

MEDICINAL PLANTS

Lecture 2

Rauvolfia serpentina
Papaver somniferum



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PLANTS AS MEDICINE

Among various other uses, the plants are very significant source of medicines, a great proportion of drugs of medicinal use are directly or indirectly obtained from plants. Most of the medicines we have are either plant based or synthetic derivatives of some plant products.

***Rauvolfia serpentina* Indian Snakeroot**
Vern.: Sarapgandha Family: Apocyanaceae

Also known as “Chanderbhaga” it is native to the moist, deciduous forests of southeast Asia, including India, Burma, Bangladesh, Sri Lanka, and Malaysia
Genus *Rauvolfia* includes more than 100 species spread in tropical and subtropical regions of the world, including Europe, Africa, Asia, Australia, and the Central and South Americas



Rauvolfia serpentina

Botanical Characters: It is an evergreen shrub, 60-90 cm high, spreading or trailing branchlets; leaves pale green, elliptic-lanceolate, in whorls of 3-5. Flowers whitish pink, borne in cymose clusters, usually on apical branches. The fruits are round, shiny, black or purple.

The most important part is the tuberous, soft taproot, which may go down up to 50 cm. Due to this the plant has been uprooted from wild, and faces serious threat of extinction.

Rauvolfia serpentina

IMPORTANT BIOCHEMICALS PRESENT

Indian snakeroot contains various alcohols, sugars and glycosides, fatty acids, flavonoids, phytosterols, oleoresins, steroids, tannins, and alkaloids. Most important alkaloids indole alkaloids, derived from amino acid tryptophan.

Though present in all parts of the plant, yet highest concentration is found in root bark. The important alkaloids are **reserpine**, reserpinine, rauwolfinine, serpentine, serpentinine etc. though more than 50 have been isolated.

CULTIVATION

This plant is now grown in various herbal gardens, botanical gardens, more for conservation purposes. Commercially grown in lower hills of HP, Uttarakhand, UP, J&K etc. Requires slightly acidic to neutral soils and can be propagated by seeds, stem cuttings as well as root cuttings.

Rauvolfia serpentina

MEDICINAL SIGNIFICANCE

Traditionally being used in India against snake and insect bites, febrile conditions, malaria, abdominal pain, and dysentery and as a cure for insanity. Indian old writings as old as 1000 BC list this plant.

Sarapgandha contains many different phytochemicals.

Reserpine is one of the major alkaloids of the plant. The reserpine content has been found to be highest in the root and lower in the stems and leaves.

Rauwolfia serpentina

MEDICINAL SIGNIFICANCE

Very effective against hypertension, isolated reserpine was branded as Serpasil for the treatment of hypertension, tachycardia, and thyrotoxicosis.

The root bark has been very effective in treatment of mental diseases like schizophrenia, bipolar disorder, epilepsy and seizures, and of insomnia and sleep problems.

Also effective in the treatment of anxiety.

Rauwolfia reduced the pain considerably in the migraine patients.

Papaver somniferum Poppy

Vern.: Afeem, Post Family: Papaveraceae

Probably a native of Eastern Mediterranean, but it cannot be precisely traced, due to extensive cultivation. It is cultivated in almost all countries of the world.

The genus *Papaver* contains about 110 species with many varieties and forms, mostly natives of Central and South Europe and temperate Asia



In addition to being excellent medicine, the plant is widely known for its highly narcotic and hallucinogenic properties. The cultivation requires license from Government in our country.



Papaver somniferum

Botanical Characters

Annual or biennial, glabrous to silvery-glaucous herb, erect, 1-1.5 m high, slightly branched, leaves stem-clasping, dentate-serrate, glaucous, lower ones pinnatifid, flowers attractive white-purple, on long peduncles, the fruit is a poricidal capsule, covered with stigmatic disc, lifting up on maturity to release seeds.

CULTIVATION

Propagation is done from seeds. Ideal temperature is 15⁰ C, weeding and manuring is required. Flowering occurs in April-May and capsules mature in June-July. Though all parts of poppy plant contain a white milky juice or latex, the unripe capsules are full of latex. The latex from unripe capsule is richest in morphine. To obtain the latex, **lancing** is done with special lancing knives, in late afternoon, and latex is collected before sunrise in the morning. The latex is packaged in special containers, and sent to nearest Department of Narcotics, to be finally sent to Govt. Opium and Alkaloid Works, Ghazipur, Uttar Pradesh.

Papaver somniferum

CULTIVATION

Crude latex of first 3-4 lancements contains higher percentage of morphine, the quantity of alkaloids varies significantly due to weather, as it requires good sunshine. Morphine content is highest during 10–30 days after flowering.

IMPORTANT BIOCHEMICALS

Opium is dried latex obtained from capsules. The natural alkaloids are a group known as opiates. The most important ones are Morphine, Codeine, Papaverine, Thebain. These alkaloids are having sedative properties, and the specific name *somniferum* means “sleep bringing”.

Papaver somniferum

MEDICINAL SIGNIFICANCE

Extensively smoked as an intoxicant, it is the source of toxic and extremely habit forming heroin, illegally traded and smuggled.

Seeds contain no opium, good source of energy and are used extensively in bakery products.

Seeds are also the source of a drying-oil, used for manufacture of paints, varnishes, and soaps.

Oil cake is a good fodder for cattle.

Stems used for straw.

It is widely grown as an ornamental, but in India it is illegal to grow.

Make the Sustainable Use of Natural resources, including Medicinal plants..



Thanks