 1500 BC) :

Screening the literature, it was observed that the concept of *Shodhana* is mentioned for the first time in *Charaka Samhita*.⁹ In *sutra sthana*, it is mentioned in *aragvadhyaadhyaya* as a content of one of the *lepa*.¹⁰ One of the component of *mootrasangrahaneeeya mahakashaya*¹¹ and the other classical categorization were mentioned in Table 1. It is indicated for *sotha* (inflammation with swelling).¹² In *chikitsasthana*, ten different dosage forms of *Bhallataka* for *rasayana* (rejuvenation) were elaborated.¹³ *Taila* (oil), *ghrita* (ghee) and *mishraka* (both oil and ghee) prepared with the combination of drugs including *Bhallataka* is indicated for *vatakaphaja prameha* (diabetic mellitus) and *tridoshaja prameha* respectively.

Bhallatakadya ghritam is indicated for the disease *kaphaja gulma*, *pleeha* (spleen disorders), *pandu* (anaemia), *swasa* (wheezing), *grahani* (Irritable Bowel Syndrome), *kasa* (cough).¹⁴ *Asava* prepared with *Bhallataka* and other drugs is indicated for *prameha*.¹⁵ *Lepa* (ointment) *yoga* prepared with *Bhallataka* and other drugs indicated for *arshas* (piles) as external application.¹⁶ For internal purpose administered along with buttermilk for *arshas*.¹⁷ *Bhallataka* is an ingredient of *Madhukasava* indicated for *grahani*, *sotha*, *kushta* (skin diseases) and *prameha*.¹⁸ *Sakthu* prepared with the combination of *Bhallataka*, *mustha* (*Cyperus rotundus*) etc. is mentioned for *visarpa chikitsa* (skin disease).¹⁹ In *Vimanasthana*, *Bhallataka taila* extraction method has been mentioned.²⁰ In *kalpasthana*, it is mentioned that *Leha* prepared with *swarasa* (juice) of *Bhallataka* or *srita* (decoction) of *Bhallataka* is a good *vamanakalpa* (emetic).²¹ *Bhallatakasthi* has been mentioned as a content of *Mahaneela taila* indicated for *Palitya*. *Bhallataka rasayana* has been indicated in *Kaphaj shukradosha*.

B. SushrutaSamhita(1000 – 1500 BC) :

Bhallataka is mentioned under, *sutrasthana*, *chikitsasthana*, *kalpasthana*, *shareera sthana* and *uttaratantra*. In *sutrasthana*, *Bhallataka* is mentioned in *nyagrodhadi gana*²² and *mustadigana*.²³ In *vamanadravyavikalpavijnaniya* *Bhallataka sneha* is mentioned to be used in *avaleha* dosage form.²⁴ *Rasadi gunas* such as *madhura* (sweet), *kashaya* (astringent), *tikta anurasa* (bitter secondary taste), *ushnaviryaya* (hot potency), *kaphavata shaman* (pacifies *kapha* and *vata*) and indications such as *kushta*, *meda* (obesity), *meha* (diabetes), *krimi* (worms) and *ubhayabagadosahara* (emetic and purgative) of *Bhallataka taila* are mentioned.²⁵ It is mentioned under *shakavarga*.²⁶ In

dravadravayavidhiadhyaya, it is mentioned that *sheeta jala* (cold water) should be taken as *anupana* (adjuvant) for *Bhallataka taila*.²⁷ In *chikitsa sthana*, *Nyagrodhadi gana* is indicated for *vrana* (wounds)²⁸ and *mahakushta* (skin diseases), *bhallataka* is one of the ingredients of this formulation.²⁹ It is an ingredient in *Kalyanaka lavana* which is indicated in *vataroga* (*vata* diseases), *gulma*, *pleeha* etc.³⁰ Different formulations of *Bhallataka* are mentioned for *arshas*.³¹ *Bhallataka* fruits and its *taila* are used for the management of *kushta*.³² *Bhallataka* is one of the ingredients in a *lepa* for *shwitra* (leucoderma).³³ Indicated for *prameha*³⁴ and it is one of the ingredient in a formulation for *pramehapidaka* (diabetic ulcers)³⁵ and indicated for the management of *madhumeha*.³⁶ It is indicated for one of the *kshudraroga valmika* (a type of skin disease).³⁷ *Madhu* (honey) mixed with *Bhallataka kwatha* (decoction) is mentioned in *sarvopaghatasamaneeya rasayana* chapter.³⁸ Indicated in *mahavyadhi*.³⁹ In *kalpasthana*, *Bhallataka* along with other drugs is used as *anjana* (collyrium) for eye diseases.⁴⁰ In *uttaratantra*, for *sheetaputana parisheka* with *Bhallataka*, *kapitha* (*Feronia elephantum*) etc are mentioned.⁴¹ *Bhallataka* is one of ingredient in the *ghrita* (ghee) formulation indicated for *shosham* (malnourishment), *prameha* etc.⁴² In *sharirasthan*, *Bhallataka* is used in the constructing of *sutikagara* (labour ward).⁴³

Astanga sangraha(6th century):-

Mentioned about *Bhallataka* in *sutrasthan*, *chikitsasthan*, *uttrasthan* and *kalpasthana*.⁴⁴ In the context of *Bhallataka Rasayana* and *Amrita Bhallataka*, *Vagbhata* has mentioned the *Shodhana* (purificatory procedures) of *Bhallataka*. The fruits of *Bhallataka* are cut into pieces and are kept in brick powder until the oil part is removed.

Astanga Hridaya(7th century):-

In *Sutrasthan*, Properties of false fruit of *Bhallataka* are *bhrimhana* (nourishment), *madhura* (sweet), *sheeta* (cold) and fruit is equal to *agni* (fire) and possess *medhya* (memory booster), *kaphavataghna* property.⁴⁵ *Bhallataka* is indicated for *yoni* (vaginal disorders), *stanyarogas* (breast milk disorders).⁴⁶ In *chikitsasthan*, *Avaleha* prepared with *Bhallataka* and other drugs is indicated for *kasa* (cough).⁴⁷ *Ghrita* prepared with *Bhallataka* and other drugs is indicated for *rajayakshma* (tuberculosis).⁴⁸ *Bhallataka* is the *agroushadha* (drug of choice) for *sushkaarshas* (piles).⁴⁹ *Asava* prepared with *Bhallataka* and other drugs is indicated for *grahanidosha*.⁵⁰ *Taila*, *ghrita* and *mishraka* (both) prepared with *trikantaka* (*Tribulus terrestris*), *nisha* (*Curcuma longa*), *Bhallataka* etc. is indicated for *vatakaphaja prameha*, *pittaja prameha* and *tridoshaja prameha* respectively.⁵¹ *Bhallataka* is indicated for all types of *kushta* (skin diseases) and *ghrita* prepared with *pathya* (*Terminalia chebula*) and *Bhallataka* is indicated for *krimi* (worms).⁵² *Guda* (jaggery) preparation with *vidanga* (*Embelia ribes*), *Bhallataka* etc. drugs is indicated for *kushta*.⁵³ *Bhallataka* is used as a *rasayana* (rejuvenator) in the management of *kushta*.⁵⁴ *Lepa* (ointment) prepared with *Bhallatakadi* drugs is indicated for *kushta*, *charmakeela*, *tilakalaka* (type of skin diseases) etc.⁵⁵ In *kalpasthana*, *Leha* prepared with *swarasa* (juice) of *Bhallataka* or *sruta* (decoction) of *Bhallataka* is a good *vamanakalpa* (emetic).⁵⁶ In *uttaratantra*, *Dhoopanayoga* (fumigation) prepared with *Bhallataka*, *vacha* (*Acorus calamus*) etc drugs is best for *sarvagrahabaadha* (all the evil spirits).⁵⁷ There is no obstruction which *Bhallataka* does not cure. Bestows strength to the digestive fire. ⁵⁸Extraction methods of *taila* from *Bhallataka* were mentioned. Specific pharmaceutical procedure for processing *Bhallataka* to prepare a *ghrita* formulation is mentioned.⁵⁹ *Bhallataka* is very *teekshna* (strong) just like fire but when processed by following certain pharmaceutical procedures the drug acts like *amritha* (nectar). Thus showing the pharmacodynamics of the drug.⁶⁰ *Rasayana yoga* prepared with *vidanga*, *Bhallataka* and *nagara* (*Zingiber officinale*) along with *madhu* and *sarpi* (ghee) is highlighted.⁶¹ *Bhallataka* is considered as *agroushada* (drug of choice) for *arshas* (piles).⁶²

References from Nighantus

Dhanvantari nighantu:-

Bhallatakais kept under *chandanadi varga* and its synonyms and properties are mentioned.⁶³

Sodhala nighantu:-

Properties, synonyms, indications and purification method of the drug are mentioned.⁶⁴

Siddhamantra:-

The *Bhallatakasthi* (seed/nut) is considered under *kapha-vataghnava*.⁶⁵

Madanapala nighantu:-

Synonyms and properties are mentioned.⁶⁶

Raja nighantu:-

The synonyms, properties of *phala* (fruits), *majja* (false fruit) are mentioned under *Aamradi varga*.⁶⁷

Kaiyadeva nighantu:-

Synonyms of *Nadi Bhallataka* and its properties are mentioned.⁶⁸

Bhavaprakasha nighantu:-

Synonyms, properties, purification method of the drug are mentioned and it is kept under *haritakyadi varga*.⁶⁹

Shaligram nighantu:-

Synonyms, properties and purification method of the drug are mentioned and also about the *Nadi Bhallataka*.⁷⁰

Priyanighantu:-

The drug is mentioned under *haritakyadi varga*.⁷¹

Vanoushadhinidarshika:-

Different names, family, usable parts, dose, chemistry, shelf life, properties, purification method and effects by the usage of unpurified seed of the *Bhallataka*.⁷²

References from *Rasa granthas*

Rasa Tarangini:-

Bhallataka synonyms, *grahyabhallatakasyaswarupa* (selection methods of the fruits) that which sinks in water were the main criteria for the selection of *Bhallataka* fruits. Need for *Bhallataka shodhana*, different *shodhana* methods, dose, *amayikaprayoga* (therapeutic indications), and formulations were dealt in detail.⁷³

Rasamritam

Bhallataka shodhana is mentioned.⁷⁴

Ayurvediya Rasa Sastra by CB Jha

Bhallataka is mentioned in *upavisha varga* (one of the semi-poisonous drugs), synonyms, *grahya lakshana* (selection methods), need of *shodhana*, *shodhana* methods, *Bhallataka guna karma* (properties and actions), *matra* (dose), contraindicated in *pitta prakriti* and treatment for its toxic nature and important formulations.⁷⁵

Rasa Sastra by Damodar Joshi:-

Synonyms, necessity for *shodhana*, selection of *Bhallataka* fruits, *shodhana* methods, *rasadigunas*, *karma*, *vyadhiprabhava* (specific actions), dose and treatment for the toxic manifestation are mentioned.⁷⁶

References from Modern period:-

Wealth of India:-

Morphology, habitat, therapeutic uses and chemistry of different parts of drug are noted.⁷⁷

Indian material medica:-

Different names, morphology, useful part, actions, uses and contraindications are mentioned.⁷⁸

Dravyagunavijnana by PV Sharma:-

Different names, morphology, distribution, chemistry, pharmacodynamics, actions, properties and therapeutic uses are mentioned.⁷⁹

Dravyagunavijnana by Gyanendra Pandey:-

Different names, morphology, distribution, chemistry, pharmacodynamics, actions, properties and therapeutic uses are mentioned.⁸⁰

Dravyagunavijnana by JLN Sastry:-

Different names, morphology, distribution, chemistry, pharmacodynamics, actions, properties and therapeutic uses are mentioned.⁸¹

Indian medicinal plants by Kirthikar & Basu:-

Different names, morphology and therapeutic uses are mentioned.⁸²

Ayurvedic pharmacopoeia of India:-

Macroscopic and microscopic structures of the drug noted, along with identity, purity, strength, constituents, properties and therapeutic uses.⁸³

Synonyms:-

Bhallataka is having many *pariyaya* (synonyms). Most of the synonyms are based on the irritating nature of the fruits.⁸⁴ The synonyms quoted in various lexicons and classics were mentioned in Table 2.

- *Bhallataka*- Its touch may produce pricking pain or it scrapes away vitiated *kapha* like a lancet.
- *Agnika*- Its corrosiveness is compared to fire.
- *Agnimukhi*- It will cause burning and ulceration on the skin.
- *Arushkara*- It produces rashes all over the body.
- *Vatari*- It acts as *vatahara*.
- *Sphotabeejaka*- Its fruits will produce rashes on the skin.

- *Veeravriksha*- Its touch is intolerable which is similar to the same way a highly courageous warrior who cannot be touched by any ordinary person.
- *Sophahetu*- It produces edema and rashes on the body.

Vernacular names and the natural order were mentioned in Table 3 and Table 4 respectively.

Rasadigunas(Properties and actions):-

The properties of the drug as per API,

Rasa :*Madhura, Katu, Tikta, Kashaya*

Guna: *Laghu, Snigdha, Tikshna*

Virya: *Ushna*

Vipaka: *Madhura*

Doshagna Karma : *Vata Kaphaghna*

Karma : *Deepana, Pachana, Vatahara, Medhya*

Table 1: Classical categorization

Sr.no.	Classical texts	Gana/Varga
1.	<i>Charaka samhita</i> ^{85,86}	<i>Deepaniya mahakashaya</i> <i>Kushthaghna mahakashaya</i> <i>Mutrasangrahaniya mahakashaya</i> <i>Katukaskandha</i>
2.	<i>Sushruta samhita</i> ⁸⁷	<i>Nyagrodhadi gana</i> <i>Mustadi gana</i> <i>Kashaya varga</i>
3.	<i>Ashtanga hridaya</i> ⁸⁸	<i>Mustadi gana</i>
4.	<i>Dhanwantari nighantu</i> ⁸⁹	<i>Chandanadi varga</i>
5.	<i>Sodhala nighantu</i> ⁹⁰	<i>Chandanadi varga</i>
6.	<i>Shadarasa nighantu</i> ⁹¹	<i>Katudravyaskandha</i>
7.	<i>Hridayadeepak nighantu</i> ⁹²	<i>Kaphavataghna varga</i>
8.	<i>Madanapala nighantu</i> ⁹³	<i>Abhayadi varga</i>
9.	<i>Kaiyadeva nighantu</i> ⁹⁴	<i>Aushadhi varga</i> <i>Taila varga</i>
10.	<i>Bhavaprakasha nighantu</i> ⁹⁵	<i>Haritakyadi varga</i>
11.	<i>Raj nighantu</i> ⁹⁶	<i>Amradi varga</i>
12.	<i>Priya nighantu</i> ⁹⁷	<i>Haritakyadi varga</i>
13.	<i>Nighantu aadarsha</i> ⁹⁸	<i>Bhallatakadi varga</i>
14.	<i>Gunaratnamala</i> ⁹⁹	<i>Haritakyadi varga</i>

Table 2: Synonyms mentioned in various nighantus and classics

Synonyms	D.N	So.N	M.N	R.N	K.N	B.P.N	Sha.N
<i>Agnika</i>	+	-	-	+	-	+	+
<i>Agnimukhi</i>	+	-	+	-	+	+	+
<i>Agnivakrakah</i>	-	-	+	-	-	-	-
<i>Ahavala</i>	-	-	-	-	-	-	+
<i>Anala</i>	-	-	-	-	+	-	+
<i>Antasatva</i>	-	-	-	-	-	-	+
<i>Arushkara</i>	+	+	+	+	+	+	+
<i>Arushko</i>	+	-	-	-	-	-	-
<i>Ashowhita</i>	-	-	-	-	-	-	+
<i>Bhallataka</i>	+	-	+	+	+	-	+
<i>Bhallata</i>	+	-	-	+	-	-	+
<i>Bhallataki</i>	-	-	-	-	-	-	+
<i>Bhalli</i>	-	-	-	-	+	+	+

<i>Bhedana</i>	-	-	-	-	-	-	-
<i>Bhootanashana</i>	-	-	-	-	-	-	+
<i>Chikarvara</i>	-	-	-	-	-	-	-
<i>Dahana</i>	+	-	-	+	-	-	-
<i>Dhanurvruksha</i>	-	-	-	-	-	-	+
<i>Krimighna</i>	-	-	-	+	-	-	+
<i>Mahatikshna</i>	-	-	-	-	-	-	+
<i>Nabhovalli</i>	-	-	+	-	-	-	-
<i>Nardhahana</i>	-	-	-	-	-	-	+
<i>Preethabeeja</i>	-	-	-	-	-	-	+
<i>Ruksha</i>	-	-	+	-	-	-	-
<i>Shophahrut</i>	-	-	-	-	-	+	-
<i>Shothahrutha</i>	-	-	-	-	-	-	+
<i>Shpotanuth</i>	-	-	-	-	-	-	+
<i>Snehabeeja</i>	-	-	-	-	-	-	+
<i>Sphotohetu</i>	-	-	-	-	+	-	+
<i>Tailabeeja</i>	-	-	-	+	-	-	-
<i>Tapana</i>	+	-	+	+	-	-	+
<i>Vahni</i>	-	-	-	-	-	-	+
<i>Vahninama</i>	-	-	-	-	-	-	+
<i>Vatari</i>	-	-	-	+	-	-	-
<i>Vayusakha</i>	-	-	-	-	-	-	-
<i>Veerataru</i>	-	-	-	-	+	-	+
<i>Veeravriksha</i>	-	-	+	-	-	+	+
<i>Vranakruth</i>	-	-	-	-	+	-	+

D.N-Dhanwantari nighantu; So.N-Sodhala nighantu; M.N-Madanapala nighantu; R.N-Raj nighantu; K.N-Kaiyadeva nighantu; B.P.N-Bhavaprakasha nighantu; Sha.N-Shadarasa nighantu

Table 3: Vernacular names

Sanskrit	<i>Aru, Ākara, Bhallata</i>
Assamese	<i>Bhelaguti</i>
Bengali	<i>Bhela</i>
English	Marking Nut
Gujrati	<i>Bhilara</i>
Hindi	<i>Bhilawa</i>
Kannada	<i>Bhallataka</i>
Malayalam	<i>Chera</i>
Marathi	<i>Bibba</i>
Oriya	<i>Bhollataki, Bholai</i>
Punjabi	<i>Bhilawa</i>
Tamil	<i>Tatamkottai, Scramkotati</i>
Telugu	<i>Nallajidi, Nallajidiginga</i>
Urdu	<i>Baladur, Bhilavan</i>

Table 4: Natural order Taxonomical Classification¹⁰⁰ :

Kingdom	: Plantae – Plants
Subkingdom	: Tracheobionta – Vascular plants
Super division	: Spermatophyta – Seed plants
Division	: Magnoliophyta – Flowering plants
Class	: Magnoliopsida – Dicotyledons
Subclass	: Rosidae
Order	: Sapindales
Family	: Anacardiaceae – Sumac family
Genus	: <i>Semecarpus</i> L. f. – semecarpus
Species	: <i>Semecarpus anacardium</i> L. f. – marking nut tree

Karma (actions) mentioned in different Nighantus

Pittavardhaka, Vishaghna, Sphotajanaka, Sheetaprashamana, Medhya, Nadibalya, Deepana, Pachana, Bhedana, Yakrittejaka, Krimighna, Hridayauttejaka, Shothahara, Kaphanissaraka, Vrishya, Kamottejaka, Shukrasaravidhikara, Vajikarana, Garbhashayauttejaka, Swedajanana, Kushthghna, Jwaraghna, Rasayana, chhedana.

Rogagnata :

Kushtha, shwitra, Indralupta, Mastikya daurbalya, Nadi daurbalya, Apasmara, Gridhrasi, Urustambha, Aamawata, Vatavyadhi, pakshaghata, Agnimandya, Vibandha, Aanaha, Gulma, Udara, Plihodara, Grahani, Arsha, Krimi, Hriddaurbalya, Granthishotha, Kasa, Shwasa, Prameha, Shukradaurbalya, Dhvajabhanga, Kashtartava, Vatarakta, Vrana, jwara, Daurbalya, plihavidhi, Atisara, Bradhna, Ajirna, Upadansha.

Good quality *bhallataka*:-

As per the *Brihatreyee*'s in *rasayanaadhyaya* they have told about the qualities of *Bhallataka* to be taken for medicinal purposes.

These are:-

1. The fruit which is not destroyed by wind, cold and heat.
2. The fruit which is also not infected or without any disease.
3. The ripe fruit of *Bhallataka* should look like the ripe fruit of *jambu* "*Pakwajambvaprakashani*".
4. "*Purnarasapramanaveeryani*" i.e. full of *rasa*, normal shape and size, well grown and having great potency.
5. The *Bhallataka* which sinks on immersing in water.

Season of collection:-

Acharyas have mentioned that the best season for the collection of *Bhallataka* is the summer season (*Jyeshtha* and *Aaashadha*).

Seasons of administration:-

Winter, being the healthy season it is the best season for the use of *Bhallataka* (*Semecarpus anacardium* Linn.f.). It should not be used for long time, in suitable cases it may be used in every season (Nadkarni 1954). As *bhallataka* is hot in potency, administration in winter season also serves the purpose of reducing the side effects caused due to its hot potency, this is also mentioned in Ayurvedic texts.

Contraindications for *bhallataka*:-

- Summer season
- *Pitta prakriti*
- Hemorrhagic condition
- Pregnancy
- Diarrhoea
- Dysentery
- Gastritis
- Children
- Old age
- Kidney disorders

Table 5 :precautions during *bhallataka sevana*

Do`s	Dont`s
Intake of milk.	Exposure to sunlight.
Rice cooked with milk and ghee	Use of hot water
Kernel of coconut, coconut water to drink.	Exposure to fire
Plenty of ghee, milk, starchy and saccharine foods.	Excessive use of <i>katu, amla</i> and <i>lavana rasa</i> .
<i>Sheeta aahara</i>	<i>Pitta vardhaka aahara.</i>
Use of cold water.	Indulgence in excessive sex
Application of coconut oil	Intake of nitrogenous foods
Should be administered in winter season	Should be avoided in summer season
Vegetarian, light and non spicy diet.	Non-vegetarian and spicy diet.

Toxic effects of *bhallataka*:-

Acharya Sushruta has mentioned that staying below the tree of *Bhallataka* can lead to swelling over the body. Also most of the synonyms mentioned by different text indicate it`s toxic nature.

Madhava Nidana and other acharyas have described *Bhallataka* as cause for *Vishaja shotha*, feeling of hotness. In short it can cause

1. Raised black surface on the body.
2. Itching all over the affected parts.
3. Mild itching and burning during micturition.
4. Rashes all over the body.
5. Gastro intestinal irritant when taken by mouth.

Antidote of *bhallataka*:-

With mild toxic symptoms it is often not necessary to stop the drug, only a reduction in the dose is sufficient. But if there is any severe rash or itching, *Bhallataka* should at once be stopped. Antidotes for the treatment mentioned in different texts for the toxic symptoms produced by this drug are –

1. Kernel (Albumen) of coconut.
2. Sesamum seeds
3. Chebulic myrobalan
4. The fresh juice of the leaves of *amlika / chincha (Tamarandus indica)* internally is one of the antidotes for such symptoms.
5. Decoction of *Coriandrum sativum (Dhaniya)*.

The best result is obtained by using the first antidote. Milky juice of the kernel of cocconut, sweetened to taste, is to be drunk in large quantities, as soon as there is a full purgative action, the itching, rash etc. disappear. Any saline purgative also serves the same purpose. Lint soaked in goulard`s lotion if covered on the itchy parts will help in reducing itching.¹⁰¹

The vesicating action of the active principle of *Semecarpus anacardium* Linn.f. juice is destroyed by caustic potash, if the petroleum ether residue is mixed with cold caustic potash solution, allowed to stand overnight, reacidified with dilute hydrochloric acid and then reextracted with petroleum ether, the residue will not produce a blister, if applied on the skin.

Table 6 :antidotes mentioned in ayurvedic texts

Sr.No.	TEXT	ANTIDOTE
1.	<i>Chakradutta</i>	Black sesamum along with <i>mulethi</i> is added in milk and paste is prepared. This paste then mixed with butter and applied. Soil under the plant of <i>Bhallataka</i> itself is used to apply on the affected parts. Paste of <i>Shorea robusta</i> .
2.	<i>Bhavaprakasha</i>	Crush the <i>Sesamum indicum (Tila)</i> in Buffalo milk and add butter and apply with butter. <i>Churna</i> of <i>Yashtimadhu</i> and <i>Sesamum indicum (Tila)</i> grind with milk and apply with butter. Apply the paste of <i>Shorea robusta(Shalapatra)</i> .
3.	<i>Sharangadhara samhita</i>	<i>Ajadugdha</i> (Goat milk) along with <i>tila</i> (sesamum) and butter is used for application. Black mud application over the swelling.
4.	<i>Bharat bhaishajyaratnakara</i>	<i>Kwatha</i> prepared from <i>patra</i> of <i>Ashwatha</i> plant. Sesamum and black mud (<i>Krishna mritika</i>) is mixed with butter and applied. Make paste of Sesamum in buffalo milk and apply with butter.
5.	<i>Ayurveda Oshadhinighantu</i>	<i>Tanduliya swarasa</i> with sugar. Application of <i>Devadaaru</i> , <i>Musta</i> , <i>Sarshapa churna</i> with butter over swelling. External application of <i>mula</i> of <i>tanduliya</i> and <i>Sarshapa</i> with butter.

Shodhana of bhallataka:-

There are various *shodhana* methods mentioned in Ayurveda texts¹⁰² for the purification of *Bhallataka*, But API followed only the *shodhana* procedure of *Rasamrutam*.¹⁰³

Controversial status:-

There are some controversies regarding this drug based on its synonyms. *Aruskara* is the *pariyaya* given to the drug *Bhallataka*. *Vrtaaruskara* is mentioned in *Nighantu* and is considered as the *Kajutaka* (Cashew nut) and it is identified botanically with *Anacardium occidentale* Linn.

The drug *Nadi Bhallataka* is mentioned in *Nighantu ratnakara*. *Kajutaka* is used as tonic and indicated for leucoderma, haemorrhoids, *Grahani* etc. *Nadi Bhallataka* is known with synonyms like *vrsanka Gojanaka* and is *sheetavirya* (cold potency). *Nadi Bhallataka* is mentioned in *Sushruta samhita*.^{104,105}Thakurji is of opinion that it may belong to *Ficus* genus and also expresses his view that *Nadi Bhallataka* may be the *Nandi*. *Nandi* Still remains to be controversial plant.

Conclusion:-

The drug *bhallataka* was used to cure various diseases like fever, diabetes, piles, heart diseases, inflammation, tumors, cancer, spleen disorders, liver disorders etc. The drug should be used after purification for internal purposes. The drug is suitable for *Kapha prakriti* individuals. Detailed information about *Bhallataka* including it's antidotes has been described by Acharyas. This review article would help the researchers to get a detailed Ayurvedic references about the drug *bhallataka* (Marking nut).

References:-

- ¹Pa.Un.Bho. 2/2/42
- ²Ramayana, Ayodhyakanda (II), 56/7
- ³Ramayana, Aranyakanda (III), 75/5
- ⁴Agni purana 77/20,283/13,286/2.363/25
- ⁵Garuda purana (I), 162/36,171/22, 171/27,176/17,177/46,177/56,180/10,182/9
- ⁶Brahma purana 43/49
- ⁷Kautilya Arthashastra 14.1.177/4,177/46,177/30
- ⁸Varah Mihir Sanhita 29/11,43/5,53/50,56/3
- ⁹Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 1 -2/13-19.p.382-383.
- ¹⁰Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Sutrasthana3/4-5.p.27.
- ¹¹Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Sutrasthana4/33.p.33.
- ¹²Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006.Sutrasthana 18/3-4.p.106.
- ¹³Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 1 -2/13-19.p.382-383.
- ¹⁴Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 5/143-146.p.443.
- ¹⁵Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 6/45.p.448.
- ¹⁶Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 14/55.p.504
- ¹⁷Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 14/70.p.505
- ¹⁸Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 15/146.p.522.
- ¹⁹Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Chikitsasthana 21/129.p.565
- ²⁰Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Vimanasthana 7/23-24.p.260
- ²¹Caraka, Caraka Samhita, Yadavji Trikamji Acharya, editor. Varanasi: Chaukhamba Krishnadas Academy; 2006. Kalpasthana1/20.p.655.
- ²²Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 38/48.p.168.
- ²³Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 38/54.p.168.
- ²⁴Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 44/3.p.188.
- ²⁵Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 45/122.p.206.
- ²⁶Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 46/249.p.232.
- ²⁷Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 46/423.p.244.
- ²⁸Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 1/78.p.403.

- ²⁹Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 10/6.p.449.
- ³⁰Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 4/32.p.423.
- ³¹Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 6/13-18.p.432-434.
- ³²Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 9/6-7.p.442.
- ³³Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 9/27-28.p.445.
- ³⁴Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 11/9-10.p.453.
- ³⁵Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 12/5.p.454.
- ³⁶Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 13/14.p.456.
- ³⁷Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 20/54.p.480.
- ³⁸Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 27/7-8.p.499.
- ³⁹Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Chikitsasthana 31/5.p.507.
- ⁴⁰Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Kalpasthana 1/70-71.p.563.
- ⁴¹Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Uttarantra 34/3.p.665.
- ⁴²Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Uttarantra 41/46-50.p.715.
- ⁴³Uttarantra 41/46-50.p.715.
- [52] Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sharirasthana 10/5.p.387.
- ⁴⁴Vruddha Vagbhata, Ashtanga Sangraha (Indu Vyakhya), Ananth Damodar Athavale, Mahesh Ananth Athavale, editors. Pune: Sreemad Aatreya Prakashanam Nandanandana; 1980.
- ⁴⁵Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005; Sutrasthana 6/134.p.113.
- ⁴⁶Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Sutrasthana 15/40.p.239.
- ⁴⁷Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 3/135.p.597.
- ⁴⁸Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 4/29.p.612.
- ⁴⁹Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 8/162.p.654.
- ⁵⁰Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 10/47-50.p.668.
- ⁵¹Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 12/17-18.p.679.
- ⁵²Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 19/12-13.p.711 -712.
- ⁵³Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 19/45.p.714.

- ⁵⁴Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 19/53.p.715.
- ⁵⁵Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Chikitsasthana 20/16.p.720.
- ⁵⁶Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Kalpasthana 1/15.p.737.
- ⁵⁷Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana. 3/47.p.789.
- ⁵⁸Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana.39/82.p.929
- ⁵⁹Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana.39/75.p.928
- ⁶⁰Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana.39/81 -82.p.929.
- ⁶¹Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana.39/151.p.937.
- ⁶²Vagbhata, Astanga hridayam, Harishastri Paradakara editor. 9th ed. Varanasi: Chaukhamba Orientalia. 2005. Uttaraasthana.40/49.p.944.
- ⁶³Sharma PV. Dhanvantari Nighantu. 4thed. Varanasi: Chaukhamba orientalia. 2005. p.114.
- ⁶⁴Sodhala. Sodhala Nighantu (Namasangraha and Gunasangraha). Sharma PV, editor. 1 sted. Baroda: Oriental Institute; 1978.
- ⁶⁵Keshava. Siddhamantra. Sharma PV, editor. Varanasi: Chaukhambha Amarabharati Prakashan; 1977.
- ⁶⁶Khenrajsri. Madanapala nighantu. 1 sted. Mumbai: Krishnadas prakashan; 2004.p.51 -52.
- ⁶⁷Narahari. Raja Nigahntu. Tripathi. Indradeva, editor.3rd ed. Varanasi: Chowkamaba Krishnadas Academy; 2003.
- ⁶⁸Sharma PV, Guruprasad Sharma, editors. Kaiyadeva nighantu. 1 sted. Varanasi: Chaukhamba orientalia; 1979.p. 90-91.
- ⁶⁹Chunekar KC. Bhavaprakasa nighantu. Varanasi: Chaukhamba Bharati Academy; 2006.p.134-136.
- ⁷⁰Vaishya Lala Shaligrama, Shaligrama Nighantu. 3rd ed. Bombay: Khemraj Shri Krishnadas Prakashan; 1995.
- ⁷¹Sharma PV. Priya nighantu. 1 sted. Varanasi: Chaukhamba surbharati prakashan; 2004.p.14.
- ⁷²Ramsusheel Singh, Vanoushadi Nidarshika (Ayurvedic Pharmacopoeia). 2nd ed. Uttara Pradesh Hindi sansthan; 1983.
- ⁷³Sadananda Sharma. Rasatarangini, Kasinathsastri editor. 11 thed. New Delhi: Motilal Banarasidas; 2004. p.733-737.
- ⁷⁴Yadavji Trikamji Acharya, Rasamritam, Damodar Rao, Prabhakar Rao, editors. 1 sted. Varanasi: Chaukhambha Sanskrit Bhawan; 1998. p.286.
- ⁷⁵Jha CB, Ayurvediya Rasa Sastra. 1 sted. Varanasi: Chaukhamba Surabharti Prakashan; 2003.p.475-476.
- ⁷⁶Damodar Joshi, Rasa Sastra. Reprint ed. Varanasi: Chaukhambha Orientalia; 2010.p.341 -342.
- ⁷⁷Anonymous. The Wealth of India, A Dictionary of Indian raw material. New Delhi: CSIR products; 1988.
- ⁷⁸Nadkarni KM. Indian Meteria Medica, Vol.1. 2nd ed. Bombay: Popular prakashan pvt. Ltd.; 1976.p.1 119-1125.
- ⁷⁹Sharma PV. Dravyaguna vijnana, Vol.2. Varanasi: Chaukhambha Bharti Academy; 1999.p.168-169.
- ⁸⁰Gyanendra Pandey. Dravyaguna Vijnana, Part 1. 3rd ed. Varanasi. Chowkhamba Krishnadas Academy; 2005.p.343-355.
- ⁸¹Sastry JLN. Dravyaguna Vijnana, vol-II. 3rd ed. Varanasi: Chaukhambha Orientalia; 2008. p.135-138.
- ⁸²Kirthikar KR, Basu BD. Indian Medicinal Plants, vol-1. 2nd ed. International book distributors; p.667-670.
- ⁸³Anonymous. Ayurvedic Pharmacopoeia of India, Part-1, Vol-2. New Delhi: Govt. of India, Ministry of Health of Family Welfare; 2004. p.20.
- ⁸⁴Bapalal G Vaidya. Nighantuadarsa, Vol.1. 1 st ed. Varanasi: Chaukhamba Bharati Academy; 2007.p.315.
- ⁸⁵Caraka, Carakasamhita (Charaka chandrika Hindi commentary), Tripathi B. (ed), Vol. 1, Sutrasthana 4/(6)9, 4(13)11, 4(33)15 Reprint 2008. Varanasi: Chaukhamba Surbharati prakashana; p. 78,82,89
- ⁸⁶Caraka, Carakasamhita (Charaka chandrika Hindi commentary), Tripathi B. (ed), Vol. 1, Vimanasthana 8/142, Reprint 2008. Varanasi: Chaukhamba Surbharati prakashana; p. 781-782

- ⁸⁷Sushruta, Sushruta samhita (Sushrutvimarshini Hindi commentary); Sharma A R (ed), Vol. 1, Sutrasthana 38/48, 38/54, 42/18 Reprint 2010. Varanasi: Chaukhamba Surbharati prakashana;p.301-302,332
- ⁸⁸Vagbhata, Ashtanga Hridayam (Nirmala Hindi commentary); Tripathi B (ed),Sutrasthana 15/40 Reprint 2009. Delhi: Chaukhamba Sanskrit pratishthan;p.202
- ⁸⁹Dhanvantari nighantu, Sharma P V , Sharma G P (ed), Chandanadi varga, Shloka 128-129,Reprint 2008 Varanasi: Chaukhamba Orientalia; p. 114
- ⁹⁰Sodhala nighnatu, Pande G, Dwivedi R R (ed), Chandanadi varga, Shloka 460-461,1 st edition 2009, Varanasi: Chaukhamba Krishnadas academy; p. 86
- ⁹¹ Prasad G P, Shadarasa nighantu, Sastry P S (ed), Katudravayaskandha, Shloka 2, 1st edition 2009, Varanasi: Chaukhamba sanskrit series office; p. 83
- ⁹²Hridayadeepak nighantu, Sharma P V (ed), Kaphavataghnava, Shloka 87, 1st edition 1977, Varanasi: Chaukhamba Amarabharati prakashan; P. 39
- ⁹³Madanapala nighantu, Sastry J L N (ed), Abhayadivarga, Shloka 280-281, 1st edition 2010, Varanasi: Chaukhamba Orientalia; p. 233-235
- ⁹⁴Kaiyadev nighantu, Sharma P V , Sharma G P (ed), Oshadhivarga, Shloka 494-500 , TailavargaShloka 324 1st edition 1979, Varanasi: Chaukhamba Orientalia; P. 377-378
- ⁹⁵Bhavaprakasha nighantu (English translation with commentary), Sitaram B (ed), Haritakyadivarga, Shloka 228-232, 1st edition 2006, Varanasi: Chaukhamba Orientalia; p. 184-185
- ⁹⁶Raj nighantu (Dravyagunaprakashika Hindi commentary), Tripathi I (ed), Aamradivarga, Shloka 2, 66-69, 5th edition 2010, Varanasi: Chaukhamba Krishnadas academy; p. 340, 352-353
- ⁹⁷ Sharma P V , Priya nighantu, Haritakyadi varga, Shloka 53, edition 2004, Varanasi: Chaukhamba Surbharati prakashna; P. 14-15
- ⁹⁸ Vaidya B, Nighantuaadarsha, Bhallatakadi varga, 1st edition 1985 , Varanasi: Chaukhamba Bharati academy; p. 314-323
- ⁹⁹Gunaratnamala, Pandey k p , Singh A N (ed), Haritakyadi varga, 1st edition 2006, Varanasi: Chaukhamba Sanskrit bhavan; p. 80-82
- ¹⁰⁰Retrieved from <http://plants.usda.gov/java/ClassificationServlet?source=profile&symbol=SEMEC2&display=31>
- ¹⁰¹ The Indian material medica- Nadkarni, 1904
- ¹⁰²Ilanchezian R, Roshy Joseph C, Rabinarayan Acharya. Importance of media in shodhana (purification/Processing) of poisonous herbal drugs. Ancient Science of Life 2010; 30(2):27-30.
- ¹⁰³Yadavji Trikamji. Rasamritham. DamodarJoshi, Prabhakara Rao G editors. 1 sted. Varanasi: Chawkambha Sanskrit Bhawan; 1998. p.280. [P.147 (A.F.I., Vol.I, Part B, Appendices)]
- ¹⁰⁴Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy; 2004. Sutrasthana 46/249.p.232.
- ¹⁰⁵Susruta, Susruta Samhita, Yadavji Trikamji, editors. 1 sted. Varanasi: Chaukhamba Krishnadas Academy;2004. Uttarantra 34/3.p.665.