

A CRITICAL REVIEW ON BHALLATAKA

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ABSTRACT

“Drug is any substance or product that is used or intended to be used to modify or explore physiological systems or pathological status for the benefit of the recipient”. Ayurveda describes four basic factors, which are most essential for advocating proper treatment. Among these four factors *dravya* (drug) comes next to *bhishak* that is the second important thing to treat the diseases. The drug review is very much essential in Ayurveda. *Bhallataka* is mentioned as a *vishadravya* in schedule E (1) of Drug and Cosmetic Act. Knowing the detail about the drug is very much essential and helps in the further study. From medical history one can know about recognition of the continuity of medical thoughts. It tells us about the conceptions 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.

KEYWORDS: *Bhallataka*, *vishadravya*, *bhishak*.

DESCRIPTION

Historical Review of Drug

From medical history one can know about recognition of the continuity of medical thoughts. It tells us about the conceptions 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.

Vedic Period

In Vedic period it is important to note that number of herbs gradually increased from *Rig-Veda* to *Atharva Veda*. This very fact indicate towards metamorphosis of a system of medicine which was earlier based on hymns (*mantras*) later accepted more and more interventions in herbal drugs. This trend continued in *Samhita* period and reached its almn during *nighantus* period.^[1] In Vedic period, *Bhallataka* tree was quoted in *Dharma sutras*.^[2]

Samhita Period**Brihatrayee****In Charaka Samhita**

- 6 formulations are mentioned for skin disease, in that *Bhallataka* is mentioned in 5th formulation.^[3]

- Bhallataka phala* and *puspha* was mentioned under Aetiology of *Agantuja shotha* (Exogenous swelling).^[4]
- Bhallataka* was mentioned under *Phala varga*.^[5]
- Bhallataka taila* recipe was mentioned.^[6]
- Under recepies of *Madanaphala* in the form of *choorna*, it is mentioned to extract juice of *Madanaphala* according to the procedure used for extracting the essence of *bhallataka* mentioned in *chikitsa sthana*.^[7]
- Collection and purification methods of *Bhallataka* are told.^[8]
- Recipes like *Bhallathaka ksheera*, *Bhallataka khaudra*, *Bhallthaka taila*, *Bhallataka sarpis*, *Guda Bhallataka*, *Bhallataka lavana*, *Bhallataka tarpana* and *Bhallataka yusa-palala-sakthu* are explained.^[9,10]
- Bhallataka guna* and *karma* is separately mentioned.^[11]

In Sushruta Samhitha

- Bhallataka* was mentioned under *Nyagrodhadi gana* and *Mustadi gana*.^[12]
- It is mentioned to construct *sootikaagaram* with wood of *Bhallataka/Bilva/Nyagrodha/Tinthuka*.^[13]

- One preparation with *Bhallataka taila* is told for application on wounds and another preparation of *Bhallataka taila* mixed with latex of *snuhi* is also told for application on wounds.^[14,15]
- *Bhallataka* flowers are told as one of the ingredient for preparation of *anjana*.^[16]
- Decoction prepared out of *kapitha*, *suvaha*, *bimbi* and *nadi Bhallataka* is used for treatment of *seethapoothana*.^[17]

In Astanga Hridayam

- *Guna* and *karma* of *Bhallataka* fruit and nut is told.^[18]
- In *vishama jwara chikitsa Bhallataka* along with *guda* recipe is mentioned.^[19]
- In *uttara sthana*, it has been told to prepare fresh juice of *Bhallataka* just like *madanaphala*.^[20]
- *Bhallataka* is told as *doopanadravya*.^[21]

Chakradatta

- In *Rasayana adhikara*, a preparation known as *Amrutha Bhallatakam* is mentioned and in the same chapter *Bhallataka* is also old as one ingredient in *Shiva gutika* preparation.^[22]
- In *vrishya adhikara*, a preparation known as *Bhallatakadi lepa* has been explained.^[23]
- In *Gulma adhikara*, *Bhallataka ghritham* has been explained for treatment of *kapha gulma* and *raktha gulma*.^[24]
- In *kusta chikitsa*, *Bhallatakadi lepa prayoga* has been explained.^[25]
- In *Nadi vrana chikitsa*, *Bhallataka Taila prayogam* has been mentioned.^[26]
- In *shotha chikitsa*, *Bhallataka shotha hara lepa* has been explained.^[27]

- In *urusthamba chikitsa*, *Bhallatakadi kwatha* has been explained.^[28]

Adhunik Kala

- **Ayurveda Pharmacopeia of India**-Botanical source of *Bhallataka* is mentioned as *Semicarpus anacardium* Linn.^[38]
- **Text Book of Dravya Guna**-Description of *Semicarpus anacardium* Linn. is mentioned.^[39]
- **Indian Medicinal Plants by Arya vaidyasala**-Botanical source of *Bhallataka* is mentioned as *Semicarpus anacardium* Linn.^[40]
- **Classical Uses of Medicinal Plants**- *Prayoga karma* of *Bhallataka* in different diseases is mentioned.^[41]
- **Text Book Of Dravyaguna**-Detailed description of *Semicarpus anacardium* Linn is mentioned.^[42]
- **Indian Medicinal Plants**-*Semicarpus anacardium* Linn is mentioned under *Anacardiaceae* family.^[43]

Nirukthi of Bhallataka^[44]

“*Bhallaivathathy, taikshyanth, athasatyagamanae*”

Bhallataka (*Semicarpus anacardium* Linn) is a tree with irritant sap of the bark (*Bhalli*).

Botanical Name: *Semicarpus anacardium* Linn.

Family Name: *Anacardiaceae*

Synonyms

In classics many synonyms are mentioned for *Bhallataka*, among them some are indicative of its *swaroopa* like *taila beeja*, some shows its *gunakarma* like *dahana*, *vatari*, *shophabeejaka* etc. The detail about these according to different *acharyas* has been tabulated in table no 1.

Table 1: Synonyms of *Bhallataka* as per different *Acharyas*.

Synonyms	C.Sa ^[45]	Ad.Ni ^[46]	Mp.Ni ^[47]	Kd.Ni ^[48]	R.Ni ^[49]	Bp.Ni ^[50]
<i>Bhallataka</i>	+	+	+	+	+	+
<i>Veeravriksha</i>	-	+	+	-	-	+
<i>Aarushkara</i>	-	+	+	+	+	+
<i>Agnimukhi</i>	-	+	+	+	-	+
<i>Shophahetu</i>	-	+	-	-	-	-
<i>Shaila beeja</i>	-	-	-	-	-	-
<i>Taila beeja</i>	-	-	-	-	+	-
<i>Prithakbeeja</i>	-	-	-	-	+	-
<i>Dhanurbeeja</i>	-	-	-	-	+	-
<i>Veerataru</i>	-	-	-	+	+	-
<i>Nabovalli</i>	-	-	+	-	+	-
<i>Ruksha</i>	-	-	+	-	-	-
<i>Tapana</i>	-	-	+	-	+	-
<i>Dhanusha</i>	-	-	+	-	-	-
<i>Arushka</i>	-	-	-	+	-	+
<i>Agnika</i>	-	-	-	-	+	+
<i>Bhalli</i>	-	-	-	+	-	+
<i>Shophakruth</i>	-	-	-	-	-	+
<i>Anala</i>	-	-	-	+	+	-
<i>Vranakrith</i>	-	-	-	+	-	-

<i>Dahana</i>	-	-	-	-	+	-
<i>Krimighna</i>	-	-	-	-	+	-
<i>Vatari</i>	-	-	-	-	+	-
<i>Sphotabeejaka</i>	-	-	-	+	+	-
<i>Bhallata</i>	-	-	-	-	+	-
<i>Vijayatapah</i>	-	-	-	-	+	-
<i>Vahni</i>	-	-	-	-	+	-
<i>Dhanu</i>	-	-	-	+	-	-
<i>Ranchaka</i>	-	-	-	-	-	-
<i>Raktaphala</i>	-	-	-	-	-	-
<i>Bhutanashana</i>	-	-	-	-	-	-
<i>Bhallataki</i>	-	-	-	-	-	-
<i>Antasatva</i>	-	-	-	-	-	-

Vernacular name: Vernacular names play an important role in the identification of the drug in an easy way. The

details about vernacular names are tabulated in table no 2.

Table 2: Vernacular Names of *Bhallataka*.

Binomial Nomenclature	<i>Semicarpus anacardium</i> Linn
Sanskrit	<i>Bhallataka Arushkara</i>
English	Marking nut tree, oriental cashew
Hindi	Bhela, bhilava
Kannada	Geru karigeri
Telugu	Jeedi, Bhallatam
Malayalam	Ceru, Alakkuceru
Tamil	Senkottai

In classics, *Bhallataka* is mentioned in many of the *ganas/ vargas*. Among them some are indicative of its *gunakarma* like *deepaniya* etc. The detail about these

according to different *acharyas* has been tabulated in table no 3.

Table 3: *Varga/ganas* in which *Bhallataka* is mentioned.

<i>Vargas/Ganas</i>	C.Sa ^[45]	Ad.Ni ^[46]	Mp.Ni ^[47]	Kd.Ni ^[48]	R.Ni ^[49]	Bp.Ni ^[50]
<i>Bhallatakadi</i>	-	+	-	-	-	-
<i>Hareetakyadi</i>	-	-	+	-	-	+
<i>Chandanaadi</i>	-	-	-	-	-	-
<i>Oshadi</i>	-	-	-	+	-	-
<i>Ashtavarga</i>	-	-	-	-	-	-
<i>Amradi</i>	-	-	-	-	+	-
<i>Kushtagna</i>	+	-	-	-	-	-
<i>Deepaniya</i>	+	-	-	-	-	-
<i>Mutrasangrahaniya</i>	+	-	-	-	-	-
<i>Bhedaniya</i>	+	-	-	-	-	-
<i>Nyagrodadi</i>	-	-	-	-	-	-
<i>Mustadi</i>	-	-	-	-	-	-

Modern classification

Table 4: Taxonomical positions of *Bhallataka*.

Kingdom	Plantae
Sub-kingdom	Tracheobionta
Super-division	Spermatophyta
Division	Magnoliopsida
Sub-class	Rosidae
Order	Sapindales
Family	Anacardiaceae
Genus	<i>Semicarpus</i>
Species	<i>Anacardium</i>
Scientific name	<i>Semicarpus anacardium</i>

Anacardiaceae Family Characters^[51]

Trees or shrubs usually with oleo-resinous often acrid juice. Leaves alternate, simple or compound, estipulate. Flowers small, regular, 1-sexual, polygamous, or 2-sexual, usually paniced. Calyx 3-5 partite, sometimes accrescent. Disk flat, annular, entire or lobed, rarely obsolete. Stamens equal in number to the petals, rarely more, inserted under the disk, filaments usually sub-acute. Anthers 2 celled basi or dorsiflexed. Ovary superior, 1 or 2-6 celled, rudimentary or 2-3 fit in the male, ovule solitary in each cell, pendulous from the top or side of the cell or from an ascending basal funicle. Fruit superior, usually a 1-5 celled, 1-5 seeded drupes, stone, sometimes dehiscent, seed exalbuminous, embryo straight or curved, cotyledons Plano convex, radicle short- genera 60. Species 500-chiefly tropical, but also Mediterranean, East Asia, America.

Distribution^[52]

It is found through the hotter parts of India and also in Himalayas from Sirmur to Sikkim ascending in the outer hills up to 2,500 feet, Assam to 1100meters height from sea level found in Andhra Pradesh, Bihar, Kerala and Uttar Pradesh. Sub Himalayan tract from the basis eastwards, ascending in the outer hills up to 2,500 feet, Assam, Khasia hills, Chittagong Central India and the Western peninsula Eastern Archipelago, North Archipelago.

Leaves^[53]

Leaves 18-60 by 10-30 cm, obovate- oblong, rounded at the apex, cariceous, glabrous above a shy grey or buff and more or less pubescent beneath and with cartilaginous margins, base rounded, cordate or cuneate, sometimes shortly auricled, main nerves 15-25 pairs making large angle with the costa, sometimes nearly horizontal, prominent on both surfaces, petioles 1.2-3.8cm long.

Flowers^[53]

Greenish white, sub-sessile, fascicled in pubescent panicles which are equal to or shorter than the leaves, the female panicles shorter than the male, pedicels short, bracts lanceolate, pilose, calyx-segments about 1mm long, pilose outside. Petals 4- 5mm. long by 2mm. broad, ovate ovary in the male flowers rudimentary, hairy in the female subglobose, densely pilose crowned with the 3 styles. Drupes 2.5cm, long, obliquely ovoid or oblong, smooth and shining, black when ripe, seated on a fleshy receptacle or hypo carp about 2cm long, smooth and yellow when ripe.

Fruits^[53]

Fruit is acrid, hot, sweetish, digestible, aphrodisiac and anti-helminthic.

Flowering and Fruiting Time^[53]

December, January, February, June.

Chemical Composition^[53]

Fruit contains anacardic acid, cardol, catechol, anacardol and fixed oil, some carpol and Bhilawanol. Fruit Containing Oil which is blistering and yield is 32%, soluble in ether and it turns black by air contact. Fruits kernel contains a little quantity of sweet oil.

Grahya Lakshanas Of Bhallataka^[54]

भल्लातकानि पक्वानि नीरक्षिप्तानि यानि तु।

निमज्जन्ति हि तान्येव ग्राह्याणीह विशुद्धये॥

According to text the *Grahya*, acceptable variety of *Bhallataka* should bear following properties,

- That which sinks in the water, should be selected. It might be due to presence of oil in the fruit may have more specific gravity than water

Rasapanchaka and Doshagnata: Knowing the *rasapanchaka* and *doshagnata* helps in advising the drug to the particular clinical conditions based on involvement of dosha-dhatu etc. which are tabulated in table no 5.

Table 5: Rasapanchaka and Doshagnata of Bhallataka.

<i>Rasapanchaka/Doshagnata</i>	Parameters	Ad.Ni ^[46]	Mp.Ni ^[47]	Kd.Ni ^[48]	R.Ni ^[49]
<i>Rasa</i>	<i>Madhura</i>	+	+	+	+
	<i>Kashaya</i>	+	+	+	-
	<i>Katu</i>	-	-	-	-
	<i>Tikta</i>	-	-	+	+
<i>Guna</i>	<i>Laghu</i>	-	+	+	-
	<i>Ruksha</i>	-	+	+	-
<i>Veerya</i>	<i>Ushna</i>	+	+	+	+
<i>Vipaka</i>	<i>Katu</i>	+	-	+	+
	<i>Madhura</i>	-	+	-	-
<i>Doshagnata</i>	<i>V-K Hara</i>	+	-	-	-
	<i>V-R Hara</i>	-	-	+	-

Table 6: Rogagnata of Bhallataka.

Rogagnata	Ad.Ni ^[46]	Mp.Ni ^[47]	Kd.Ni ^[48]	R.Ni ^[49]
Kriminashana	+	+	-	+
Gulma	+	+	-	-
Arshas	+	+	-	-
Grahani	+	+	-	-
Kushta	+	+	-	-
Vatakapha roga	+	+	+	-
Udara	+	+	-	-
Anaha	+	+	-	+
Meha	+	-	-	+
Shwasa	+	-	-	+
Vibhanda	+	-	-	+
Shoola	+	-	-	+
Jataragnivardhana	+	-	-	+
Admana	+	-	-	+
Aarushkara	-	-	-	-
Gandamala	-	-	-	-
Vridi	-	-	-	-
Shonitavyadhi	-	-	-	-
Agnisadana	-	+	-	-
Jwara	-	+	-	-
Shwittra	-	+	-	-
Vrana	-	+	-	-
Shukrajanana	-	+	+	-
Raktapittahara	-	-	+	-

KARMA: Rasayana

USEFUL PARTS: Fruits and flowers

DOSAGE: 1.2 g of the drug in Ksheerapaka form (According to API).

DISCUSSION & CONCLUSION

- *Bhallataka* is an important drug indicated in *gulma*, *Arshas*, *kushta*, *jwara*, *raktapitta*, *admana*, *gandamala* etc.
- *Bhallataka* should be used after proper *shodhana*.

REFERENCES

1. Dr.J. L. N. Shastry. DravyaGunaVijnana. (Study of Essential Medicinal plants in Ayurveda) 2nd Edition. Varanasi: Chaukhamba Orientalia, 2005; II: 135. Ibid.136.
2. Agnivesha. Charaka Samhitha. Text with English translation and critical exposition based on Cakrapani Dattas Ayurveda dipika, by R.K Sharma, Bhagwan Dash. Varanasi chaukhamba Sanskrit series office, volume-3, chikitsa sthana, 1st chapter, 13th verse, 2015; 34.
3. Ibid.vol 1, sutra sthana, 18th chapter 4th verse, 336.
4. Ibid. vol 1, sutrasthana, 27th chapter, 165th verse, 517.
5. Ibid. vol 2, vimana sthana, 7th chapter, 23-24 verses, 209.
6. Ibid vol6, kalpasthana, 1st chapter, 20th verse, 448.
7. Ibidvol 3, chikitsa sthana, 1st chapter, 13th verse, 35.
8. Agnivesha. Charaka Samhitha. Text with English translation and critical exposition based on CakrapaniDattas Ayurveda dipika, by R.K Sharma, Bhagwan Dash. Varanasi chaukhamba Sanskrit series office; volume-3, chikitsa sthana, 1st chapter, 16th verse, 2015; 37.
9. Ibid .vol 3, chikitsa sthana, 1st chapter, 15th verse, 37.
10. Ibid .vol 3, chikitsa sthana, 1st chapter, 17-19 verses, 38.
11. Sushruta. SushrutaSamhitha. with English translation of text and Dalhanascommentary along with critical notes, by P.V Sharma. Varanasi: Chaukhamba Visva Bharathi central publishers and distributors; Volume-1, sutra sthana, 38th chapter, 2005; 48-55: 362-363, 568.
12. Ibid. Volume-2, shareera sthana, 4th chapter, 5th verse, 695.
13. Ibid. Volume-2, chikitsasthana, 1st chapter, 90-93 verses, 695.
14. Ibid. Volume-2, chikitsasthana, 1st chapter, 106th verse, 695.
15. Ibid. Volume-2, kalpa sthana, 1st chapter, 71st verse, 720.
16. Ibid. Volume-3, uttara tantra, 34th chapter, 3rd verse, 297.
17. Vagbhata. Astanga Hridayam, Text with English translation, notes, appendix Indices. Krishnadas Ayurveda series: 27, by Prof. K.R Srikanthamurthy. Varanasi: Chaukhamba krishnadas academy;

- Volume-1, sutra sthana, 6th chapter, 134th verse, 2006; 100.
18. Ibid.vol 2,chikitsa sthana,1st chapter,154th verse, 200.
 19. Ibid.vol 2,kalpa sthana,1st chapter,15th verse, 530.
 20. Ibid.vol 3,uttara sthana,3rd chapter,47th verse, 586.
 21. Chakradatta.Text with English translation, A treatise on principles andpractice of Ayurveda medicine, kashi Ayurveda series no: 17, by PV Sharma. Varanasi: chaukhamba publishers; 66th chapter, 2002; 196-201; 594.
 22. Ibid.67th chapter, 54th verse, 600.
 23. Ibid.30th chapter, 97th verse, 277.
 24. Ibid.50th chapter, 51-52verses, 396.
 25. Ibid.45th chapter, 19th verses, 374.
 26. Ibid.39th chapter, 55th verse, 335.
 27. Chakradatta. Text with English translation, A treatise on principles and practice of Ayurveda medicine, kashi Ayurveda series no: 17, by PV Sharma. Varanasi: chaukhamba publishers; 24th chapter, 4th verse, 2002; 224.
 28. GaVaidhyaBapalal.AdarshaNighantu. V. Ayurveda series, Varanasi:Chaukhamba Bharathi Academy publication. Volume-1, Bhallatakadi varga, 2005; 314.
 29. Gupta viracharana Raja Vaidhya .sachitravano ushadadarpana, kavyateertaka vibushanakritha, therapeutics, actions and uses in English, BanarasAyurveda series, Varanasi: chaukhamba Sanskrit series office, 1998. 512.
 30. Sharma PV, Priya Nighantu, Swarachitapadmakavya Hindi vyakyayasamvalitha, Varanasi: chaukhamba surabharatiprakashan publication; hareetakyadi varga, 53rd verse, 275.
 31. MadanapalaNripa.Madanapanighantu.Mumbai:Khema raja srikrishnadasa Prakasana. hareetakyadi varga, 80th verse, 2004; 51.
 32. Shodhala.Shodhalanighantu.Text with English-Hindi commentaries, by Dr.Gyanendra pandy, Editor Prof. KR Dwivedi, foreword by Prof. MS Baghel. krishnadas Ayurveda series-130, Varanasi: Chaukhamba krishandas academy; chandanadi varga, 2000; 460-461: 538.
 33. Sharma Priyamvatha, Sharma guru Prasad. Kaiyadevanighantu. Varanasi: Chaukhamba Orientalia; oshadhivarga, 1979; 464: 60.
 34. Vaishavarya Shaligrama. ShaligramaNighantu. ArthatBrihatnighantu Ratnakara Antargatho saptamaastamabaga, Mumbai: srikrishnadsaprakashana; ashta varga, 2003; 47: 189.
 35. Tripati Indradeva. Raja Nighantu, Dravyaguna prakashika Hindivyakyopethana, krishnadasa Ayurveda series no:5, 3rdedition,Varanasi: Chaukhamba krishnadas academy, Amradi varga, 2003; 66-69: 353.
 36. Bhavaprakasha. Bhavaprakasha Nighantu. Indian material medica, by Prof.Krishna chand Chunekar, forwarded by Dr. Ganga sahayapandya, Varanasi: Chaukhamba Bharathi Academy; hareetakyadivarga, 1998; 228-232: 196.
 37. Anonymous. The Ayurvedic pharmacopoeia of India, Government of India,Ministry of health and family welfare, Department AYUSH,New Delhi: the controller of publications civil lines, 2004; 1(2): 408.
 38. PandeyGyanendra. DravyagunaVijnana.Thrid edition, Varanasi: Chaukhambakrishnadas academy, 2001; 1: 343-355.
 39. Anonymous. Aryavaidhyasala, Indian medicinal plants, Hyderabad: Universities press private Ltd, 2011; 5: 98-103.
 40. Sharma P.V.classical uses of medicinal plants. Varanasi: Chaukhamba visvabharathi Publication, 2004; 273.
 41. Nishteswar K. Textbook of Dravyaguna. Varanasi: Chaukhamba surabharathi prakashan, 2001; 782.
 42. Kirtikar KR and Basu BD. Indian medicinal plants. Dehradun, Uttaranchal: International book distributors book sellers and publishers; Text, 2005; 1: 616-618.
 43. Sharma P.V. Namarupajnanam. characterization of medicinal plants. Varanasi: Chaukhamba VisvaBharathi, 2003; 144.
 44. Agnivesha.CharakaSamhitha. Text with English translation and critical exposition based on CakrapaniDattas Ayurveda dipika, by R.K Sharma, Bhagwan Dash. Varanasi chaukhamba Sanskrit series office; volume-3,chikitsa sthana,1st chapter, 2015; 13: 34.
 45. GaVaidhyaBapalal. AdarshaNighantu. V. Ayurveda series, Varanasi: Chaukhamba Bharathi Academy publication. Volume-1, Bhallatakadivarga, 2005; 314.
 46. Madanapala Nripa. Madanapananighantu. Mumbai: Khema raja srikrishnadasa Prakasana; hareetakyadi varga, 80th, 2004; 51.
 47. Sharma Priyamvatha,Sharma guru Prasad. Kaiyadevanighantu. Varanasi: Chaukhamba Orientalia. oshadhivarga, 1979; 465: 60.
 48. TripatiIndradeva. Raja Nighantu, Dravyagunaprakashika Hindi vyakyopethana, krishnadasa Ayurveda series no:5, 3rdedition, Varanasi: Chaukhamba krishnadas academy, 2003; 66-67: 352.
 49. Bhavaprakasha.BhavaprakashaNighantu. Indian material medica, by Prof. Krishna chand Chunekar, forwarded by Dr. Ganga sahayapandya, Varanasi: Chaukhamba Bharathi Academy; hareetakyadivarga, 1998; 228: 196.
 50. Kirtikar KR and Basu BD. Indian medicinal plants.Dehradun, Uttaranchal: International book distributors book sellers and publishers, 2005; 1: 616-618.
 51. PandeyGyanendra. Dravyagunavijnanana. Chaukhambakrishnadas academy, 2001; 1: 343-344.
 52. Krihikar KR and BasuBD.Indian medicinal plants. Dehradun, Uttaanchal: International book distributors book sellers and publishers, 2005; 1: 616-618.

53. Pranacharya Sadananda Sharma .Rasa Tarangini. Hindi translation, edited by Pandit Kashinath Shastri, 11thEdn, reprint. Varanasi: Motilalbanar asidasa Publication, 2004; 473: 734.