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Medicinal plant *rauwolfia tetraphylla* | its medicinal uses and pharmacological activities

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Abstract

Humans rely on plants for a wide range of necessities, including food, building materials, flavourings, and medicines. Endangered *Rauwolfia tetraphylla* L. It is a significant plant in the Apocynaceae family that is grown for its enormous medicinal value. Therapeutic qualities. The current analysis emphasises ethno botanical applications and *R. tetraphylla's* potential for use in medicine. *R. tetraphylla* is a frequently utilised plant in Traditional medicine is frequently utilized as an adulterant or Rauwolfia replacement. Serpentina. The plant is used to treat blood poisoning, snakebites, and other toxic bites. helminthiasis, wound, piles, diabetes, piles, high blood pressure, vomiting, insomnia, skin conditions, psychological issues, cough, fever, and other things Numerous secondary metabolites, including yohimbine, deserpidine, alstonine, deserpidine, aricine, isoreserpine, sarpagine, ajmaline, lankanescine, and others have been found in the plant, with reserpine being the most significant. *R. Tetraphylla* has demonstrated a variety of pharmacological properties, including antimicrobial, antioxidant, cytotoxic, antiplatelet, anti-inflammatory, cardio protective Activities include calming, hypotensive, insecticidal, allopathic, and antiphrastic effects. Isolated Constituents have demonstrated actions, demonstrating their pharmacological activity. For instance, antipsychotic and antibacterial action. Finally, the *R. tetraphylla* plant is a medicinal species that is critically endangered and has a significant role in traditional medicine is a significant source of valuable alkaloids; hence, it is crucial to protect the species for its numerous advantageous uses.

Keywords: Yohimbine, deserpidine, alstonine, deserpidine, aricine, isoreserpine, sarpagine

Introduction

Plants have been used by humans for many purposes, including the production of lumber, Food, medication, and a source of dyes. In specific types of Plants and preparations have both been widely utilized to treat a variety of conditions with conventional medicine both by indigenous medical systems and throughout the world Ayurveda, Siddha, Unani, and other belief Chinese herbal medicine (TCM). Using plants medication is the mainstay of treatment for those without access who reside in remote areas for contemporary medicine. The indigenous people's wisdom practitioners of medicine who study plants' therapeutic properties from generation to generation, properties are handed on. Alkaloids, terpenes, and polyphenolic chemicals are only a few of the numerous secondary metabolites that plants create, many of which are recognized to have medicinal uses. Chemicals originating from plants have a special role in modern medicine since they are regarded as highly important leads for the development of new drugs. Plants are the source of substances like vincristine, vinblastine, digitalin, digoxin, atropine, camptothecine, morphine, codeine, reserpine, quinine, and artemisinin. Throughout history, plants have been utilized to treat a variety of illnesses, including microbiological diseases, cancer, diabetes, inflammation, snake bites, skin diseases, and skin diseases. Numerous investigations on the pharmacological and medicinal qualities of plants have led to a wide body of knowledge regarding the therapeutic role of plants and their bioactive components. The Apocynaceae plant family includes the genus *Rauwolfia* L., which includes herbs and shrubs with leaves in whorls of three or four. The distribution of the genus *Rauwolfia* is pantropical, and it contains a wide range of alkaloids. The genus contains two vitally significant medicinal species: *Rauwolfia tetraphylla* L. and *Rauwolfia serpentina* (L.) Benth. Ex Kurz, both native to India and popularly known as sarpagandha there. Both species have bioactive alkaloids with specific biological functions the R's origins.

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Plant description

An evergreen, pubescent shrub with a woody stem that grows to a height of 4-6 feet is called *Rauwolfia canescens* L. Uneven, 5-9 x 3-4 cm, elliptic-ovate, sharp at the apex, pubescent leaves are typically seen in whorls of four. Flowers in terminal corymbose cymes are cream in colour and about 5 mm wide. The slender, ciliate, and rounded calyx lobes. Corolla is white in colour, around 3mm long, and has short lobes and tubes. Ovoid, 2-seeded, 5-10 mm in diameter, smooth, joined at the top, and purple when ripe, drupes are. Throughout the year, flowers bloom.



Fig 1: *Rauwolfia tetraphylla* L.

Kingdom	Plantae
Phylum	Angiosperms
Subphylum	Eudicots
Class	Asteroids
Order	Gentianales
Family	Apocynaceae
Genus	<i>Rauwolfia</i>
Species	<i>serpentina</i>

Fig 2: Scientific Classification

Morphological Features

The maximum height of *Rauwolfia*, an evergreen perennial shrub with glabrous leaves, is 60 cm. The roots have tuberous, light-brown cork on them. The thin, three-whorled leaves are elliptic to lanceolate to ovate, below brilliant green, and above bright green. Its flowers are white with frequently violet tipped corymbose cymes. According to Indian circumstances, the blossoming season lasts from March to May. The inflorescence has red pedicles, a calyx, and a white corolla, and the fruits are drupes that are single or didymium, gleaming black.

Chemical Constituents of *Rauwolfia serpentina*

An evergreen perennial shrub with glabrous leaves, *Rauwolfia* grows to a maximum height of 60 cm. Tuberous, light-brown cork is present on the roots. The thin, three-whorled leaves are below brilliant green and above bright green, elliptic to lanceolate to ovate. Its flowers are corymbose cymes that are typically violet-tipped and white. Indian custom dictates that the blooming season lasts from March May. The fruits are drupes that are single or didymium and shining black. The inflorescence has red pedicles, a calyx, and a white corolla. Ophioxyline, resin, starch, and wax are all present in the root. From plant to plant, alkaloids are present in varying amounts. According to a study, the yield of all alkaloids varied between 0.8 and 1.3% of the plant's dry weight. According to a different study, the overall production of alkaloids ranges

from 0.7 to 3.0% of root content. The largest amount of alkaloid found in the regenerated roots was 3.3%.

Medicinal Uses of *Rauwolfia*

According to research ^[9], *Rauwolfia serpentina* has the following pharmacologic effects:

1. By acting on the vasomotor center, it causes generalized vasodilatation and lowers blood pressure.
2. It calms the central nervous system by acting as a depressant on the cerebral ganglia ^[10].
3. It activates the muscles of the bronchi.

Antipsychotic

Reserpine has traditionally been used to treat tardive dyskinesia and schizophrenia. An upright herb with a smooth stem is called *Rauwolfia*. It is used as a medication to reduce fever or as a febrifuge.

Insomnia

Due to its calming qualities, *Rauwolfia* is a useful treatment for "insomnia." The *Rauwolfia* herb, which is quite significant, is very effective at treating madness. 250 ml of goat's milk sweetened with sugar candy and 1 g of powdered root can be taken twice daily.

Treatment of Hysteria

Hysteria can be successfully treated with *Rauwolfia*. 1 g of dried root powder be administered thrice with milk. Treatment should be continued till a complete cure is obtained.

Anti-hypertensive

It has been adopted by the medical community in the majority of countries and is also utilized in the treatment of high blood pressure. Practitioners of modern medicine frequently use these isolated alkaloids, which have a direct impact on hypertension. It reduces urticaria's itching.

Cancer

Additionally, it is employed in the management of "Breast cancer." The results of later studies and analyses that controlled for exclusion bias revealed that there was no rise in the incidence of breast cancer among the patients using *Rauwolfia*.

Other us

Other illnesses like fever, malaria, eye disorders, pneumonia, asthma, AIDS, headache, skin conditions, and spleen disorders can also be treated with *R. serpentina* extract.

Conclusion

In addition to being a great source of plants, India is the center for all medicinal plants. Some of the more recent uses of *Rauwolfia serpentina* were recommended in the current review. This use can be investigated scientifically and used to treat illnesses for the benefit of humanity.

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