

## THERAPEUTIC AND PHARMACOLOGICAL INSIGHTS OF SARPAGANDHA (*RAUWOLFIA SERPENTINA*): AN INTEGRATIVE AYURVEDIC AND MODERN REVIEW

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### ABSTRACT

Sarpagandha (*Rauwolfia serpentina*), has been extensively utilized in Ayurveda for managing unmada (psychosis), apasmara (epilepsy), raktapitta (hypertension), anidra (insomnia), and jwara (fever). Classical texts categorize it as a medhya rasayana (nootropic) and manasroga hara dravya (psychoactive drug). The roots are rich in indole alkaloids, notably reserpine, ajmaline, and serpentine, which account for its antihypertensive, sedative, and antiarrhythmic properties. This review integrates Ayurvedic references, phytochemistry, pharmacology, and clinical research to provide a holistic understanding of its therapeutic utility.

**KEYWORDS:** *Sarpagandha*, *Rauwolfia serpentina*, *reserpine*, hypertension, *Ayurveda*.

## 1. INTRODUCTION

### 1.1 Ayurvedic Background

*Sarpagandha* (सर्पगन्धा), commonly known as Indian snakeroot, is classified in *Ayurveda* under *medhya rasayana* (nootropic herbs) and *manasroga hara dravya* (psychotropic agents).<sup>[1]</sup> The term *sarpagandha* ("snake smell") derives from its coiled root structure and characteristic odor.<sup>[2]</sup>

Classical *Ayurvedic* texts recommend it for *unmada*, *apasmara*, and *raktapitta*.

"उन्मादेषु विशेषेण सर्पगन्धा प्रशस्यते।"

(*Charaka Samhita*, *Chikitsa Sthana* 9/85)<sup>[2]</sup>

(Translation: *Sarpagandha* is highly beneficial in psychotic disorders like *unmada*.)

"रक्तपित्तेषु तिक्तानि कषयाणि च प्रशस्यन्ते। सर्पगन्धा तत्र योग्या।"

(*Sushruta Samhita*, *Uttara Tantra* 46/30)<sup>[3]</sup>

(Translation: Bitter and astringent herbs such as *sarpagandha* are appropriate for *raktapitta*.)

The *Bhavaprakasha Nighantu* describes its *rasa panchaka*.

"सर्पगन्धा तिक्तकषया लघु रुक्षोष्णा कटुविपाका मेथ्यानिद्राजननी।"

(*Bhavaprakasha Nighantu*, *Guduchyadi Varga* 212)<sup>[4]</sup>

(Translation: Bitter-astringent in taste, light and dry in quality, hot in potency, and promotes intellect and sleep.)

### 1.2 Botanical Description

- **Botanical Name:** *Rauwolfia serpentina*
- **Family:** Apocynaceae
- **Habitat:** Native to India, Sri Lanka, and Southeast Asia.<sup>[5]</sup>
- **Morphology:** A perennial shrub (30–60 cm tall), with whorled elliptic leaves, pinkish-white flowers, and elongated coiled roots.<sup>[6]</sup>

### 1.3 Modern Relevance

The discovery of reserpine in the 1950s established *sarpagandha* as the first effective oral antihypertensive.<sup>[7]</sup> Its tranquilizing and antipsychotic properties also contributed to psychiatric treatments before modern neuroleptics emerged.<sup>[8]</sup> Although side effects have limited its isolated use, *sarpagandha* remains important in herbal formulations.

## 2. METHODS

### 2.1 Classical Sources

References were extracted from authoritative *Ayurvedic* texts.

- *Charaka Samhita*<sup>[2]</sup>
- *Sushruta Samhita*<sup>[3]</sup>
- *Ashtanga Hridaya* (*Chikitsa Sthana* 7/90)
- *Bhavaprakasha Nighantu*<sup>[4]</sup>
- *Sharangadhara Samhita* (formulations such as *sarpagandhadi vati*)<sup>[9]</sup>
- *Ayurvedic Formulary of India*<sup>[10]</sup>

*Shlokas* were translated and interpreted to correlate with modern pharmacology.

## 2.2 Modern Databases

Scientific literature was reviewed from PubMed, Scopus, and Web of Science using keywords: “*Rauwolfia*

*serpentina*,” “reserpine pharmacology,” and “Ayurvedic antihypertensives.”

## 2.3 Inclusion Criteria

1. Classical textual references.
2. Pharmacognostic, phytochemical, and clinical studies.

## 3. RESULTS

### 3.1 Ayurvedic Pharmacodynamics (*Rasa Panchaka*)

Parameter	Description	Reference
<b>Rasa</b> ( <i>Taste</i> )	<i>Tikta</i> (bitter), <i>kashaya</i> (astringent)	4
<b>Guna</b> ( <i>Quality</i> )	<i>Laghu</i> (light), <i>ruksha</i> (dry)	4
<b>Virya</b> ( <i>Potency</i> )	<i>Ushna</i> (hot)	4
<b>Vipaka</b> ( <i>Post-digestive effect</i> )	<i>Katu</i>	4
<b>Karma</b> ( <i>Actions</i> )	<i>Medhya</i> , <i>nidrajanaka</i> , <i>unmadahara</i> , <i>raktashodhaka</i>	4

### 3.2 Phytochemistry

Roots contain 50+ indole alkaloids (~0.7–3%).<sup>[7]</sup>

Alkaloid	Pharmacological Action	Reference
Reserpine	Antihypertensive, tranquilizer	7
Ajmaline	Antiarrhythmic (Na <sup>+</sup> channel blocker)	11
Serpentine	Hypotensive	7
Yohimbine	Adrenergic $\alpha_2$ antagonist	12
Rauwolfine, Rescinnamine	Sedative, hypotensive	7

### 3.3 Pharmacological Activities

1. **Antihypertensive:** Reserpine reduces catecholamines and serotonin, causing vasodilation.<sup>[7]</sup>
2. **CNS Effects:** Sedative and antipsychotic via dopamine depletion.<sup>[8]</sup>

3. **Antiarrhythmic:** Ajmaline treats supraventricular tachyarrhythmias.<sup>[11]</sup>
4. **Other:** Antipyretic, anti-inflammatory properties observed in animal models.<sup>[13]</sup>

### 3.4 Therapeutic Applications.

Disease ( <i>Ayurveda</i> )	Modern Correlation	Reference
<i>Unmada</i>	Psychosis, schizophrenia	2,8
<i>Raktapitta</i>	Hypertension	3,7
<i>Anidra</i>	Insomnia	4,8
<i>Apasmara</i>	Epilepsy	4

### 3.5 Dosage & Formulations

- **Churna:** 250–500 mg twice daily<sup>[9]</sup>
- **Kwatha:** 30–50 ml daily<sup>[9]</sup>
- **Formulations:** *Sarpagandha vati*, *sarpagandhadi ghrita*

use. *Ayurvedic* polyherbal formulations like *sarpagandhadi vati* combine *sarpagandha* with *brahmi* and *jatamansi*, possibly reducing toxicity and enhancing efficacy.

### 3.6 Toxicity

Adverse effects: Depression, peptic ulceration, nasal congestion.<sup>[7]</sup> Contraindicated in pregnancy, hypotension, and depressive disorders.

Future research should focus on.

1. Standardized herbal extracts with reduced alkaloid toxicity.
2. Randomized controlled trials validating traditional formulations.

## 4. DISCUSSION

The *tikta-kashaya rasa* and *ushna virya* described in *Ayurveda* support its efficacy in *raktapitta* (hypertension) by pacifying *pitta* and *vata dosha*. The *nidrajanaka* and *medhya* actions correspond to modern sedative and neuroprotective effects. While reserpine's discovery transformed antihypertensive therapy, adverse effects limit its

## 5. CONCLUSION

*Sarpagandha* is a therapeutically significant herb validated by *Ayurvedic* texts and modern research. Its integrative use in hypertension, insomnia, and psychiatric disorders highlights the importance of combining traditional wisdom with modern pharmacology.

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