

A Classical Review of Sarpagandha (*Rauwolfia Serpentina* Benth.)

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Abstract

Introduction: *Sarpagandha* (*Rauwolfia serpentina* Beth.) is a renowned medicinal plant in *Ayurveda*, used widely in the management of *Raktachapa* (Hypertension) and *Anidra* (Insomnia) due to its antihypertensive properties and sedative action. *Sarpagandha* belongs to Isocyanate family containing phytochemicals like reserpine, rauwolfine and various other 30 alkaloids. **Methodology:** A literature review of classical *Ayurvedic* texts such as *Bhava Prakash Nighantu*, *Kaideva Nighantu*, *Dhanvantari Nighantu*, and *Raj Nighantu* was done along with published research articles and databases. **Discussion:** The literatures reviewed, supports the traditional *Ayurvedic* use of *Sarpagandha* (*Rauwolfia serpentina*) in the management of various health conditions related to vitated *vata* and *kapha* dosha such as hypertension, insomnia, and psychosomatic disorders. The therapeutic effects are due to chemical constituents mainly alkaloids such as reserpine and ajmaline. **Results:** *Sarpagandha* has been found to be highly effective for psychosomatic disorders along with its significant *VataKapha shamak* action.

Keywords: *Sarpagandha*, Hypertension, Insomnia.

Introduction

In *Sanskrit*, *Sarpagandha* is derived from Sarp- snake and gandha- strong smell indicating that snakes won't stay near the plant due to its strong odour hence it is traditionally considered as an antidote for snake venom.^[1]

Rauwolfia serpentina Beth. (*Sarpagandha*) of family Isocyanate is a traditional *Ayurvedic* medicine. Its alcoholic extract has hypnotic and sedative properties. Some alkaloids are cardiac and vasomotor depressant. Due to these properties, it is widely used psychosomatic disorders and hypertension.^[2] Hypnotic effect of *Sarpagandha* was used to put children to sleep by impoverished group, mainly in Bihar.^[3] It was sold by the name of '*pagal-ka-daura*'. However, at large dosage it produces deep sleep, diminished sensation of pain and reflexes leading to death by asphyxia due to paralysis of respiratory center. ^[4]

Aim

1. To review the classical *Ayurvedic* references and therapeutic properties of *Sarpagandha* (*Rauwolfia serpentina*).

2. To explore its *Ayurvedic* role in the management of *Raktachapa* (hypertension), *Anidra* (insomnia), and psychosomatic disorders.
3. To correlate its traditional therapeutic actions with its reported phytochemical constituents and pharmacological activities.

Objectives

1. To compile and analyse the references of *Sarpagandha* from major *Ayurvedic Nighantus*.
2. To evaluate its *Vata-Kapha Shamak* properties and therapeutic applications in hypertension and insomnia.
3. To review the available scientific literature on its major alkaloids, particularly reserpine and ajmaline, and their therapeutic relevance.

Methodology:

A literature review was carried out using classical *Ayurvedic* texts, namely *Bhava Prakash Nighantu*, *Kaideva Nighantu*, *Dhanvantari Nighantu*, and *Raj Nighantu*, along with published research articles and databases to evaluate the *Ayurvedic* and pharmacological aspects of *Sarpagandha*.

A. Classical review of *Samhitas* -*Nighantu*

1. *Bhava Prakash Nighantu*- *Bhava Prakash Nighantu* was reviewed to collect information on the *Ayurvedic* properties, phytochemical constituents, pharmacological actions, and morphological characteristics of *Sarpagandha*.^[5]
2. *Kaideva Nighantu*- *Kaideva Nighantu* was reviewed to study the synonyms, *Guna* (properties), *Karma* (therapeutic actions), and classification of *Sarpagandha*.^[6]
3. *Dhanvantari Nighantu*- *Dhanvantari Nighantu* was reviewed to compile information on the synonyms, *Guna*, *Karma*, and classification of *Sarpagandha*.^[7]
4. *Raj Nighantu*- *Raj Nighantu* was reviewed to study the synonyms and classification of *Sarpagandha*.^[8]

B. Database- Databases were reviewed to obtain vernacular name along with taxonomical classification of *Sarpagandha*.

Review

Vernacular names

English: Indian snakeroot, java devil pepper, ichneumon-plant, insanity herb, rauwolfia root, rauwolfia, serpentine wood, snakeroot, snakewood

Assamese: Arachoritita Bengali: Chandra

Gujarati: *Sarpagandha*

Hindi: Chandrabhaga, Chota-chand, Nakuli, *Sarpagandha*

Kannada: Sarpangandha, Sarpagandhi, Shivanabhiballi, Sutranavi, Patalagandhi

Malayalam: Amalpori, Chuvannavilpori, Sarppagandhi, Suvapavalporiyam

Marathi: Harkaya, Harki, Nakuli

Oriya: Patalagarar, Sanochado

Sanskrit: *Chandrika, Nakuli, Patalgaruda, Sarpagandha*

Tamil: Chevanamalpodu

Telugu: Patalaguni, Patalagaruda, *Sarpagandha*

Urdu: Chota chand, Nakuli ^[9]

Table 1. Synonyms as described by Nighantus

Synonyms	K.N. ^[10]	D.N. ^[11]	R.N. ^[12]
<i>Nakuleshta</i>	+	-	-
<i>Mahavirya</i>	+	-	-
<i>Sarpasugandhika</i>	+	+	-
<i>Vishaghni</i>	+	-	-
<i>Suvaha</i>	+	-	-
<i>Sarpgandha</i>	+	+	+
<i>Chireetpatrika</i>	+	+	-
<i>Sugandha</i>	+	+	+
<i>Nakuli</i>	+	-	+
<i>Gandhanakuli</i>	+	-	-
<i>Sarpalochan</i>	+	-	-
<i>Sarpkankalika</i>	+	-	-
<i>Sunanda</i>	+	-	-
<i>Vishdanshtrika</i>	+	-	-
<i>Chhatraki</i>	+	-	-
<i>Kaamcharini</i>	+	--	-
<i>Bhogigandhika</i>	-	+	-
<i>Raktpatrika</i>	-	--	+
<i>Isvari</i>	-	--	+
<i>Naga-gandha</i>	-	--	+
<i>Ahibhuk</i>	-	--	+
<i>Sarpadani</i>	-	--	+
<i>Svarasa</i>	-	--	+
<i>Vyalagandha</i>	-	--	+

K.N.- Kaiyadeva Nighantu D.N.- Dhanvantari Nighantu R.N.- Raj Nighantu

Taxonomy

Kingdom- Plantae Phylum- Streptophyta Class- Equisetopsida Subclass- Magnoliidae Order- Gentianales Family- Apocynaceae Genus- *Rauvolfia*
Species- *Rauvolfia serpentina* ^[13]

Botanical description

Habitat- A climbing shrub found in the tropical Himalayas and at moderate altitude in Sikkim, north Bihar, Patna, Bhagalpur, Assam, Pegu and Tenasserim, Deccan peninsula along the Ghats to Travancore and Ceylon, java and Malay peninsula. ^[14]

Description-

Habit :- shrub, attractive, 30-60 cm tall rarely 1 metre tall.

Leaves :- green, glabrous, 7.5-18 long, 3-6 cm broad, tapering, pointed apex, in whorls of 34 leaves at nodes.

Flowers :- whitish or pinkish in a bunch, on 4-10 cm long pedicels. Fruit :- small, pulpy, in pair of 2, purple on ripening.

Root:- snake like, irregular, approx. 10 cm long, 18 mm thick, rough, wrinkled, branched with vertical lines present, outer greyish yellow in colour inner whitish in colour, irregular on breaking. ^[15]

Varieties

A. Kaiyadeva Nighantu -

1. *Gandhanakuli* {*Aristolochia inidca* Linn.} (synonym- *Mahasugandha*, *Chatraki*, *Kamcharini*)

2. *Nakuli* ^[16]

B. Bhava Prakash Nighantu -

1. *Gandhanakuli* {*Aristolochia inidca* Linn.} (synonym- *Mahasugandha*, *Chatraki*, *Kamcharini*)

2. *Nakuli* ^[17]

C. Dhanvantari Nighantu-

1. *Gandhanakuli* {*Ophiorrhiza mungos* Linn.} (*Mahasugandha*, *Suwaha*, *Sarpakshi*, *Naki*, *Nakuleshtha*, *Chatraki*, *Leshtha*, *Chatraki*, *Vishmardani*)

2. *Nakuli* ^[18]

D. Raj Nighantu-

1. *Mahasugandha* {*Aristolochia indica* Linn.} (*Māha-sugandhā*, *Gandha-nākulī*, *Phaṇi-hantrī*, *Ahibhuk*, *Ahi-mardinī*, *Mahāhi-gandhā*, *Suvahā*, *Sarpākṣī*, *Nakulāḍhya*, *Viṣa-*

mardanikā, Visa-mardinī, Ahilatā)

2. *Nakuli* ^[19]

Table 2 . Ayurvedic properties as per *Nighantu*

	K.N. ^[20]	D.N. ^[21]	B.N. ^[22]
Ras	<i>Katu, Tikta, Kashaya</i>	<i>Katu Tikta</i>	<i>Tikta</i>
Guna	-	-	-
Virya	<i>Ushna</i>	<i>Ushna</i>	<i>Ushna</i>
Vipaka	<i>Katu</i>	<i>Katu</i>	<i>Katu</i>

K.N.- Kaiyadeva *Nighantu*

D.N.- Dhanvantari *Nighantu*

B.N.- BhavPrakash *Nighantu*

Chemical constituents:

The root of *Sarpgandha* contains mainly two groups- Ajmaline group (Ajmaline, Ajmalinine, Ajmabeine) and the serpentine group (Serpentine, Serpentinine). The ajmaline groups depress- heart, respiration, nerves whereas the serpentine group paralyses- respiration and depresses nerves but stimulates heart. The total alkali content of the roots produced in Bihar is 0.8-1.3% consisting of Ajmaline (Ajmaline, Co H O, N, 3 H, O), Ajmalinine (Ajmalinine, C H O, N, 1.5 HO), Ajmalicine and yellow alkali serpentine (Serpentine, Co Ho O, N. 1.5 H O), serpentinine (CHO, N 1.5 H, O) and amorphous bases. The root from Dehradun has a total alkali content of 1-1.3% but no yellow alkaloids and contains two isomeric alkali substances, azlin and azlinine. In addition to these, there are some other bases with amphoteric character. In addition to these bases, its core contains an oily resin (Oleoresin) and Serposterol (CH O₂). ^[23]

Part used

Root of *Sarpgandha* is of therapeutic value ^[24]

Use

1. Uterine contraction: Decoction of root increases uterine contraction and promote expulsion of foetus.
2. Snake bite: It acts as a remedy for poisonous snake bites and stings of insects.
3. Dysentery: Remedy for dysentery and painful affections of the bowels
4. Insomnia: It works in Insomnia, Hypochondria and irritative conditions of the central nervous system.

5. Fever: The root of *Sarpgandha* and *Andrographis paniculata* are grinded along with black and given at the dosage of 1 to 2 tola for fever.
6. High blood pressure: Dose of 20 to 30g of root powder is given twice daily to reduce blood pressure.^[25]
7. It works as an antidote for *Vrta*, *Krimi*, *Sarp*, *Luta*, *Vrishchika*, *Mushakvisha* and *Garvisha*.^[26]
8. It works as an antidote for *Mushakvisha* and *Krimi*.^[27]

Behavioral therapy-

Sarpgandha is called as “Pagal-ki-dawa” and has been widely used for behavioral changes

Mental disorders- It has proved itself to be very potent in *Raktachaap* (Hypertension), *Vataj Unmaad* (Insanity), *Anidra* (Insomnia) and other mental disorders. It's action remains prevalent even after 3 to 7 days and it's full potency is seen in 3 to 6 week.

Its use brings drowsiness rather than sleep and the patient gets great relief by getting rid of nervousness, irritability, tension, heartbeat and fatigue etc.^[28]

Overdose:

Overdose of *Sarpgandha* more than it's recommend dosage (1 to 2g) can cause diarrhea and nightmares. During its use, it has side effects such as nasal congestion, heaviness in body, loss of libido and increased bowel movements.^[28]

Conclusion:

Sarpgandha (*Rauvolfia serpentina*), a medicinal plant in *Ayurveda* that is being used in the treatment of various disorders. Some among many are- hypertension, insomnia and mental health conditions. The classical texts describe the importance in managing conditions related to vitiated *Vata* and *Kapha* doshas. Uniquely it is also used as a medicine in certain toxic conditions such as snake bites and mouse bites. *Sarpgandha* contains active alkaloids like reserpine and ajmaline which contributes to its calming and blood pressure-lowering effects. This review highlights the therapeutic significance of *Sarpgandha*. High dosage of *Sarpgandha* may cause unwanted side effects, hence it should be administered in appropriate doses under professional guidance.

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Conflict of Interest

The author declares no conflict of interest.

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