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BEYOND THE BLOSSOMS: EXPLORING THE MYSTIQUE OF MICHELIA CHAMPACA

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ABSTRACT

Michelia champaca, a species of paramount importance in traditional medicine and perfumery, has garnered significant attention for its diverse therapeutic and industrial applications. A thorough examination of Ayurvedic literature reveals Champaca's utility in treating various ailments, including fever and skin disorders, while its essential oil, Champa oil, is highly valued in perfumery and aromatherapy for its fragrance and therapeutic properties. Furthermore, the tree's bark, flowers, and fruits exhibit diuretic, febrifuge, anti-spasmodic, and stomachic properties, underscoring its potential as a medicinal plant. The review also highlights Champaca's commercial significance, particularly in the production of perfumes, cosmetics, and traditional medicines. By consolidating existing knowledge on Champaca, this review article seeks to provide an in-depth analysis of Champaca's botanical characteristics, traditional uses, pharmacological properties, and significance in other sector, while promoting sustainable utilization of this valuable plant resource and exploring opportunities for further research and development.

KEYWORDS: *Champaka, Traditional medicine,* Ayurveda.

INTRODUCTION

In the realm of botanical wonders, few plants have captivated human imagination as profoundly as *Michelia Champaca*, commonly known as the Golden Champa. Michelia champaca is native to the Indomalayan realm, a vast region encompassing South Asia, Southeast Asia, and southern China. The Michelia champaca tree has a broad native range, spanning across numerous countries in Asia. These include the India, Maldives,

Bangladesh, Cambodia, China, Indonesia, Malaysia, Myanmar, Nepal, Thailand, and Vietnam.[1] Its widespread distribution is a testament to the tree's adaptability and its significance in various ecosystems across the continent. Native to the tropical regions of Asia, this majestic tree has been revered for centuries for its breathtaking beauty, intoxicating fragrance, and multifaceted uses. The Golden Champa is a sight to behold, with its glossy, dark green leaves and vibrant, golden-yellow flowers that bloom in clusters. One of its most distinctive features is its fragrant flowers, which boast vibrant, golden-yellow hues and emit an intoxicating aroma. This unique fragrance has made Champak a highly valued ingredient in the production of perfumes and aromatherapy products. In addition to its olfactory appeal, Champak has been employed in traditional medicine for centuries, particularly in the practice of Ayurveda. Its medicinal properties have been utilized to treat a range of health issues, including skin problems, digestive disorders, and respiratory issues. Champak's ornamental value is another aspect of its appeal. The plant's stunning flowers, glossy leaves, and attractive shape make it a popular choice for gardens and landscapes. The perfumery industry also holds Champak in high esteem, as its attar (Essential oil) is highly valued for its unique, sweet fragrance. Beyond its practical applications, Champak holds cultural and spiritual significance in various Asian traditions. It is often symbolically associated with beauty, fragrance, and spirituality. Champak's wood is also a valued resource, prized for its durability and versatility in furniture-making, construction, and other applications. This article provides critical review on Michelia Champaca Linn., exploring its therapeutic utilities and significance in different sectors.

Taxonomical description

Domain: Eukaryota

Kingdom: Plantae

Subkingdom: Tracheobionta-Viridaeplantae

Division: Magnoliophyte

Class: Magnoliopsida- Dicotyledons

Subclass: Magnoliidae

Superorder: Magnolianae

Order: Magnoliales

Family: Magnoliaceae- Magnolia family

Subfamily: Polemonioideae

Tribe: Polemonieae

Genus: Michelia

Botanical name: *Michelia champaca*

- **Vernacular names**

- **N**epali- Champ, Suna champ, Phul champ
- **E**nglish–Golden champa, Yellow Champa, Fragrant Champaca, Orange Chempaka
- **H**indi –Chempaka
- **S**anskrit - Champaka
- **B**engali-Champaka, Champa
- **B**urmese-Mawk-sam-lung
- **I**ndonesian-Cempakakuning, Capaka, Cempak
- **T**hai -Champapa, Champakhao, Champa
- **P**hilippines-Ilang-ilang
- **M**alaysian-Chempakamerah, Chempaka, Champaka
- **V**ietnamese -Ngocian, Sunam
- **L**ao-Solo
- Tibetan- Tsam-pa-ka.

- **Synonyms**[1-6]

Sukumar, Shitala, Champeya, Kanchan, Shatapadatithi, Surabhi, Hema Pushpa, Kachar, Ramya, Chala, Swarnapushpa, Subhaga, Bhramara, Varalabdha, Latika, Phali, Gandhphali.

- **Morphological characteristics**

Flowers – yellow to orange, very fragrant, solitary, axillary and large, **Fruits** – small, warty structure, pale brown. **Seed** -The seeds themselves are an interesting feature of the fruit. Encased in a fleshy covering that is bright reddish or pink in color. This covering is likely an adaptation to attract animals to disperse the seeds. **Root**- Dicot plant with a well-defined, shallow, and brittle tap root system. **Stem**- Aerial, erect, branched, woody, and solid. Bark – Surface: Smooth, with a grey to greyish-white coloration. Inner Bark: Fibrous, yellow to brown. **Leaf**-Leaves are simple, entire, and arranged spirally, with stipules that are either adnate to or free from the petiole. They have a pointed tip and are typically 13-25 cm long and 5- 9 cm wide. The leaves are lanceolate, sometimes ovate, and have a finely acuminate shape. They are glabrous and more or less shining above, with a glabrescent underside. The **petiole** is slightly channeled, and usually pubescent.

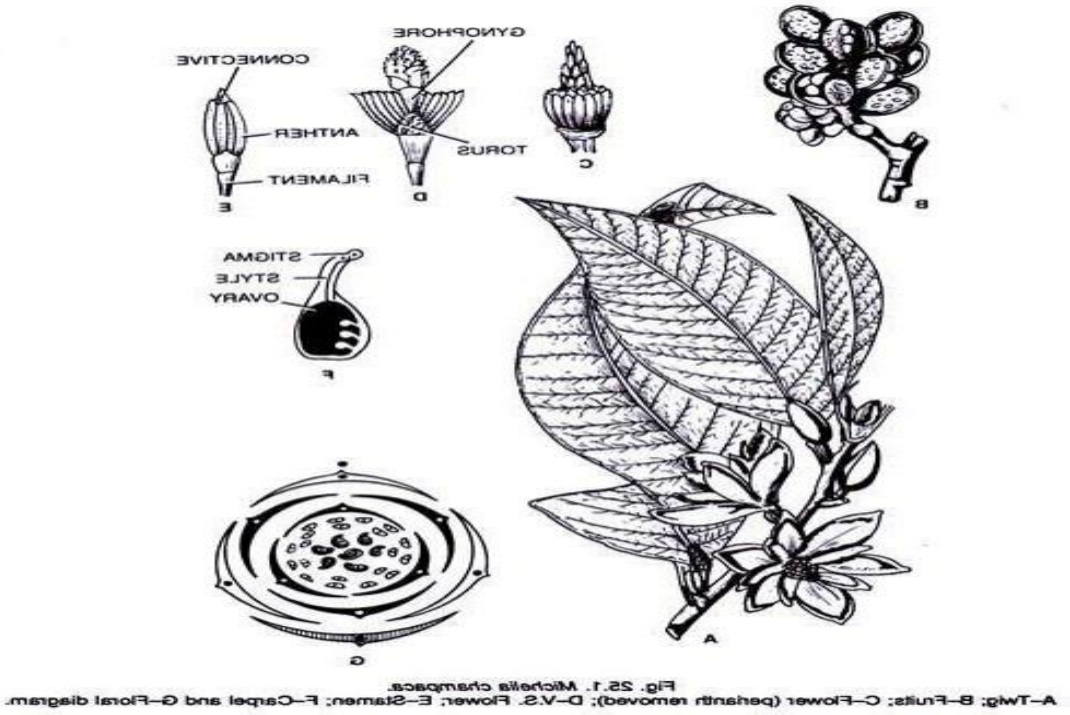

Fig. 25.1. Michelia champaca.
A–Twig; B–Fruits; C–Flower (perianth removed); D–V.S. Flower; E–Stamen; F–Carpel and G–Floral diagram.

- **Chemical composition**[13,14,16]

The Michelia champaca tree is a rich source of various bioactive compounds, including alkaloids, terpenes, and flavonoids. The root and stem bark contain liriodenine, magnosprengerine, and salicifoline, while the root bark yields sesquiterpine lactones such as costunolide, parthenolide, dihydroparthenolide, and micheliolide. The leaves contain polysorprenoid, β-sitosterol, and liriodenine. The essential oil from the flowers is composed of β-elemene, borneol, caryophylline, α-humulene, spathulenol, and quercetin. The seed oil contains myristic and palmitic acids. These compounds have been found to have various biological activities, including antimicrobial, anti-inflammatory, and antioxidant properties, making the Michelia champaca tree a valuable resource for traditional medicine and pharmaceutical applications.

Table no. 1: *Gana / Varga* (Classification).[2,3,4,5,9,10]

Sr. no	*Granthakar*	*Varga*
1	*Bhavapraksha*	*Pushpa Varga*
2	*Sushruta*	*Pushpa Varga*
3	*Kaiyadev Nighantilu*	*Oshadhi varga*
4	*Dhanvantari Nighantu*	*Amradi Varga*
5	*Raj Nighantu*	*Karviradi Varga*
6	*Shodhal Nighantu*	*Vishay Varga*

- **Properties**

Rasa (Taste) – *Katu* (Pungent), *Tikta* (bitter), *Kasaya* (Astringent)

Guna (Attributes) – *Laghu* (Light), *Ruksha* (Dry)

Virya (Potency)- *Sheeta* (cold)

Vipaka (Post digestive effect) - *Katu*

Varna (colour) - *Peet* (yellow)

- **Rogaghnata (Action on disease)**

Kushthanghana (Curing skin infection), *Mutrakrichchra* (Urinary Disorder), *Vataraktahara* (Antigout), *Raktapittahara* (Cures Bleeding disorder), *Jwarhara* (Antipyretic), useful in *Anartava* (Amenorhoea), *Upadansha* (Syphilis), *Twakaroga* (Skin Diseases).

- **Karmuktata (Pharmacological action)**

Dahanashan (Antiheat), *Kandughna* (Ant itching), *Krimighna* (Wormicidal), *Chakshushya* (Eye benefecial), *Hridya* (Cardiotonic), *Sugandhi* (Aromatic), *Vranahara* (Wound healing)

Table no. 2: Action of parts of champak.[1,7]

Sr.	Parts	Actions No
1	Roots and Root bark	Purgative, Emmenagogue
2	Stem bark	Astringent, Febrifuge, Diuretic, Stimulant, Expectorant
3	Flower, Flower bud and Fruit	Astringent, Acrid, Refrigerant, Haemostatic, Digestive, carminative, depurative, vulnerary, anthelmintic, diuretic, diaphoretic, expectorant, emmenagogue, Antispasmodic, Antipyretic, Stomachic, Cardiotonic
4	Seed	Healing

Table no. 3: Therapeutic utility.[1,7]

Sr. No	Part used	Internal Application	External Application
1	Flower	Renal disease	Flower Paste (flowers+ sesamum oil)- Vertigo, Foetid Discharge from Nostril Flower perfume oil- Cephalgia, Ophthalmia, Gout
2	Leaves	Leaves juice + Honey	-
3	Bark	Fever	-
4	Seed	-	Rub over the abdomen to relieve flatulence
5	Fruit		Seed and Fruits- Healing cracked feet. Dry fruit and root mixed with curdled milk- Abscess clearing away or maturing the inflammation

- **Ayurvedic formulation**[12,13]

Ekadashshashtika Prasarini Taila, Mahalaxminarayana Taila, Eladi Taila all oil preparations have champak flower as an ingredient used in *Vatavyadhi* chapter explained by *Chakradatta*. *Champakadi Churna* used to treat jaundice explained in *Yogatarangini*. As an ingridient in *Maltyadi ghrita* and *Guduchyadi Churna* explained in *Bhaishajya Ratnawali*.

Table no. 4: Modern Pharmacological Application (Research workdone).[13-27]

Sr. No	Plant Part	Pharmacological actions
1	Bark	Antitumor
	Flower	Anti-inflammatory, Anti-diabetic, Antioxidant, Anti-ulcer, Cardioprotective
2	Leaves	Anti-inflammatory, Anti-ulcer, Anti-fertility, Anthelmintic
3	Plant	Leishmanicidal activity, Wound healing, Antibacterial
4	Stem bark	Diuretic

- **The health benefits of Michelia champaca: Current findings**

Previously lots of research done on Michelia champaca Linn. Many research found that the flower of champaka have Antidiabetic, Antimicrobial, Anti- inflammatory, Antioxidant, Antibacterial, Antituberculer, Cardiotonic, Antihyperlipedemic activity present in flower. Previously in one research article they formulate Handwash in which champak flower extract is used for its antimicrobial activity. Some researcher worked on how many chemical content found in champak flower. Some previously done researches are given below:-

1. Anti-diabetic activity of Michelia champaca Linn Flower buds. This Study supports traditional claim that the traditional preparation for ailment of various diabetes associated Complications.[15]
2. Antimicrobial, antioxidant and anticancer activity of Michelia champaca seed and flower extract finding shows medicinal value of M. Champaca flower and seed extracts in terms of Antimicrobial and anticancer are promising.[16,17]
3. Antimicrobial activity of flower extracts on human bacterial pathogen which are found effective when compared to ampicillin antibiotic and also impose no side effect.
4. In vitro Anti-inflammatory activity of Michelia champaca L flowers with standard drug diclofenac.[19]
5. Oral consumption of M.champaca extracts promotes wound healing in diabetic rats.[20]
6. Effect of Michelia champaca linn flowers on Burn wound healing in wistar rats.[21]
7. Comparative study of Michelta champaca linn. Flowers, leaves for antiulcer activity[22]
8. Antibacterial and free radical scavenging activity of Michelia champaca flower extracts

against Bacillus subtilis, streptococcus aureus, salmonella typhi and shigella dysentery.[23]

9. Pharmacological basis for medicinal use of Michelia champaca in gut, airways, cardiovascular disorders.[24]
10. Michelia champaca Linn flower and leaf (Alcoholic &aqueous) extracts displays gastroprotective activity, as demonstrated by its significant inhibition of the formation of ulcers induced using different models, as well as its ability to decrease gastric secretions.

Cultural Significance and Traditional uses

1. Hinduism: Michelia champaca is considered a sacred plant in Hinduism, associated with the goddess Saraswati. Used in the worship of all gods except Lord Shiva
2. Buddhism: The plant is also revered in Buddhism, particularly in Sri Lanka and Southeast Asia. Flowers are offered at alterd and used for meditation purpose for their calming fragrance. The Theravada Buddhism, champaca is said to be have been used as the tree for achieving enlightenment or Bodhi by 17th Buddha called Aththadassi. According to Tibetian beliefs the buddha of next era will find enlightenment under the white flower canopy champaca tree.
3. Traditional ceremonies: Michelia champaca flowers are used in various traditional ceremonies such as wedding and festives as hair adornament. Also used as room freshner by putting flowers in bowl of water.

Environmental importance[30]

The Michelia champaca tree has also been found to have ecological benefits, particularly in reforestation efforts. In Java, the tree is used to reforest badly eroded areas, helping to restore soil health and prevent further erosion. Studies have shown that soil under the tree's cover exhibits an increase in pH, soil organic carbon, and available phosphorus, indicating improved soil fertility and structure. This makes the Michelia champaca tree a valuable species for reforestation and soil conservation efforts. Champak trees are a haven for local wildlife and ecosystems, playing a vital role in supporting the delicate balance of nature. Their fragrant flowers are a magnet for pollinators like bees and butterflies, which are crucial for maintaining the health and beauty of gardens and natural habitats. By incorporating Champak trees into your garden, you're not only adding a touch of elegance and beauty, but also contributing to the overall well-being of the environment. These trees provide a source of food and shelter for a variety of species, fostering a rich biodiversity that benefits everyone involved. By supporting local wildlife and ecosystems, Champak trees help to create a thriving and

resilient environment that is better equipped to withstand the challenges of climate change and other environmental pressures.

Commercial significance

Michelia champaca is a tree with a multitude of uses, extending far beyond its medicinal properties. Its fragrant flowers are a prized ingredient in the perfume industry, where they are used to craft exclusive, high-end scents. The extracted Champak oil is one of the most expensive and sought-after essential oils globally. The tree's durable wood is also highly valued, particularly in furniture making, wood carvings, and artisanal products. Moreover, Michelia champaca is cultivated in home gardens and urban landscapes, where it serves as an ornamental plant, providing ecological benefits and aesthetic appeal. In addition to its various uses, Champaca seed oil has emerged as a sustainable alternative. Research has shown that this oil can replace traditional lubricants, while also demonstrating potential as a biodiesel alternative. Furthermore, modified Champaca oil has been found to reduce friction and wear on moving parts, making it a promising solution for industrial applications.[33]

DISCUSSION

Michelia champaca, commonly known as Champak, is a highly valued plant in Ayurveda. Its flowers, leaves, and bark have been used for centuries to treat various health conditions, including fever, headache, and skin infections. However, despite its widespread use, there is a need to conserve and utilize this plant more effectively to unlock its full therapeutic potential. According to the ancient Ayurvedic text, Ashtanga Hridayam, the ideal dravya (medicinal substance) is one that possesses multiple dosage forms and numerous qualities. This concept is essential in Ayurveda, as it allows for the creation of various medicinal preparations that can be prepared to specific health needs. Michelia champaca, with its diverse range of bioactive compounds, is an excellent example of an ideal dravya. Champak flowers have been traditionally used in various forms, including oil, juice, paste, and powder, as well as in perfumeries. However, their medicinal properties and potential uses extend far beyond these traditional applications. It is essential to conserve and convert these flowers into useful drugs to unlock their full therapeutic potential. This can be achieved through sustainable harvesting practices, cultivation of the plant in controlled environments, and developing new dosage forms. Literature surveys reveal that Michelia champaca possesses numerous medicinal properties, making it a valuable resource for treating various diseases. Champak flowers are highly aromatic and a rich source of essential oil, which is used in aromatherapy to treat

cephalgia, stress management and other conditions. Champak essential oil is widely used in perfumeries and traded in international market as one of expensive. Champak flower used as an ingredient in various Ayurvedic formulations, such as Eladi Taila, Baladhatryadi Thailam, and champakadi churna. However, there is a need to explore and develop other dosage forms to fully harness the medicinal properties of Michelia champaca. This could include creating capsules, tablets, or topical creams that incorporate the bioactive compounds present in the flowers and other parts. By doing so, we can unlock the full therapeutic potential of this remarkable plant and make its benefits more accessible to a wider audience.

Images of michelia champaca

CONCLUSION

In conclusion, Michelia champaca is a highly valued plant with a rich history of traditional use. However, there is a need to conserve and utilize this plant more effectively to unlock its full therapeutic potential. By exploring and developing new dosage forms, we can make the benefits of this plant more accessible to a wider audience and contribute to the advancement of traditional medicine. The whole champaka tree has medicinal as well as commercial qualities, making it a valuable resource for various industries, including pharmaceuticals, perfumery, and cosmetics. Its unique combination of bioactive compounds and essential oils

makes it an attractive for further research and development, with potential applications in the treatment of various diseases and conditions.

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