

## APOCYNACEAE

### **Rauvolfia serpentina** (L.) Benth. ex Kurz

*Common English names* : Devil-pepper, Snake-root.

*Vernacular names* : *Beng.*: Chandra; *Hindi*: Chandrabagha, Chota chand; *Kan.*: Patalagondhi, Sarpagandhi, Shivavabhiballi, Sutrnavi; *Mal.*: Chuvanna-vilpori, Suvapavalforiyan; *Mar.*: Harkaya, Harki; *Or.*: Patalgarur, Sanochada; *Tam.*: Chivan amelpodi; *Tel.*: Paataala garuda, Paataala goni; *Urdu*: Asrel.

*Trade name* : Sarpagandha, Indian Snake-root.

*Distribution* : INDIA: Jammu & Kashmir, Himachal Pradesh, Punjab, Delhi, Uttar Pradesh, Bihar, West Bengal, Sikkim, Arunachal Pradesh, Assam, Maharashtra, Goa, Andhra Pradesh, Karnataka, Tamil Nadu, Kerala, Lakshadweep and Andaman Islands; CHINA; PAKISTAN; BANGLADESH; NEPAL; BHUTAN; SRI LANKA; MYANMAR; PENINSULAR MALAYSIA; THAILAND; LAOS; VIETNAM and INDONESIA.



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*Habitat* : Grows well in hot humid climate, temperature ranging between 10-38° C, preferring partial shade in tropical or subtropical belt having the benefit of monsoon rains, rainfall ranging from 250-500 cm. It prefers sandy alluvial loam to red lateritic loam or stiff dark loam.

*Population status / Cause for RET* : Vulnerable. Roots are collected indiscriminately for medicinal properties which resulted its rarity in many forest areas of Uttar Pradesh, West Bengal, Tamil Nadu and Maharashtra. The species once recorded as a common forest floor component has become rare. The plant is under experimental cultivation in Uttarakhand, Bihar, Odisha, West Bengal, Assam, Tamil Nadu, Kerala, Karnataka, Maharashtra and Gujarat. Also cultivated in SFRI, FRS, Chessa; Forest Dept., Meghalaya and Assam Bioresource Center, ASTEC.

*Description* : Erect herbs or undershrubs, 15 - 75 cm high. Roots tuberous, irregularly nodular, with pale brown bark. Leaves in whorls of three, lanceolate or elliptic-lanceolate, 7.5 - 17.5 × 4.3 - 6.8 cm, acute or acuminate at apex, wavy at margins, dark green above, pale green below. Flowers ca 1.5 cm long, white or pinkish in cymes; peduncles deep red. Drupes purplish-black, obliquely ovoid or rounded, connate.

*Fl. & Fr.* : April-October.

*Medicinal properties and uses* : *Rauvolfia* roots are of immense medicinal value and have steady demand in both domestic and international markets. In action, the root is bitter, acrid, laxative, diuretic, antidote to snake venom, expectorant and febrifuge. In folk and tribal medicine, the root of this plant is used during delivery to stimulate uterine contractions and promote the expulsion of the foetus. Crying babies are put to sleep by working mothers by making them to suck the breasts, which are smeared with the root-paste. It is also a valuable remedy in treatment of painful affections of the bowels. Roots are used for treating various Central Nervous System disorders. The root of this plant contains several alkaloids; the major and most potent alkaloid is 'reserpine', which is very much useful in insomnia and reducing blood pressure.

The root extracts are used for treating intestinal disorders, particularly diarrhoea and dysentery and also used as anthelmintic. It is used for the treatment of cholera, colic and fever. The juice is used as a remedy for opacity of the cornea. The total root extracts exhibits a variety of effects viz., sedation, hypertension, bradycardia, myosis, ptosis and tremors which are typical of reserpine. This plant is traded in various levels viz., local, regional, national and global markets. The crude drug sold in the local markets comes largely from wild sources. The Forest departments of various States regulate the collection of this plant from the wild. The crude drug commercially supplied by Forest Corporations, Co-operative marketing societies and certain selected drug dealers are located in Dehra Dun, Rishikesh, Hazaribagh, Shillong, Cuttack, Raipur and Vishakhapatnam. Drug dealers placed in Thrissur, Mumbai, Delhi and Kolkata arrange bulk supplies of this raw drug. The current market rate of the roots of this plant is Rs. 140 per kg.

*Commercial / Ex-Im data* : Nearly 200 - 500 MT of roots are traded annually.

During 2000:

100 kg of roots/rhizomes of *Rauvolfia serpentina* have been exported to Switzerland (CITES Permit no. A1668).

2.235 kg of roots/rhizomes extract used in ayurvedic formulation have been exported to Russian Federation (CITES permit no. A 1668, A 1683, A1693, A 1694, A 1696, A 1697).

During 2004-2005, India exported 1.3 MT of *Serpentina* roots, valued at Rs. 99,361 and 28 MT were imported for a value of Rs. 8.7 lakhs (Source: I-AIM, Bangalore).

Cases of offences detected, violating CITES and EX-IM Policy :

- 1.8 kg of roots and other items of *R. serpentina* seized at FPO, Kolkata on 29.08.2000, on way to Holland.
- 100 gm of *Rauvolfia* powder detected at FPO, New Delhi on 31.07.2001, on way to New York, USA, consignor being Vedmata Gayatri Trust, Haridwar.
- 100 kg of *R. serpentina* seized at Air Cargo Complex, Mumbai on 03.04.2002, on way to Spain, consignor being Esschem Overseas (Pvt.) Ltd., Mumbai.

*Adulteration* : The roots of *R. serpentina* are usually adulterated with the stem of the same plant. But the roots can be easily distinguished from the stems in having more wrinkled surface, less flexible, thicker and less branching. They are also adulterated with *Ophiorrhiza mungos* L., white flowered and red flowered *Clerodendrum* species and *Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult. Roots of *Rauvolfia beddomei* Hook.f., *R. micrantha* Hook.f., *R. verticillata* (Lour.) Baill., *R. densiflora* (Wall.) Benth. ex Hook.f. and *R. tetraphylla* L. are also used as adulterants.

*Legal* : Listed in Appendix II of CITES. Included in Negative List of Exports.

*References* :

Jain, S. K. & A.R.K. Sastry (1980). Threatened Plants of India - A State-of-the-Art Report. P. 35.

Jain, S. K. & R.R. Rao (1983). An assessment of threatened plants of India. P. 100.

Mulliken, T. & P. Crofton (2008). Review of the Status, Harvest, Trade and Management of seven Asian CITES - listed Medicinal and Aromatic Plant species. Pp. 93-111.

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