

ASHMANTAKA (BAUHINIA RACEMOSA LAMK.): A COMPREHENSIVE REVIEW OF AYURVEDIC PERSPECTIVE, BOTANICAL CHARACTERISTICS, PHYTOCHEMISTRY AND THERAPEUTIC POTENTIAL

¹Dr. Neha Hiralal Patil, ^{2*}Dr. Nilima Dharkar, ³Dr. Loveleen Kour

⁴Dr. Omkar Devgir Giri

¹PG Scholar, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

²HOD and Professor, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

³PG Scholar, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

⁴PG Scholar, Dr. D.Y Patil College of Ayurved and Research, Pimpri, Pune.

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*Corresponding Author

Dr. Nilima Dharkar

HOD and Professor, Dr. D.Y Patil
College of Ayurved and Research,
Pimpri, Pune.



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ABSTRACT

Background: *Bauhinia racemosa* Lam. (Ashmantaka) is an important medicinal plant described in classical Ayurvedic literature and extensively utilized in traditional medicine for the management of various disorders. Despite its long-standing therapeutic use, information on its botanical, phytochemical, and pharmacological attributes remains dispersed. **Objective:** The present review aims to comprehensively summarize the available evidence on the taxonomy, botanical characteristics, traditional Ayurvedic perspective, phytochemical constituents, and therapeutic potential of *Bauhinia racemosa*. **Methods:** Relevant information was compiled from classical Ayurvedic texts, published scientific literature, and authenticated electronic databases. Data related to taxonomy, vernacular names, morphology, propagation, phytochemistry, traditional uses, and pharmacological activities were critically reviewed

and integrated. **Results:** *Bauhinia racemosa* is rich in bioactive constituents, including flavonoids, phenolic acids, tannins, glycosides, phytosterols, coumarins, and stilbenes. Experimental studies have demonstrated antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, antidiabetic, and immunomodulatory properties, providing scientific

support for several traditional Ayurvedic indications. The plant also possesses favorable agronomic characteristics that facilitate its cultivation and conservation. **Conclusion:** The available evidence indicates that *Bauhinia racemosa* possesses considerable therapeutic potential and represents a promising source of bioactive compounds. However, further phytochemical standardization, mechanistic investigations, toxicological evaluation, and well-designed clinical studies are required to validate its efficacy and support its integration into evidence-based healthcare.

KEYWORDS: Bauhinia Racemosa Lamk, Ashmantak, Madanpala Nighantu, Dhanvantri Nighantu.

INTRODUCTION

Medicinal plants have served as the cornerstone of traditional healthcare systems for centuries and continue to provide valuable leads for modern drug discovery. Ayurveda, one of the world's oldest systems of medicine, describes numerous plant species with significant therapeutic potential that remain underexplored despite their extensive traditional use. Among these, Ashmantaka (*Bauhinia racemosa* Lamk.), belonging to the family Fabaceae (subfamily Caesalpinioideae), occupies an important position owing to its wide distribution and diverse medicinal applications.

Ashmantaka is extensively described in classical Ayurvedic literature, including the *Madanapala Nighantu* and *Dhanvantari Nighantu*, where it is referred to by several synonyms such as *Amlapatraka*, *Yugmapatra*, *Shlekshana Twak*, and *Ashwayoni*.

Modern phytochemical investigations have revealed that Ashmantaka contains a wide spectrum of biologically active constituents, including flavonoids, phenolic acids, tannins, glycosides, saponins, phytosterols, stilbenes, coumarins, fatty acids, and essential minerals. Several compounds such as quercetin, kaempferol, rutin, gallic acid, methyl gallate, β -sitosterol, β -amyrin, resveratrol, racemosol, and de-O-methylracemosol have demonstrated potent antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, antidiabetic, and immunomodulatory activities in experimental studies. These findings provide scientific support for many of the therapeutic claims documented in Ayurvedic literature.

Despite its rich ethnomedicinal heritage and increasing pharmacological evidence, information on Ashmantaka remains scattered across classical Ayurvedic texts and

contemporary scientific publications. An integrated review that systematically compiles its traditional descriptions, botanical characteristics, phytochemical constituents, and therapeutic significance is therefore warranted. The present review aims to comprehensively summarize the available literature on Ashmantaka (*Bauhinia racemosa* Lamk.), highlighting its Ayurvedic concepts, botanical profile, phytochemistry, and medicinal importance while identifying future research opportunities for its evidence-based therapeutic utilization.

MATERIALS AND METHODS

Madanpala Nighantu, Dhanvantari Nighantu and Ayurvedic Pharmacopoeia of India have been used for the review study.

Literature Review

Taxonomic Classification

The taxonomic classification of Ashmantaka (*Bauhinia racemosa* Lam.) places it within the Kingdom Plantae and the clade Angiosperms, indicating that it is a flowering plant. It belongs to the class Eudicots, order Fabales, and family Fabaceae, specifically under the subfamily Caesalpinioideae. The plant is classified under the genus *Bauhinia*, with the scientific species name *Bauhinia racemosa* Lamk. This taxonomic placement reflects its close relationship with other leguminous plants and provides a scientific basis for its botanical identification and classification.^[1]

Vernacular Names

Bauhinia racemosa Lamk., commonly known as Ashmantaka in Ayurveda, is recognized by a variety of vernacular names across different regions of the Indian subcontinent, reflecting its widespread distribution and traditional significance. In English, it is referred to as the Burmese Silk Orchid. In Hindi, it is commonly known as Kachnar, Sona Patti, and Asanta. The plant is called Bauraj and Sada Kanchana in Bengali, Apto in Gujarati, and Aapta or Aralukadumandara in Kannada. In Malayalam, it is known as Mandarum, while in Punjabi, it is referred to as Kosundra and Taur. The Telugu names include Ari, Are, and Pacchare, whereas in Urdu, it is known as Kachnal. In Marathi, the plant is popularly called Aapata or Ashtaa. The diversity of these regional names highlights the plant's extensive geographical distribution and its long-standing use in traditional medicinal systems and local cultural practices throughout India.^[1]

Synonyms^[2,3]

Synonyms as per different nighantus are mentioned in table 1.

Table 1: Synonyms of Ashmantak.

Synonyms	Madanpala Nighantu	Dhanvantari Nighantu
Ashmantak	+	-
Malukapatra	+	-
Yugampatra	+	-
Amlapatrak	+	+
Shlekshan Twak	+	+
Ashwayoni	+	-
Kushli	+	-
Paapnashan	+	-
Chandrak	-	+
Kuddali	-	+
Maluka parna	-	+
Yamlapatrak	-	+

Gana

Ashmantak has been mentioned in Mutrasangrahaniye, Kashay Sakandh and Amla Skandh.^[4]

Habitat and Distribution^[1]

Ashmantaka is a hardy, deciduous tree widely distributed across the Indian subcontinent. It thrives naturally in tropical and subtropical climatic conditions and is commonly found in dry deciduous forests, open woodlands, scrublands, and foothill regions. The plant adapts well to a variety of soil types and can tolerate periods of drought, making it suitable for areas with low to moderate rainfall. It grows best in sunny locations and is often seen in wastelands, forest margins, and rural landscapes.

The species is distributed throughout most parts of India, particularly in states such as Maharashtra, Kerala, Tamil Nadu, Karnataka, Gujarat, Rajasthan, and Uttar Pradesh. It is also found in Sri Lanka and some neighboring regions of South Asia. In the Himalayan foothills, the tree occurs up to an altitude of approximately 1000 meters above sea level. Due to its adaptability and medicinal importance, *Bauhinia racemosa* is frequently cultivated and conserved in several regions. Its widespread occurrence and ability to grow under diverse environmental conditions have contributed to its continued use in traditional healthcare systems and local communities.^[1]

Botanical Characteristics and Propagation

Bauhinia racemosa., Lamk commonly referred to as Ashmantak, is a small deciduous tree that typically grows to a height of 3–5 m. It possesses a crooked trunk with pendulous branches and rough, scabrous bark that varies from dark brown to bluish-black, marked by vertical fissures. The leaves are characteristic, being nearly circular with a heart-shaped base and deeply divided into two lobes, resembling a cow's hoof. They measure approximately 2–5 cm in length and 2.5–6.3 cm in width, with a smooth upper surface and a finely hairy lower surface. The tree bears creamy-yellow to greenish-white flowers arranged in loose terminal racemes measuring 5–12.5 cm long, which appear during the February to May flowering season. The fruits are hard, curved, woody pods ranging from 13–25 cm in length, ripening between November and December. Each pod encloses 12–20 flattened seeds that are dark reddish-brown to black in color.^[5,6]

Ashmantak is mainly propagated through its seeds, which are best collected when they become semi-ripe and turn reddish to black in colour. Germination can be enhanced by subjecting the seeds to moist stratification before sowing. In traditional practice, the plant is also propagated through root cuttings. With advancements in plant biotechnology, successful micropropagation techniques have been developed for its conservation and large-scale multiplication. Nodal explants cultured on Murashige and Skoog (MS) medium supplemented with 3.0 mg/L 6-benzyladenine (BA) have shown effective axillary shoot proliferation, followed by successful ex vitro rooting. Naturally, *Bauhinia racemosa* is distributed across the Indian subcontinent, Southeast Asia, and parts of China, where it grows well under tropical and subtropical climatic conditions.^[7]

Phytochemical constituents

Bauhinia racemosa (Ashmantaka) is recognized as a valuable medicinal plant due to its rich and diverse phytochemical composition. Various investigations have demonstrated the presence of numerous bioactive constituents, including flavonoids, alkaloids, tannins, saponins, glycosides, steroids, phenolic compounds, carbohydrates, proteins, fixed oils, and fats. Among these, flavonoids represent one of the most important groups of compounds contributing to the plant's therapeutic potential. The leaves are particularly abundant in flavonoids such as kaempferol and quercetin, along with coumarins like scopoletin and scopolin. The stem bark contains phytosterols, notably β -sitosterol and β -amyirin, while the heartwood is a source of stilbenes such as resveratrol and dibenzoxepin derivatives.

Detailed phytochemical studies of the aerial parts have led to the identification of several phenolic compounds, including gallic acid, methyl gallate, rutin, quercetin glycosides, kaempferol glycosides, and myricetin derivatives. These compounds are known for their strong antioxidant and antimicrobial properties. The aerial part extracts exhibit a high polyphenol content and significant free-radical scavenging activity, supporting their role in protecting cells against oxidative stress. Additionally, the extracts have shown inhibitory effects against microorganisms such as *Candida albicans* and *Bacillus subtilis*.

Further studies have isolated unique constituents such as racemosol and de-O-methylracemosol from the roots and wood. The seeds are nutritionally valuable, containing essential fatty acids such as palmitic, oleic, and linoleic acids, along with amino acids and minerals including calcium, potassium, magnesium, iron, zinc, and manganese. Collectively, these phytoconstituents contribute to the antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and antidiabetic activities attributed to Ashmantaka. The remarkable chemical diversity of *Bauhinia racemosa* not only validates its traditional Ayurvedic applications but also highlights its potential as a promising source for future pharmacological and therapeutic research.^[1]

Properties of Ashmantak in Ayurved.

Properties have been described in Table 2 and Table 3.^[2,3]

Table 2: Properties as per Madanpala Nighantu.

Rasa	Madhur
Guna	Guru
Virya	Sheeta and ushna
Vipaka	Madhur
Karma	Pacifies Kapha and Vata Acts as Lekhaniye and Grahi Dravya. Indications: Gandmala, Galaganda.

Table 3: Properties as per Dhanvantari Nighantu.^[3]

Rasa	Kashaya
Guna	-
Virya	Sheeta
Vipaka	Madhur
Karma	Pacifies Pitta and Kapha. It is Sangrahi. Acts in Daha, Trushna and Prameha.

Dosage: 1-3 gms (8)

DISCUSSION

Ashmantaka (*Bauhinia racemosa* Lamk) represents an excellent example of a medicinal plant whose traditional Ayurvedic significance is increasingly supported by modern scientific evidence. Classical Ayurvedic literature describes the plant as possessing Sangrahi, Grahi, Lekhaniya, and Dosha-pacifying properties, particularly in disorders involving Kapha, Pitta, and Vata depending upon the textual reference. Its inclusion in Charaka's *Mutrasangrahaniya Mahakashaya*, *Kashaya Skandha*, and *Amla Skandha* further emphasizes its therapeutic importance in diseases associated with excessive secretions, impaired digestion, and metabolic disturbances.

Phytochemical investigations have significantly expanded the understanding of Ashmantaka's medicinal value. The presence of flavonoids such as quercetin, kaempferol, and rutin, together with phenolic acids including gallic acid and methyl gallate, accounts for the strong antioxidant potential observed in several experimental studies. These compounds effectively neutralize reactive oxygen species and reduce oxidative stress, which plays a central role in the pathogenesis of chronic inflammatory diseases, diabetes mellitus, neurodegenerative disorders, cardiovascular diseases, and cancer.

Similarly, phytosterols such as β -sitosterol and β -amyirin exhibit anti-inflammatory and immunomodulatory properties, whereas stilbenes including resveratrol contribute additional antioxidant and cytoprotective effects. The identification of unique compounds such as racemosol and de-O-methylracemosol further highlights the chemical uniqueness of *Bauhinia racemosa* and opens opportunities for future drug discovery. The nutritional composition of the seeds, rich in essential fatty acids, amino acids, and minerals, additionally supports the plant's value as both a medicinal and nutritional resource.

The reported antimicrobial activity against pathogenic organisms such as *Candida albicans* and *Bacillus subtilis* correlates well with the traditional use of Ashmantaka in infectious and inflammatory conditions. Likewise, its experimentally demonstrated hepatoprotective, antidiabetic, antioxidant, and anti-inflammatory activities provide scientific validation for several Ayurvedic indications including Prameha and inflammatory disorders. These pharmacological activities are likely the result of synergistic interactions among multiple phytoconstituents rather than the action of a single bioactive compound, reflecting the holistic therapeutic principles emphasized in Ayurveda.

Although considerable progress has been made in elucidating the phytochemistry and pharmacological activities of *Bauhinia racemosa*, several research gaps remain. Most available studies are limited to phytochemical screening, in vitro assays, and animal experiments. Well-designed clinical studies evaluating standardized extracts, dosage optimization, pharmacokinetics, safety profiles, and long-term therapeutic efficacy are still lacking. Standardization of raw materials, quality control parameters, and identification of reliable phytochemical markers are also essential to ensure consistency in medicinal preparations.

The integration of classical Ayurvedic knowledge with modern phytochemical and pharmacological research demonstrates that Ashmantaka possesses significant therapeutic potential. Future multidisciplinary investigations employing advanced analytical techniques, molecular pharmacology, systems biology, and clinical validation may facilitate the development of evidence-based herbal formulations and novel phytopharmaceuticals derived from this traditionally important medicinal plant.

CONCLUSION

Ashmantaka (*Bauhinia racemosa* Lam.) is an important medicinal plant that holds a prominent place in both classical Ayurvedic literature and contemporary phytopharmacological research. Traditional Ayurvedic texts describe the plant as possessing Sangrahi, Grahi, Lekhaniya, and Dosha-balancing properties, with therapeutic applications in disorders such as Prameha, Daha, Trishna, Gandamala, Galaganda, and gastrointestinal ailments. These traditional claims are increasingly supported by modern scientific investigations demonstrating antioxidant, antimicrobial, anti-inflammatory, hepatoprotective, antidiabetic, and immunomodulatory activities.

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