



REVIEW ARTICLE ON MESHASHRUNGI- A CONTROVERSIAL DRUG

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Abstract

Meshashrungi (*Gymnema sylvestre* (Retz.) R.Br. ex Sm. is wellknown as gurmar in hindi for its sugar destroying property. It is mentioned from samhithas to nighantus with many indications like Prameha, Visha, Kasa, Svasa, Krimi, Kushta, Vrana. *Gymnema sylvestre* (Retz.) R.Br. ex Sm. is used ethnobotanically as remedy in snake bite, for reducing glycosuria and number of eye diseases. Due to various synonyms mentioned for Meshashrungi like Ajashrungi, Vishanika, Mesha, Vishani, Yugmaphala e.t.c. it creates controversy about the original botanical source. Because of the increasing demand of Meshashrungi in treating various diseases, particularly Diabetes mellitus, it is adulterated with other available drugs. *Pergularia daemia* (Forsskal) Chiov, *Vallaris Solanaceae* (Roth) kunize, *Cryptolepsis buchanani* Roem. & Schult, *Aristolochia bracteolata* Ham. and *Dolichandrone falcata* (Dc.). Seemann. are some of the sources used as Meshashrungi in different parts of india. The article is an attempt to review the morphological features of plant taken as Meshashrungi along with the review of literature. After reviewing various available references and description it can be concluded that *Gymnema sylvestre* (Retz.) R.Br. ex Sm. is Meshashrungi.

Keywords: Meshashrungi, *Gymnema sylvestre* (Retz.) R.Br. ex Sm., Contraversy, Literature review, Gymnemic acid

Introduction

Gymnema sylvestre (Retz.) R.Br. ex Sm. belongs to apocynaceae is a large woody climber with branches. It is distributed throughout Sri Lanka, Malaysia, Australia, Indonesia, Japan, Vietnam, Tropical Africa, and the southwestern areas of China. It can be found in the tropical woods of central and southern India, as well as the western ghats. It is extensively used in controlling blood sugar levels of Diabetic patients. The herb accounts for its sweet inactivation property by the presence of triterpene saponins known as gymnemic acids, gymnemasaponins, and gurmardin. The mode of action of Gymnemic acids is through stimulation in insulin secretion from pancreas. It also exerts a similar effect by delaying the glucose absorption in the blood. Along with anti-diabetic property, it also has anti-oxidant, anti-inflammatory, anti-viral and anti-cancer activity. Meshashrunji is mentioned from samhitas to nighantus with many indications in various forms. In different parts of india, Different sources are used as a source of Meshashrunji because of the confusion caused by synonyms, ganas in which the drug is mentioned, similarity of the description of the drugs. This creates controversy. The consistency, dependability, and homogeneity of Ayurvedic products are being hampered by controversy. So, it is important to identify the right source from critical literature review.

Objectives and Methodology:

- Review of literature with a focus on Samhitas, Nighantus and various ayurvedic literatures.
- Review on Morphology and Ethnobotanical uses.
- Critical analysis on the review to conclude the identity.

Meshashrunji in Samhitas

Caraka Samhita:¹

Caraka referenced Meshashrunji in Jvara Cikitsa while mentioning Agurvadya taila for the cure of Sita jvara.

Susrutha Samhita:²

Meshashrunji is referred as karkatashrunji by Dalhana in Sonithavarnaniya adhyaya, of Sutra sthana and Sadyovranacikitsitam, Kushtacikitsitam of Cikitsasthana, Atisarapratishedha adhyayah of Uttaratantra. Meshashrunji is mentioned as karkatashrunji in Salasaradi Gana, Varunadi Gana. Meshashrunji is cited as Ingudibheda by Dalhana. Meshashrunji is mentioned in sirovirecana and vata samsamana varga. Vishanika is commented as Meshashrunji in virecana dravyas.

TABLE: 1. Meshashrungi in Susrutha Samhitha:²

S.No.	Form Of Drug/ Mahakasaya	Part Used/Remarks	Indication	References
1	Taila For Intake, Kalka for Pradeha	Meshashrungi kvatha	Vata Rakta	S.S.Ci-5/7
2	Anjanam	Meshashrungi Niryasa/Puspa	Poisoned Collyrium.	S.S.Ka-1/70-71
3	Anti-Poisonous Formulation /Agada		All types of Frog bite	S. S. Ka-8/50
4	Ghrta		Anyatovata And Marutaparyaya	S. S. U-9/20
5	Ghrta	Meshavisananama cited as Meshashrungi Phala	Araga Timira (Partial Blindness)	S.S.U-17/31
6	Anjanam	Meshashrungi Puspa	All types of Timira.	S.S.U-17/45
7	Anjanam	Meshashrungi Puspa	For Clear Vision	S.S.U-17/96
8	Bhadrodaya Anjanam.	Meshashrungi Puspa	Anjanartah for Kings	S.S.U-18/94
9	Sirovirecana Dravya	Bark of Meshashrungi	Kapha Siroroga	S.S.U-26/20
10	Meshashrungi Rasa	Bark Paste	Udara Amaya	S.S.U-40/84

TABLE:2. Meshashrungi in Astanga Hridayam:³

S.No.	Form Of Drug/ Mahakasaya	Part Used/Remarks	Indication	References
1	Anjanam	A/c to Ayurvedarasayanam commentary, Puspa niryasa of Kapittha, Meshashrungi and Bhallataka		A.H. Su-7/26
4	Snehapana	Meshashrungi	Kustha	A.H. Ci-19/2
6	Curna	Srotojanjana is mixed with flowers of Meshashrungi and Yastyahva made into Powder	Best In Sannipatika Timira	A.H. U-13/80

TABLE:3. Meshashrungi in Astanga Sangraha:⁴

S.No	Form Of Drug/ Mahakasaya	Part Used/Remarks	Indication	References
1	Dhumapana/ Pana	Meshashrungi Flowers	Poisonous smoke inhalation	A.S. Su-8/11
2	Anjana	Meshashrungi Flowers	Poisoned Collyrium	A.S. Su-8/17
6	Snehapana	Meshashrungi	Vata predominant Kustha	A.S.Ci-21/2
8	Warm poultice	Panca Payasanupakalpa with paste of Meshashrungi	Vata Sonita	A.S.Ci-24/7
9	Sauviraka	Meshashrungi Kasaya	For Srestha Virecana	A.S. Ka-2/46
10	Taila	Meshashrungi Kalka	Vrana Ropana	A.S.U-31/52
11	Anjana	Meshashrungi Flowers	Netroparodha, Svayathu, Kandu during Sleep	A.S.U-44/68
12	Sura	Sarpadamstra is cited for Meshashrungi	Vata Vikaras	A.S.U-49/202

Description of Meshashrungi in Nighantus

Abhidhana Manjari: Meshashrungi and Meshashrungi Visesa are mentioned in Asanadi varga of madanadi gana varga. Meshashrungi is mentioned with synonyms Ajashrungi, Bastashrungi, Agnibhesaja, Visanika, Citrasena, Payahphala, Puspaksira, Chagashrungi, Meshavisanika, Nandyavartaphala, Tiktadugdha⁵.

Abhidana Ratnamala:Here, Meshashrungi is cited as Ajashrungi with synonyms Ajashrungi, Visa, Kali, Caksusya, Visanika, Vartika, Bahushrungika, Daksinavarta, Tiktagandha⁶.

Sausrutha Nighantu:In Sausrutha nighantu, Meshashrungi is included with synonyms Medhashrungi, Yadavrksa, Grahastatha, Caksurbahulasrungi in Salasaradi gana. In Vallipancamula, Ajashrungi is used as it is the synonym of Meshashrungi. The term Meshashrungi is referred with synonyms Ajasrungi, Vastashrungi, Tiktadugdha, Aksibhesaja, Visanika, Meshashrungi, Satruseni in Variunadi gana⁷.

Paryaya Ratnamala:Meshashrungi is cited with synonyms Meshashrungi, Nandivrksa, Meshavisanika, Medhrashrungi, Grahadruma, Caksurbahalacaksusca⁸.

Madanadi Nighantu:Bastashrungi, Meshashrungi, Padavrksa, Ajashrunghika, Avivrksa, Vanassrnga, Caksusya, Bahalangaka are the synonyms mentioned in Sodasa gana for Meshashrungi⁹.

Dhanvantari Nighantu:In Guducyadi varga, Ajashrungi is mentioned with synonyms Ajashrungi, Meshashrungi, Sarpadamstra, Vartika. Second type of Meshashrungi is Daksinavarta¹⁰.

Sodhala Nighantu: Meshashrungi is referred as Ajashrungi with synonyms Meshashrungi, Sarpadamstra, Vartika,

Tiktadugdha, Bhaisajya, Putratreni, Visanika. Another variety is Daksinavarta mentioned as Vishanika¹¹.

Nighantu Sesa: Meshashrungi, Ajashrungi, Vartika, Sarpadamstrika are the synonyms of Meshashrungi given in Gulma khanda. Daksinavarta Meshashrungi is quoted as another variety¹².

Hridayadipika Nighantu: Meshashrungi is cited in Ekapada Varga¹³.

Madanapala Nighantu: Meshashrungi is given in Abhayadi varga with synonyms Meshavalli, Sarpadamstra, Ajashrungika. The second variety is Daksinavarta with vrschikali, vishanika¹⁴.

Kaiyadeva Nighantu: Meshashrungi is mentioned with synonyms Srivṛksaka, Bahalangaka Meshashrungi, Bastashrungi, Shrungika, Padavṛksa, Caksusya, Avalkala, Abahalangaḥ, Nadi, Bahalacaksusa, Vṛscikali, Kurcaparni, Visanika, Sukranemi, Sarpadamstra, Medhravalli, Ghanasṛnga Vivartika, Mahaphala, Tiktadugdha, Ajashrungi, Netrausadhi, Aksibhesaja, Second variety is Daksinavarta with synonym Sapucchika¹⁵.

Bhavaprakasa Nighantu: Meshashrungi is mentioned in Guducyadi varga with synonyms Visani, Meshavalli, Ajashrungika¹⁶.

Sarasvati Nighantu: Meshashrungi is mentioned as Ajashrungi in Latavarga with synonyms Meshashrungi, BastaShrungi, Visanika, CakraSreni, Svetapuspi, Visani, Kubjaparnika¹⁷.

Raja Nighantu: Meshashrungi cited as Ajashrungi with synonyms Meshashrungi, Vartika, Sarpadamstrika, Caksusya, Tiktadugdha, PutraSreni, Visanika in Prabhadradi Varga¹⁸.

Saligrama Nighantu: Meshashrungi, Meshavalli, Caksu, Meshavisanika, Nandivṛksa, Caksurbahala, Visani, Ajashrungika, Visanika, Ajashrungi, CakraSreni, Ajagandhini, Maurvi, Vartika, Sarpadamstrika, Caksusya, Tiktadugdha, PutraShrungi, Aksibhesaja are the synonyms given for Meshashrungi in Guducyadi varga¹⁹.

Nighantu Adarsa: Meshashrungi is mentioned in Arkadi Varga with indications, availability and ethnobotanical uses²⁰.

Table.4: Vargas in which Meshashrungi is mentioned:

S.No	VARGA/GANA/ SKANDHA	Reference
1	Vatasamsamana Varga	Susruta Sutra Sthana -39/6-7
2	Sirovirecana Varga	Susruta Sutra Sthana -39/6-7
3	Asanadi Gana	Astanga Hrdayam Sutra Sthana -15/19
4	Varunadi Gana	Astanga Hrdayam Sutra Sthana -15/21
5	Asanadi Gana	Astanga Sangraha Sutra Sthana -16/11
6	Sirovirecana Gana	Astanga Sangraha Sutra Sthana -14/5
7	Kasaya Skandha	Astanga Sangraha Sutra Sthana -18/24
8	Asanadi Varga of Madanadi Gana Varga	Abhidhana Manjari
9	Asanadi Gana	Astanga Nighantu
10	Salasaradi Gana	Sausruta Nighantu
11	Guducyadi Varga	Dhanvantari Nighantu
12	Sodasa Gana	Madanadi Nighantu
13	Guducyadi Varga	Sodhala Nighantu
14	Gulma Kanda	Nighantu Sesa
16	Ekapada Varga	Hrdayadipaka Nighantu
17	Abhayadi Varga	Madanapala Nighantu
18	Osadhivarga, Vallipanca Mula, Pacana, Sthavaravisa	Kaiyadeva Nighantu
19	Guducyadi Varga	Bhavaprakasa Nighantu
20	Guducyadi Varga	Saligrama Nighantu

Table.5: Rasa Pancaka of Meshashrungi

MESHASHRUNGI							
S.No	Rasapancaka	M.Ni	D.Ni	M.P.Ni	K.Ni	B.P.Ni	R.Ni
A	Rasa						
1	Tikta	-	-	+	+	+	+
2	Kasaya	-	-	-	+	-	-
3	Katu	-	-	-	-	-	+
4	Madhura	-	+	-	-	-	-
B	Guna						
1	Ruksha	-	-	+	-	+	-
C	Virya						
1	Sita	-	+	-	-	-	-
2	Usna	+	-	-	-	-	-
D	Vipaka						
1	Katu	-	-	+	-	+	-
E	Karma						
1	Kaphapitta hara	+	-	+	+	-	-
2	Kaphavata hara	-	-	-	-	-	+
3	Kapha hara	-	-	-	-	+	-
MESHASHRUNGI PHALA							
A	Rasa						
1	Tikta	-	-	-	+	+	+
2	Katu	-	-	-	-	-	+
B	Virya						
1	Usna	-	-	-	-	-	+
C	Karma						
1	Kapha hara	-	-	-	+	+	-
2	Kaphavata hara	-	-	-	-	-	+

Table.6: Indications of Meshashrungi in Nighantu:

S.No	Indication	A.M	M.Ni	D.Ni	So.Ni	M.P.Ni	K.Ni	B.P.Ni	R.Ni	Sha.Ni
1	Svitra	+	-	-	-	-	-	-	-	-
2	Kustha	+	-	+	+	-	+	+	+	-
3	Krimi	+	-	-	-	-	+	+	+	+
4	Panduroga	+	-	-	-	-	-	-	-	-
5	Prameha	+	-	-	-	-	+	+	-	+
6	Medodosa	+	-	-	-	-	-	-	-	-
7	Timira	-	+	-	-	-	+	-	-	-
8	Vrana	-	+	-	-	+	+	+	-	+
9	Visa	-	+	+	-	-	+	+	+	+
10	Kasa	-	+	+	-	+	+	+	+	+
11	Sopha	-	-	+	-	-	-	-	+	-
12	Svasa	-	-	+	-	-	+	+	+	+
13	Hrdroga	-	-	+	-	-	-	-	+	+
14	Raktapitta	-	-	-	+	-	-	-	-	-
15	Aksisula	-	-	-	-	+	-	+	-	-
16	Arsa	-	-	-	-	-	-	-	+	-

Table.7: Formulations of Meshashrungi:

S.No	Formulation	Reference
1	Agurvadya Taila	Caraka Cikitsa Sthana -3/267
2	Tilvaka Sauviraka Kasaya	Caraka Kalpa Sthana - 9/7
3	SamSodhana Varti.	SuSruta Sutra Sthana -37/13
4	Tusodaka Kalpam	Susruta Sutra Sthana -44/41
5	Bhadrodaya Anjanam.	Susruta Uttara tantra -18/94
6	Agada	Astanga Sangraha Sutra Sthana -8/44
7	Sauviraka	Astanga Sangraha Kalpa Sthana -2/46
8	Yogaraja avaleha	Astanga Sangraha Cikitsa Sthana -21/12
9	Karanjadi lepa	Bhela Samhita Cikitsa Sthana -14/8 ²¹
10	Varunadigana Kvatha	Sarngadhara Samhita Madhyama Khanda - 2/127-130 ²²
11	Vimala Sodhana	Sarngadhara Samhita Madhyama Khanda - 11/57 ²³

12	Somaghrta	Vṛndamadhava or Siddha Yoga -64/28 ²⁴
13	Nyagrodhadi Curna	Madhava Cikitsa -35/7 ²⁵
14	Rasa Sodhana	Bhavaprakasa Samhita Purva Khanda - 7/3/151 ²⁶
15	Taramaksika Sodhana	Bhavaprakasa Samhita Purva Khanda -7/3/111-112 ²⁷
16	Nyagrodhadi Curna	Bhavaprakasa Samhita Madhyama Khanda-38/67-71 ²⁸
17	Mṛtyunjaya Kasaya	Basavarajiyam -1/453 ²⁹
18	Meshaṣṅgyadi Taila	Vangasena Samhita -60/218 ³⁰
19	Paribhadra Ras	Basavarajiyam -13/120 ³¹
20	Parada Svedana Samskara	Basavarajiyam-25/483 ³²
21	Mahavisagarbha Taila	Bhaisajya Ratnavali-26/596-606 ³³
22	Mṛtasanjivani Sura	Bhaisajya Ratnavali-74/372-386 ³⁴
23	Roupyamaksika Sodhana	Anupanadarpana-7/14 ³⁵

MODERN REVIEW OF THE DRUG MESHASHRUNGI-*Gymnema sylvestre* (Retz.) R.Br. ex Sm.

Botanical name : *Gymnema sylvestre* (Retz.) R.Br. ex Sm.

Family : Apocynaceae

MORPHOLOGY:

HABITAT:

Gymnema sylvestre (Retz.) R.Br. ex Sm. is found in the tropical forests of central and southern india. Also found in western ghats. Distributed in Sri lanka, Malaysia, Australia, Indonesia, Japan, Vietnam, Tropical Africa and southwestern regions of china³⁶.

HABIT:

Gymnema sylvestre (Retz.) R.Br. ex Sm. is a large woody, much branched, climber, with pubescent young parts³⁷.

ROOT:

Tap root branched, rough, longitudinally fissured, corky, soft and nodulose pieces, 2 to 7 cm long and 0.2 to 1.0 cm in thickness; external surface dark brown and cut surface showing a core cream in colour; fracture, splintery; odour, unpleasant; taste, bitter and acrid³⁷.

STEM:

A large woody much-branched climber running over the tops of high trees; young stems and branches pubescent, often densely so, terete³⁷.

LEAVES:

Leaves 3.2-5 by 1.3-3.2 cm., ovate, elliptic, or ovate-lanceolate, acute or shortly acuminate, more or less pubescent on both sides, sometimes densely so beneath, especially on the nerves, base rounded or cordate, sometimes cuneate; petioles 6-13 mm. long, pubescent³⁸.

FLOWER:

Flowers in pedunculate or nearly sessile cymes; peduncles densely pubescent, shorter than the petioles and arising from between them, sometimes producing successive umbels or whorls of flowers; pedicels 3-13 mm. long, pubescent; bracts minute, ovate-oblong, hairy ciliate. Calyx pubescent, divided to the base or nearly so; segments 2 mm. long, oblong, obtuse, ciliate. Corolla yellow, 4-5 mm. across; tube campanulate, 1.5 mm. long, about equalling the lobes; lobes thick, ovate-deltoid, spreading, recurved, glabrous; 3corona of 5 processes inserted on the corolla-tube, alternate with its lobes, free at the short deltoid subacute tip which protrudes above the sinus, the lower adnate portion decurrent, channelled and with strongly ciliate margins. Style-apex thick, subhemispherical, much exserted beyond the anthers, pearly white³⁸.

FRUIT:

Follicles 6.3-7.5 by 0.8 cm., terete, rigid, lanceolate, attenuated into a beak, glabrous, one follicle often suppressed³⁸.

SEED:

Seeds 1.3 cm. long, narrowly ovoid-oblong, flat, with a thin broad marginal wing, brown, glabrous³⁸.

CHEMICAL CONSTITUENTS:

Triterpenoid saponins of gymnemic acid A, B, C and D with sugar residues such as glucuronic acid, galacturonic acid, ferulic and angelic acids attached as carboxylic acids. Several isopropylene derivatives of gymnemagenin, a hexahydroterpene, gymnemagenin, gymnemic acid. The leaves also contain betaine, choline, gymnamine alkaloids, inositol, d-quercitol. Hydrocarbons such as nonacosane, hentriacontane, tritriacontane, pentatriacontane, phytin, resin, tartaric acid, formic acid, butyric acid, amino acids such as leucine, isoleucine, valine, alanine, γ -butyric acid³⁹.

USES:

Diabetes, Diuretic, Cardiac stimulant, Headache, Hydrocele, Leprosy, Pruritis, Poisoning, Wounds, Bronchial Asthma.

ETHNO-BOTANICAL USE:

- Among the Bourgeois classes of Bombay and Gujarat the custom exists the chewing the fresh leaves to reduce glycosuria⁴⁰.
- The root is in esteem amongst the hindus as a local and internal remedy in snake bites; is also said to possess emetic and expectorant properties⁴⁰.
- In folk medicine of Bundelkhand, Uttar Pradesh, a decoction of the leaves is heated up with til (sesame) oil to obtain the emulsion. This emulsion is dropped in the eyes several times a day to treat a number of eye diseases⁴¹.

Discussion:

Even though there is a clear description in API regarding Meshashrungi, no other clear literature review is available on the drug. Various confusions are surrounding the drug because of its synonyms and lack of correct knowledge about the drug. A critical analysis on ayurvedic etymological aspects and nighantus based on which the identity could be clarified.

Correlation of Etymology with Pharmacognosy:

The synonyms like Mesashrungi, Ajashrungi, Vartika, Sarpadamstra, Chagasrrngi, Tiktadugdha, Yugmaphala can be attributed to *Gymnema sylvestre* (Retz.) R.Br. ex Sm. (As the synonyms Mesashrungi, Ajashrungi, Chagashrungi indicate that fruits of *Gymnema sylvestre* (Retz.) R.Br. ex Sm. looks like horns of the sheep. Yugmaphala means the paired fruits of *Gymnema sylvestre* (Retz.) R.Br. ex Sm. Tiktadugda indicates the bitter taste of latex. Vartika indicates that it is a Climber. Sarpadamstra means the fruits resemble the fangs of snake.

Analysis from Samhita and Nighantu:

Susruta mentioned karkatashrungi, Ajashrungi, Meshashrunga for Meshashrungi. As Meshashrunga is cited in Salasaradi gana which has trees in it. Meshashrunga can be equated with *Dolichadrone falcata*, Karkatashrungi is *Pistacea integerrima* stew ex Brandis and Meshashrungi is *Gymnema sylvestre* (Retz.) R.Br. ex Sm. Nighantukaras mentioned both Meshashrungi and Meshashrungi visesa which is *Gymnema sylvestre* (Retz.) R.Br. ex Sm. And Dakshinavarta Meshashrungi respectively.

Conclusion:

As Plant based drugs has increased utilisation in recent era, Identification of reliable botanical source help in the preparation of various formulations. The comprehensive analysis of the literature on Meshashrungi has shown that the production of drugs can benefit greatly from an understanding of literature review, which is crucial in determining the trustworthy source of pharmaceuticals.

References:

1. Caraka, Caraka Samhita (Text with English Translation), Acharya Sharma P. V, Cikitsa Sthana, Jvara cikitsitham(3/267), Vol II, First Edition, Varanasi, Chaukambha Orientalia, 1981, Pg.no.78-79.
2. Susrutha, Nibandhasangraha commentary, Susrutha Samhitha, Vaidya Jadvji Trikamji Acharya, Sutra Sthana, Sonitha varnaniya adhyaya (14/36), Reprint Edition, Varanasi, Chaukhambha Sanskrit Sansthan, 2012.
3. Vagbhata, Ashtanga Hridayam, with Sarvangasundara and Ayurved Rasayana Commentary by Arundutta and Hemadri respectively, Pt Hari Sadashiva Shastri Paradakara, Reprint Edition, Varanasi, Chaukhamba Sanskrit Sansthan, 2016.
4. Vagbhata, Astanga Samgraha with English Translation, Srikantha Murthy K.R, Vol I & 2, Reprint Edition, Varanasi, Chaukhambha Orientalia, 2017.
5. <https://niimh.nic.in/ebooks/e-Nighantu/abhidhanamanjari/?mod=read&h=aja shRu~ggl>
6. <https://niimh.nic.in/ebooks/eNighantu/abhidhanaratnamala/?mod=read&h=ajashRu~ggl>
7. <https://niimh.nic.in/ebooks/e-Nighantu/soushrutanighatu/?mod=read&h=ajashRu~ggl>
8. <https://niimh.nic.in/ebooks/eNighantu/paryayaratnamala/?mod=read&h=meShashRu~ggl>
9. <https://niimh.nic.in/ebooks/eNighantu/madanadinighantu/?mod=read&h=meShashRu~ggl>
10. Kamat S.D, Dhanvantari Nighantu, Guduchyadi Varga, First Edition, Delhi, Chaukhamba Sanskrit Pratishthan, 2002, Pg.no.31.
11. Gyanendra Pandey, Sodala Nighantu, Dwivedi R.R, Guduchyadi Varga, First Edition, Varanasi, Chowkhamba Krishnadas Academy, 2009, Pg.no.45.
12. <https://niimh.nic.in/ebooks/eNighantu/nighantushesha/?mod=read&h=meShashRu~ggl>
13. <https://niimh.nic.in/ebooks/eNighantu/hrdudayadipakanighantu/?mod =read&h=ajashRu~ggl>
14. <https://niimh.nic.in/ebooks/eNighantu/madanapalanighantu/?mod= read&h=meShashRu~ggl>
15. <https://niimh.nic.in/ebooks/eNighantu/kaiyadevanighantu/?mod=read& h=meShashRu~ggl>
16. Chuneekar K.C, Bhavaprakasa Nighantu, Pandey G.S, Guduchyadi Varga, Revised Edition, Varanasi, Chaukhambha Bharati Academy, 2010, Pg.no.428-429.

17. <https://niimh.nic.in/ebooks/e-Nighantu/sarasvatiniighantu/?mod=read&h=ajashRu~ggI>
18. <https://niimh.nic.in/ebooks/e-Nighantu/rajanighantu/?mod=read&h=ajashRu~ggI>
19. Laala shaligramji vysya, Saligrama Nighantu, Guducyadi Varga, Mumabi, Kemaraj Sri Krishnadass, Reprint Edition-1980, Pg.no:335-336.
20. Bapalal G, Nighantu Adarsha, Arkadi varga, First Edition, Varanasi, Chaukhambha Bharati Academy, 1985, Pg.no. 33-36.
21. Krishnamurthy K.H, Bhela Samhita, Priya Vrat Sharma (Ed), Urusthamba Cikitsa (14/8), Reprint Edition, Varanasi, Chaukhambha Visvabharati, 2008, Pg.no.385.
22. Himasagar Chandra Murthy P, Sarangadhara Samhitha, Madhyama Khanda, Kvathakalpana Adhyaya (2/127-130), Reprint Edition, Varanasi, Chowkhamba Sanskrit Series Office, 2018, Pg.no.133.
23. Himasagar Chandra Murthy P, Sarangadhara Samhitha, Madhyama Khanda, Dhatusodhana Marana Adhyaya (11/57), Reprint Edition, Varanasi, Chowkhamba Sanskrit Series Office, 2018, Pg.no.254.
24. Premavati Tewari, Vrndamadhava or Siddha Yoga, Yoniroga Adhikara (64/28), Vol II, First Edition, Varanasi, Chaukhambha Visvabharati, 2006, Pg.no.830-831.
25. Acharya Madhava, Madhava Cikitsa, Krishnamurthy M.S, Prameha Cikitsa (35/7), Reprint Edition, Varanasi, Chaukhambha Orientalia, 2017, Pg.no.146-147.
26. Bulusu Sitaram, Bhavaprakasa of Bhavamisra, Purva Khanda, Dhatvadi Sodhana Marana Vidhi Prakarana Adhyaya (7/3/151), Vol I, Reprint Edition, Varanasi, Chaukhambha Orientalia, 2015, Pg.no.596
27. Bulusu Sitaram, Bhavaprakasa of Bhavamisra, Purva Khanda, Dhatvadi Sodhana Marana Vidhi Prakarana Adhyaya (7/3/111-112), Vol I, Reprint Edition, Varanasi, Chaukhambha Orientalia, 2015, Pg.no.592.
28. Bulusu Sitaram, Bhavaprakasa of Bhavamisra, Madhyama Khanda, Prameha Adhikara (38/67-71), Vol II, Reprint Edition, Varanasi, Chaukhambha Orientalia, 2017, Pg.no.430.
29. Krishnamurthy M.S. Basavarajeeyam, Jvara Adhikarana (1/453), First Edition, Varanasi, Chaukhambha Orientalia, 2014, Pg.no.48.
30. Nirmal Saxena, Vangasena Samhitha, Kushta Adhikarana (60/218), Vol II, Second Edition, Varanasi, Chowkhamba Sanskrit Series, 2014, Pg.no.752.
31. Krishnamurthy M.S. Basavarajeeyam, Kushtaroga Nidana Lakshana Cikitsa Adhyaya (13/120), First Edition, Varanasi, Chaukhambha Orientalia, 2014, Pg.no.341-342.
32. Krishnamurthy M.S. Basavarajeeyam, Rasagandhkadi Dravya Suddhi Nirupana Adhyaya (25/483), First Edition, Varanasi, Chaukhambha Orientalia, 2014, Pg.no.702-703.

33. Prabhakara Rao G, Bhaishajya Ratnavali of Kaviraj Shri Govind Das Sen, Vata Vyadhi Cikitsa (26/596-606), Vol I, First Edition, Varanasi, Chaukhambha Orientalia, 2014, Pg.no.781-782.
34. Prabhakara Rao G, Bhaishajya Ratnavali of Kaviraj Shri Govind Das Sen, Vajikarana Prakarana (74/372-386), Vol II, First Edition, Varanasi, Chaukhambha Orientalia, 2014, Pg.no.732-733.
35. Gyarasaram Sharma Pt, Anupana Darpana, Bombay, Gangavishnu Shrikrishnadas, Laxmi Venkateswara Press, 1867, Pg.no.96.
36. Khare C.P, Ayurvedic Pharmacopoeial Plant Drugs: Expanded Therapeutics, New York, CRC Press:Tylor & Francis Group, 2016, Pg.no.295.
37. The Ayurvedic Pharmacopoeia Of India, Vol 5: First Edition, New Delhi, The Controller of Publications Civil lines, 2008.Pg.no.113.
38. kirtikar kR, Basu BD, Indian medicinal plants, Vol III, Second Edition, Allahabad, Lalit Mohan Publication,1935, Pg.no.1624-1627.
39. The Ayurvedic Pharmacopoeia Of India, Vol 5: First Edition, New Delhi, The Controller of Publications Civil lines, 2008.Pg.no.110-112.
40. kirtikar kR, Basu BD, Indian medicinal plants, Vol III, Second Edition, Allahabad, Lalit Mohan Publication,1935, Pg.no.1624-1627.
41. Anonymous, The Wealth Of India Raw Materials, Second Supplement Series, Vol II, G-Ph, New Delhi, NISCAIR, Council of scientific and industrial research, 2007, Pg.no.27.