



Review On *Sinduvvara* with Special Reference to *Visha Chikitsa*

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ABSTRACT:

Sinduvvara (*Vitex negundo*) is a deciduous shrub widely found in India and used in various treatment systems, including *Ayurveda*, Unani, Siddha, Homeopathy, and Allopathy. Known as *Sindhuvara* and *Nirgundi* in *Ayurveda*, it has a long history of medicinal use, with the leaves, roots, and bark being particularly significant. The plant can be administered both internally and externally, utilizing its whole parts, including leaves, roots, fruits, and seeds. Recent research indicates that *Sinduvvara* may serve as an antidote for snake venom and exhibits various pharmacological activities, including CNS depressant, anti-convulsant, enzyme inhibition, anti-cancer, and anti-bacterial properties. In *Ayurvedic* texts, it is classified within the *Vishaghna gana* and is a key ingredient in several *Agada* formulations designed to counteract poisoning. Notably, *Sinduvvara* is included in nearly ten *Agada* used for treating *Jangam visha* (poisonous bites). This review aims to explore the medicinal value of *Sinduvvara* and emphasize its *Vishaghna* properties based on pharmacological evidence.

IndexTerms - *Agada*, *Nirgundi*, *Sinduvvara*, *Visha*, *Vitex negundo*

I. INTRODUCTION

Medicinal plants have served as a vital source of therapeutic agents for treating human diseases since ancient times. *Sinduvvara*, belonging to the Verbenaceae family, is a significant herb known for its extensive pharmacological activities and medicinal properties, particularly its *Vishaghna* qualities. In the *Ayurvedic* texts, *Charaka* includes *Sinduvvara* (the variety with white flowers) in the *Vishaghna gana*, a classification of anti-poisonous drugs. In contrast, its other variety, *Nirgundi* (with blue flowers), is categorized in the *Krimighna gana*, which comprises wormicidal drugs. The *Brihatrayi* texts frequently refer to this plant using the names *Sinduvvara* and *Nirgundi*. Notably, *Sushruta* also mentions a variety called *Sita Sinduvvara* (the white variant), suggesting the presence of two distinct varieties within the *Nirgundi* classification. It is commonly thought that *Sinduvvara* and *Nirgundi* represent two different species of *Vitex*, characterized by their flower colors. However, *Vitex negundo* itself displays a range of flower colors, including white and blue, and

variations in leaf colors, such as greenish and purplish black ^[1,2]. While both *Sinduvvara* and *Nirgundi* are important medicinal herbs, *Sinduvvara* (the white-flowered variety) is particularly prominent in *Visha Chikitsa* ^[3,4]. It plays a crucial role in approximately ten *Agada* formulations designed primarily for treating poisonous bites. This review aims to delve into the various aspects of *Sinduvvara*, including its detailed descriptions, chemical constituents, pharmacological activities, and its significance in the context of *Visha Chikitsa*. By exploring these facets, the review highlights the importance of *Sinduvvara* in traditional medicine and its potential applications in contemporary therapeutic practices. Through this examination, the therapeutic potential of this herb is brought to the forefront, emphasizing its historical significance and ongoing relevance in medicinal treatments for poisoning.

Table 1: *Nirgundi/Sinduvvara* (*Vitex negundo*) are described in various *Ayurveda* classics and *Nighantus* ^[5]

S.No.	Samhithas	Types	Names
1	<i>Sushruta</i>	2	<i>Svetapushpa, Nila pushpa</i>
2	<i>Dalhana</i>	2	<i>Nirgundi, Sinduvvara</i>
3	<i>Dhanwantari nighantu</i>	2	<i>Shweta, Nila</i>
4	<i>Bhavamishra</i>	2	<i>Shwetapushpa (Sinduvvara), Nilapushpa (Nirgundi)</i>
5	<i>Kaiyadeva nighantu</i>	3	<i>Nirgundi, Sinduvvara, Shephalika</i>
6	<i>Shodhal nighantu</i>	2	<i>Sinduvvara (White), Shephalika (Blue)</i>
7	<i>Raj nighantu</i>	3	<i>Sinduvvara, Nila Nirgundi, Shephalika</i>
8	<i>Nighantu ratnakar</i>	2	<i>Kartari Nirgundi, Aranya Nirgundi</i>

Table 2: Taxonomical classification of *Vitex negundo* (*Sinduvvara*) ^[6]

Kingdom	Plantae- Plants
Subkingdom	Tracheobionta – Vascular plants
Super division	Spermatophyte – Seed plants
Division	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Asteridae
Order	Lamiales
Family	Verbenaceae – Verbena family
Genus	<i>Vitex</i> Linn.
Species	<i>Vitex negundo</i> Linn.

Morphology:

This plant is a large shrub or a small slender tree characterized by thin, grey bark and quadrangular, whitish branchlets covered in fine tomentum. Its leaves can be tri- or penta-foliolate, featuring lanceolate, acute leaflets that are entire or crenate. The leaflets are glabrate, dark green on top and pale beneath, with the central leaflet being larger than the smaller lateral ones, which have very short petioles and acute bases. The flowers appear in branched lateral cymes and are small, either bluish-purple or white. The fruit is drupaceous, measuring less than 6 mm in diameter, turning black upon ripening. The seeds are obovate or oblong in shape. This shrub or tree presents an interesting combination of features, making it a unique addition to its ecosystem ^[7].

Chemical constituents:

The chemical constituents of *Sinduvara* are as follows,

- Monoterpenes agunoside, eucoside, aucubin, flavonoids as 5,7,3 – trihydroxy, 6,8,4 – trimethoxy flavones, casticin, chryso – splenol, vitexin.

The CCl₄ extract of the seed contains 4 triterpenoids that are:

- 3 beta – acetoxylean – 12 – enhance – 27 – oic acid
- 2 alpha, 3 alpha – dihydroxy oleana – 5, 12 – dien – 28 – oic acid
- 2 beta, 3 alpha – diacetoxyoleana – 5, 12 – dien – 28 – oic acid
- 2 alpha, 3 beta – diacetoxy – 18 hydroxyoleana – 5, 12 dien – 28 – oic acid

The oil is composed of alpha-pinene, linalool, terphenyl acetate, beta-caryophyllene, caryophyllene, and caryophyllene oxide. Additionally, it contains other significant constituents such as phenol, dulcitol, the alkaloid vitricine, beta-sitosterol, camphene, angoside, artemetin, and orientin ^[8].

- Pharmacological properties of *Sinduvara* according to *Ayurveda* ^[9]:

Rasa – Katu, Tikta

Guna – Laghu, Ruksha

Virya - Ushna

Vipaka - Katu

Doshakarma - KaphaVata Shamaka

- Pharmacological activities of *Sinduvara* according to *Ayurveda*:

Internally, this substance acts as an analgesic due to its *Vata Nashaka* properties and supports cognitive function as a *Medhya*. In the digestive system, its *Katu, Tikta, and Ushna* qualities stimulate digestion, promote liver function, and combat intestinal worms. It also balances *Kapha* and *Vata*, reducing inflammatory swellings in the circulatory system. Its pungent and bitter tastes help alleviate cough and treat pulmonary and pleural diseases in the respiratory system. Additionally, it promotes urine production (*Mutrajanaka*), and supports overall health. *Nirgundi* promotes menstruation due to its *Ushna virya* and effectively treats skin diseases, exhibiting *kanduhara* properties. It demonstrates *jwaraghna* action, aided by its *Amapachaka*

qualities that helps digest undigested food and toxins, making it useful for treating *Vishamajvara* (intermittent fever). Additionally, it is beneficial for improving eyesight and can also alleviate ear discharge ^[10]. Overall, its diverse properties contribute to various aspects of health, supporting both physical well-being and specific conditions.

➤ Pharmacological activities and medicinal properties:

1. **Snake venom neutralization activity:** Methanolic root extracts of *Vitex negundo* and *Emblica officinalis* exhibited anti-snake venom activity. *Vitex negundo* significantly countered the lethal effects of *Vipera russellii* and *Naja kaouthia* venoms in both in vitro and in vivo studies. The extracts effectively neutralized venom-induced haemorrhage, coagulant, defibrinogenating, and inflammatory activities associated with *Vipera russellii*. Notably, no precipitating bands were observed between the plant extracts and snake venom, suggesting a potential mechanism of action that merits further research. These findings highlight the therapeutic potential of these plant extracts in managing snakebite envenomation. ^[11]
2. **Hepatoprotective activity:** The ethanolic extract of *Vitex negundo* at doses of 250 and 500 mg/kg significantly reduced serum levels of bilirubin, AST, ALT, ALP, and total protein in cases of hepatotoxicity induced by a combination of antitubercular drugs (isoniazid, rifampin, and pyrazinamide). Additionally, the alcoholic extract of *Vitex negundo* seeds demonstrated hepatoprotective effects against carbon tetrachloride-induced liver damage. This protection was evident through improvements in morphological, biochemical, and functional parameters. *Vitex negundo* also mitigates CYP2E1-dependent CCl₄ toxicity by inhibiting lipid peroxidation, enhancing intracellular calcium homeostasis, and inhibiting Ca²⁺- dependent proteases. ^[12]

➤ Exploration of *Sinduvara* and its formulations in *Visha chikitsa*:

According to *Ayurvedic* texts, *Sinduvara* is well-known for its *Vishaghna* properties, making it a key ingredient in various formulations designed for treating poisoning, particularly in cases of *Jangama visha* (poisoning from insect or animal bites).

• **In *Darveekar sarpa* (hooded snake) bite:**

- a) Root of *Sinduvara* along with *Shweta* root should be taken in snake poisoning or both drugs should be taken along with honey and *Kushtha* for drinking and as nasal drop in snake poisoning. ^[13]
- b) Powder of *Sinduvara*, *Vacha* and *Aparajita* should be taken with water. ^[14]
- c) Root of *Sinduvara* macerated in its own juice, added with honey and consumed is the recipe for poison of hooded snakes. Also root of *Sinduvara* and *Girikarnika* made into paste and consumed. ^[15]

• **In *Mandali sarpa* (snakes with spots or wheels on body):**

Agada is prepared with *Sinduvara*, *Drakshaa*, *Sarpagandha* etc. with honey and taken in snake poisoning. ^[16]

- **In spider bite:**

- Sinduvara* along with *Shirisha* and many other drugs is used for eye application, drinking and as nasal drops in all kinds of spider bite. ^[17,18]
- Sinduvara* along with *Pippali*, *Priyangu*, *Nirgundi*, *Rasna*, *Vasa* etc. are made into paste and applied in spider poisoning predominant of *Kapha*. ^[19]
- Sinduvara*, *Shirisha*, *Padmaka*, *Usira*, *Patali*, *Pancha Valkala*, *Nata*, *Udichya*, *Kustha* and *Chandana* macerated with fresh juice of *Selu* and preserved. This *Agada* to be used in the form of nasal drops, collyrium, internal potion, external application, and pouring on the body is highly beneficial in spider poisoning. ^[20]
- Use of *Sinduvara*, *Bharangi*, *Nidigdhika*, *Nimba*, *Patali*, *Durva*, the two *Haridra* and *Vasa* – these removes the poison of *Putigandha* (having foul smell) spider. ^[21]
- Use of *Sinduvara* root, *Selu*, *Arjuna*, *Amratak* bark is ideal in *Rakta* (red) spider bite. ^[22]
- In *Santanika* spider bite, use of *Keshara*, bark of *Kshiri vrikshas*, roots of *Sinduvara*, *Amra* and *Ashmantaka* is beneficial. ^[23]

- **In dog bite:**

A decoction is prepared using *Yava*, *Masa*, *Kulattha*, and the herbs from *Panchamula*. To this mixture, one part of ghee and two parts of milk are added, along with a fine paste made from *Ashvagandhika*, *Saha*, *Kushtha*, *Brihati*, the two *Rajani*, *Vidari*, *Nata*, *Katvanga*, *Payasya*, *Sinduvara*, *Sarpagandha*, *Nakha*, *Abhiru*, *Sarkara*, and *Raktachandana*. This results in a medicated ghee that can be used for drinking and anointing, effectively addressing all complications from dog bites. ^[24]

- **In rat bite:**

- Person suffering from effect of rat bite should drink the decoction of *Sinduvara*, *Nata*, *Sigru*, root of *Bilva*, *Punarnava*, *Vacha*, *Svadamstra* and *Jimuta* added with honey, followed by eating cooked rice along with curds. ^[25]
- The paste of *Sinduvara* and the two *Saha* added with more of honey should be applied in *Kulaka* rat bite. ^[26]
- Decoction of *Sinduvara*, *Tagara*, *Sahajana*, *Bilva*, *Punarnava*, *Gokshura* and *Jimutaka* is taken in all kinds of rat bite. ^[27]
- Formulation of root of *Sinduvara*, cat bones, *Vatsanabha*, *Tagara* is used as nasal drops and for drinking in rat bite. ^[28]
- A linctus made of *Sinduvara*, *Mudgaparni* and *Mashparni* with honey is used in *Kulinga* rat bite. ^[29]

Table 3: Agada containing *Sinduvara*:

Formulations	Ingredients	Indications
<i>Mahagandhahasti Agada</i>	<i>Sinduvara, Tejapatra, Agar, Mustak, Ela, Panchaniryas, Chandan, Sprikka, Twak, Nalada, Utpala, Sugandhabala, Ushira etc</i>	Cataract, night blindness, fever, indigestion, ringworm, cholera, scabies, constipation, fainting, poisoned nearing death. [30]
<i>Mrutasanjivan Agada</i>	<i>Sinduvara, Sprikka, Plava, Sthouneya, Kankshi, Tagara, Dhyamaka, Keshara, Maansi, Ela, Khadira, Amalatas etc.</i>	All kinds of poison, fever, bad dreams. [31]
<i>Sanjivani Agada</i>	<i>Sinduvara, Chandana, Kumkuma, Kustha, Kankshi, Laksha, Priyangu, Musta, Sthouneya, Saileya, Cocana, Madana, Plava etc</i>	Destroys poison, fever, evil spirits, effects of witchcrafts, subjugatory rites, demons, wild animals, insects, worms, reptiles. [32]
<i>Yapan Agada</i>	<i>Sinduvara, Chandana, Valaka, Musta, Dhyamaka, Katuka, Nata, Dadima, Kumkuma, Sunthi, Kapittha, fruits of Vatsaka, seeds of Karanja, Maricha, Apamarga, Karaveera etc</i>	Destroys poison, fever, evil spirits, effects of witchcrafts, subjugatory rites, demons, wild animals, insects, worms, reptiles. [33]
<i>Lodhradi Agada</i>	<i>Sinduvara, Lodhra, Flowers of Sirisa, Samanga, Hingu, Renuka, Kana, Ushnaila, Nepali, Vacha, Yashtimadhu, Utpala, seeds of Karanja etc.</i>	Destroys the poison of snakes, rats, wasps, jackal, cat and python. Wards off possession by evil spirits, fevers, epilepsy, insanity, abdominal tumors, indigestion, cholera. [34]
<i>Tarkshya Agada (by vagbhata)</i>	<i>Sinduvara, Prapoundarika, Katuka, Devdaru, Suvarchika, Kalanusari, Sthouneya, Shaileya, Ghana, Padmaka, Katunnata, Ela, Guggulu, Punnaga, Nata etc</i>	It removes the effects of poisoning even of <i>Takshaka</i> (serpent of heaven) [35]
<i>Tarkshya Agada (by sushruta)</i>	<i>Sinduvara, Prapoundarika, Musta, Kutaki, Kalanusari, Devdaru, Kartrina, Nagkeshara, Sthouneya, Ela, Guggulu, Suvarchika, Talishpatra, Lodhra, Priyangu etc.</i>	It removes the effects of poisoning even of <i>Takshaka</i> (serpent of heaven) [36]

<i>Ekasara gana</i>	<i>Sinduvara, Bakuchi, Bakuchi Flower, Choraka, Varuna, Kushtha, Sarpagandha, Yavatikta, Punarnava, Shirisa flower etc.</i>	Destroys all kinds of poison especially snakes. ^[37]
<i>Mahasugandhi Agada</i>	<i>Sinduvara, Chandana, Agaru, Kustha, Tagara, Hulhula, Prapoundarika, Nalada, Sarala, Devdaru, Shwet Chandana, Bharangi, Neelee, Sarvagandha, Madhuyashti, Jatamansi etc.</i>	It removes effects of poisoning even of <i>Vasuki</i> (serpent of heaven). ^[38]

DISCUSSION

Medicinal plants have been integral to healthcare since ancient times, offering a wealth of potential in combating diseases. Both developed and developing nations increasingly turn to herbal remedies for primary healthcare due to their diverse biological activities, greater safety profiles, and lower costs. Among these plants, *Sinduvara* stands out for its extensive pharmacological properties. Research indicates that it exhibits various effects, including anticonvulsant, CNS-depressant, antiarthritic, and antiallergic activities. *Sinduvara* is particularly noted for its *Vishaghna* qualities, making it a valuable component in formulations for treating poisoning, especially from insect or animal bites, referred to as *Jangama visha*. The symptoms associated with *Jangama visha* typically include pain, swelling, and inflammation. *Sinduvara's* analgesic properties are attributed to its *Vata Nashaka* characteristics, while its ability to balance *Kapha* and *Vata* helps alleviate inflammation and swelling. Additionally, it is effective in treating skin conditions and possesses antipruritic properties, which further supports its application in managing insect or animal bites. Despite the existing knowledge of *Sinduvara's* classical pharmacological benefits, further research is necessary to uncover additional therapeutic potentials and practical clinical applications, particularly in the context of poisoning management. By exploring these areas, we can better understand how to harness *Sinduvara's* capabilities in modern medicine, ensuring its continued relevance in therapeutic practices for both acute and chronic conditions. The exploration of *Sinduvara* not only emphasizes the importance of traditional knowledge but also encourages the integration of herbal medicines into contemporary healthcare systems.

CONCLUSION

Sinduvara merits significant attention due to its notable *Vishaghna* properties, which are highlighted in various classical formulations for treating poisoning. Scientific studies have validated its effectiveness against snake venom, further establishing its role as a promising herb in conjunction with *Shirisha* for *Visha chikitsa* (treatment of poisoning). A comprehensive review of the literature reveals the critical importance of *Nirgundi* in traditional medicine. Virtually every part of the plant is utilized in the preparation of herbal remedies, showcasing its versatility. *Sinduvara* is recognized for its wide range of pharmacological activities, including anticancer, antimicrobial, antifeedant, anti-inflammatory, antihyperpigmentation, hepatoprotective, antipoisonous, antihistaminic, and analgesic effects. These diverse properties underscore the potential of

Sinduvvara not only in addressing poisoning but also in treating various health conditions. Its extensive application in herbal medicine highlights its significance in both traditional and modern healthcare systems, offering a natural alternative for numerous ailments. Further exploration of *Sinduvvara* could lead to enhanced understanding and utilization of this valuable plant in therapeutic practices.

REFERENCE:

1. Agnivesha, Shadvirechanashatashriya 4th chapter verse 15, sutrasthan in Harishchandra singh kushvaha Charak samhita volume 1, Varanasi, chaukhambha orientalia, 2009. p. 63
2. Agnivesha, Shadvirechanashatashriya 4th chapter verse 16, sutrasthan in Harishchandra singh kushvaha Charak samhita volume 1, Varanasi, chaukhambha orientalia, 2009. p. 63
3. Susrutasamhita volume 1, sarpadashta visha chikitsitamkalpa 5th chapter verse 66, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 65
4. Susrutasamhita volume 1, sarpa dashta visha chikitsitamkalpa 5th chapter verse 77, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 66
5. Dr JLN sastry, Dravyaguna vijnana (study of essential medicinal plants in Ayurveda) volume 2, Varanasi, chaukhambha orientalia, 2014, p. 413
6. Kambham Venkateswarlu, Vitex negundo: Medicinal Values, Biological Activities, Toxicity Studies and Phytopharmacological Actions, Int. J. Pharm. Phytopharmacol. Res. 2012, 2(2): 126-133
7. Kambham Venkateswarlu, Vitex negundo: Medicinal Values, Biological Activities, Toxicity Studies and Phytopharmacological Actions, Int. J. Pharm. Phytopharmacol. Res. 2012, 2(2): 126-133
8. Dr JLN sastry, Dravyaguna vijnana (study of essential medicinal plants in Ayurveda) volume 2, Varanasi, chaukhambha orientalia, 2014, p. 415
9. Dr JLN sastry, Dravyaguna vijnana (study of essential medicinal plants in ayurveda) volume 2, Varanasi, chaukhambha orientalia, 2014, p. 415
10. Prof. P.V. Sharma, Dravyaguna vigyan volume 2 (vegetable drugs), Varanasi, chaukhambha bharati academy, 2012, p. 66
11. Alam MI Gomes A, Snake venom neutralization by Indian medicinal plants (Vitex negundo and Embelica officinalis) root extracts, J. Etanopharmacol., 2003; 86(1): 75-80.
12. Sheikh AT, Kaiser PJ, Gupta BD, Gupta VK, Johri RK, Negundoside, an irridiod glycoside from leaves of Vitex negundo, protects human liver cells against, calcium mediated toxicity induced by carbon tetrachloride, World J Gastroenterol, 2008 June 21; 14(23). P. 3693-3709.
13. Agnivesha, vishachikitsitam 23rd chapter verse 195, chikitsasthan in Harishchandra singh kushvaha Charak samhita volume 2, Varanasi, chaukhambha orientalia, 2009. p. 611
14. Astangahridayam of vagbhata, sarpavishapratishedha 36th chapter verse 57, uttarsthanam in Kaviraj atridev gupt and vaidya yadunandana upadhyaya, Varanasi, chaukhambha prakashan, 2014. p. 797
15. Astanga samgraha sarpavisapratishedha of 42nd vagbhata vol III, chapter verse 26, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 393
16. Susrutasamhita volume 1, Sarpa dashta visha chikitsitamkalpa 5th chapter verse 76-77, kalpasthana in Kaviraj dr. Ambikadatt shastri, Varanasi, Chaukhambha samskrit sansthan, 2014. p. 66

17. Agnivesha, vishachikitsitam 23rd chapter verse 200, chikitsasthan in Harishchandra singh kushvaha Charak samhita volume 2, Varanasi, Chaukhambha orientalia, 2009. p. 613
18. Astangahrdayam vishapratisedha of 38th vagbhata, chapter mooshikalark verse 82-85, uttarsthanam in Kaviraj atridev gupt and vaidya yadunandana upadhyaya, Varanasi, chaukhambha prakashan, 2014. p. 808
19. Astanga samgraha of vagbhata vol III, lutapratisedha 44th chapter verse 43-45, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 420
20. Astanga samgraha of vagbhata vol III, lutapratisedha 44th chapter verse 70-71, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 422
21. Astanga samgraha of vagbhata vol III, pratyekaluta pratisedha 45th chapter verse 24-25, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 428
22. Astanga samgraha of vagbhata vol III, pratyekaluta pratisedha 45th chapter verse 31, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 429
23. Astanga samgraha of vagbhata vol III, pratyekaluta pratisedha 45th chapter verse 34, uttarsthana in Professor K.R. Srikanthamurthy, chaukhambha orientalia, 2012. p. 429
24. Astanga samgraha of vagbhata vol III, musikalarkapratisedha 46th chapter verse 74-76, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 440
25. Astanga samgraha of vagbhata vol III, musikalarka pratisedha 46th chapter verse 36, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 436
26. Astanga samgraha of vagbhata vol III, musikalarka pratisedha 46th chapter verse 52, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 437
27. Astangahrdayam of vagbhata, mooshikalarkavisha pratisedha 38th chapter verse 27-30, uttarsthanam in Kaviraj atridev gupt and vaidya yadunandana upadhyaya, Varanasi, chaukhambha prakashan, 2014. p. 810-811
28. Astangahrdayam of vagbhata, mooshikalarkavisha pratisedha 38th chapter verse 32, uttarsthanam in Kaviraj atridev gupt and vaidya yadunandana upadhyaya, Varanasi, chaukhambha prakashan, 2014. p. 811
29. susrutasamhita volume 1, mushikakalpa 7th chapter verse 20-21, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 73
30. Agnivesha, vishachikitsitam 23rd chapter verse 77-94, chikitsasthan in Harishchandra singh kushvaha Charak samhita volume 2, Varanasi, chaukhambha orientalia, 2009. p. 591-592
31. Agnivesha, vishachikitsitam 23rd chapter verse 54-60, chikitsasthan in Harishchandra singh kushvaha Charak samhita volume 2, Varanasi, chaukhambha orientalia, 2009. p. 588
32. Astanga samgraha of vagbhata vol III, visapratisedha 40th chapter verse 59-67, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 359-360
33. Astanga samgraha of vagbhata vol III, visapratisedha 40th chapter verse 68-72, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 360-361
34. Astanga samgraha of vagbhata vol III, sarpavisapratisedha 42nd chapter verse 83-86, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 400-401
35. Astanga samgraha of vagbhata vol III, sarpavisapratisedha 42nd chapter verse 79-82, uttarsthana in Professor K.R. Srikanthamurthy, Varanasi, chaukhambha orientalia, 2012. p. 400

36. Susrutasamhita volume 1, sarpa dashta visha chikitsitamkalpa 5th chapter verse 65-67, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 65
37. Susrutasamhita volume 1, sarpa dashta visha chikitsitamkalpa 5th chapter verse 84-86, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 66-67
38. Susrutasamhita volume 1, dundubhiswaniyakalpa 6th chapter verse 14-27, kalpasthana in Kaviraj dr. ambikadatt shastri, Varanasi, chaukhambha samskrit sansthan, 2014. p. 69.

