

Exploring the Medicinal Potential of *Dalbergia sissoo*

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Abstract

Dalbergia sissoo, commonly known as Indian rosewood or Shisham, the plant is widely growing plant at different parts of country. It is a fast-growing deciduous tree widely distributed across the Indian subcontinent. Traditionally revered in Ayurvedic and Unani medicine, this species possesses a rich phytochemical profile, including flavonoids, tannins, glycosides, and essential oils, contributing to its diverse therapeutic applications. Numerous studies have highlighted its pharmacological properties, such as anti-inflammatory, antimicrobial, antioxidant, analgesic, antidiabetic, and hepatoprotective effects. The bark, leaves, seeds, and wood extracts of *D. sissoo* have shown significant potential in both in vitro and in vivo models, supporting its use in traditional healthcare practices.

This review aims to consolidate current research findings on the phytochemistry and medicinal applications of *Dalbergia sissoo*, emphasizing its potential as a natural source for developing novel plant-based therapeutics. It is used as traditionally to cure many diseases. The present study reveals the phytochemistry and its applications in treatment of various ailments. The genus consists of 300 species among which 25 species occur in India. The plant is used for painkilling and antipyretic activity.

Keywords: *Dalbergia sissoo*, Indian rosewood, Shisam, Antidiabetic, Phytochemicals,

Introduction

Medicinal plants have been the part and parcel of human society to fight disease since from the human development. The earliest description of therapeutic properties of medicinal plants were described in Rigveda (2500-1800 BC), Charak Samhita and Sushruta Samhita. Herbal medicines are still used to cure many diseases and a way of most common forms of therapy widely available throughout the world [1]. Herbal medicines are good ways to cure many diseases

in developing countries. The old medicines usually derived from medicinal plants [2]. The use of plants as a source of remedies has been inherited and is an important component of the health care system in India also [3]. The genus, *Dalbergia*, consists of 300 species out of which nearly 25 species occur in India. Many species of *Dalbergia* are important timber trees, valued for their decorative and fragrant wood, rich in aromatic oils [4]. The generic name *Dalbergia* honours the Swedish brothers, Nils and Carl Dalberg, who lived during the 18th century [5].

Taxonomical classification [6]:

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Fabales

Family: Fabaceae

Sub Family: Faboideae

Genus: *Dalbergia*

Species: *D. sissoo*

Scientific Name: *Dalbergia sissoo*



Fig. a) Habit of *Dalbergia sissoo*



Fig. b) leaves and pods of Dalbergia sissoo

Botanical Description

Dalbergia sissoo is a medium to large tree of about 25 meters high with grey yellow trunk, 2-3 meters in diameter. Leaves are leathery, pinnately compound, leaflets are alternate. They are broad, ovate, acuminate, glabrescent, and petiolate with fine pointed tip [7]. The generic name *Dalbergia* honours the Swedish brothers, Nils and Carl Dalberg, who lived during the 18th century [5]. Flowers are whitish to pink, fragrant nearly sessile, they are 5-8 mm long racemes 2.5 - 3.7 cm long in short axillary panicles. Its top is oval in shape. Pods are oblong, flat, thin, strap like 4-8 cm long and 1 cm in wide with 1-4 seeds. Seeds are 4-5 mm kidney shaped, thin and flat, light brown. They have long taproot and numerous surface roots which produce suckers. The sapwood is white to pale brown is dark brown in colour. The flowering period is March May [8].

Geographical Distribution

- **Exotic range:** India, Malaysia, Pakistan, Afghanistan, Bangladesh, Bhutan.
- **Native Range:** Nigeria, Sudan, Tanzania, Thailand, Togo, US, Zimbabwe Cameroon, Cyprus, Ethiopia, Indonesia, Iraq, Israel, Kenya, Mauritius, [9].

Traditional Uses

Several parts of *Dalbergia sissoo* are traditional used in treating different diseases and are stated below. [10]

Bark

Ayurveda describes the bark and wood as bitter, hot and acrid used as aphrodisiac abortifacient expectorant, anthelmintic, antipyretic and diseases of the blood, leucoderma, and dysentery.

Seeds

D. sissoo oil is used to treat burning and scabies.

Leaves

A decoction of the leaves are given in acute stage of gonorrhea. Its use in removing pus in urine, as alleviates profuse menstruation. To cure boils and pimples. The leaves extract has been reported to have antipyretic, anthelmintic and analgesic properties of pharmacology.

Chemical Constituents

The various part shows following constituents [11]

Leaves: Isoflavone -O- glycoside.

Pods: Mesoinisited, 7 - O - methyle tectorigenin and 4'- rhamnoglycoside.

Mature pods: Isocaviumin, tetorigeni dalbergin, tanniuns.

Steam bark: Dalberginone, dalbergin methyl dalbergin and dalberichromene.

Formula used	Medicinal Activity
Extract of aerial parts	Showed bronchodilation as well as significant antipyretic, analgesic and estrogen like activities [12].
Dried Leaf	Anti-bacterial, anti-protozoal anti in-inflammatory activities [13].
Leaf Juice	Used in gonorrhea [14].
Oil	Shows repellent activity [15].
Wood and bark extract	Abortifacient, anthelmintic, antipyretic [16]. blood disorders, scabies eye and nose disorders, burning sensations, scalding urine, stomach problems and syphilis, boils, leprosy and nausea [17].
Wood Paste	Used in wound itches, abscess and vomiting [18].

Traditional Medicine and Medicinal Uses

Dalbergia sissoo is reported to be a stimulant used in folk medicine and remedies. It is a folk remedy for gonorrhoea and skin ailments. Ayurvedics prescribe the leafy juice for eye ailments, the woody bark pastes as anthelmintic, antipyretic and analgesic. The wood is also used in India for boils, leprosy and nausea. The alcohol extract of green branches of aerial parts showed an inhibitory effect on the mobility of rabbit duodenum, pronounced bronchodilation, as well as significant anti-inflammatory antipyretic, analgesic and estrogen-like activities. An aqueous extract of wood has been used for the treatment of gonorrhoea in Arabic countries. The species of *Dalbergia* has been reported to have isoflavones, norartocarpotin, stigmasterol and neoflavonoids [19].

Leaves And Young Shoot Uses

The leaves, young shoots and green pods are used as good fodder for livestock and gazing animals; April to May is the best time for the production of high-quality fodder. The dry weight of leaves of *D. sissoo* contains up to 24.1% crude protein, 4.9% fat, 26.1% crude fibre and 12.0% ash.

Ecological importance

Dalbergia sissoo provides numerous services to environment and agro-forestry. It is used as a wind break and shelter belt and as a shade tree in intercropping of orchards, mango, tea and coffee plantations. The root system has suckers; it is commonly used for soil-erosion control and soil stabilization along stream and river banks. It is widely used as plant for nitrogen fixation and reforestation. Due to its fragrant flowers and shade, it is planted along the road side and in gardens as an ornamental plant [20].

Conclusion

Compounds obtained from *D. sissoo* like an isoflavone, biochanin is a potent chemotherapeutic cancer defensive agent. Also reported the estrogenic activity from the fresh flowers of *D. sissoo*. Querection was also isolated in a little yield research is still need to prove these properties [23]. In recent years, ethno-medicinal studies have received much devotion towards *Dalbergia sissoo*. It possesses various Pharmacological accomplishments to be conducted to investigate the unexploited potential of the plant.

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