

# **A Detailed Review on Medicinal Uses and Phytopharmacology of *Ficus glomerata***

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**Abstract:** *Ficus racemosa* Linn. (Moraceae) is a popular medicinal plant in India, which has long been used in Ayurveda, the ancient system of Indian medicine, for various diseases/disorders including diabetes, liver disorders, diarrhea, inflammatory conditions, hemorrhoids, respiratory, and urinary diseases. *F. racemosa* is pharmacologically studied for various activities including antidiabetic, antipyretic, anti-inflammatory, antitussive, hepatoprotective, and antimicrobial activities. A wide range of phytochemical constituents have been identified and isolated from various parts of *F. racemosa*. In this review, a comprehensive account of its traditional uses, phytochemical constituents, and pharmacological effects is presented in view of the many recent findings of importance on this plant.

**Keywords:** Plant information, Taxonomical classification, Cultivation detail, Morphology, Phytochemistry

## **I. INTRODUCTION**

The genus *Ficus* (Moraceae) constitute one of the largest genera of angiosperms with more than 800 species of trees, epiphytes and shrubs in the tropical and sub-tropical regions worldwide. It is one of the most diverse plant genera in regard to its growth habit with both deciduous and evergreen free-standing trees, stranglers, climbers, creepers, small shrubs, lithophytes and rheophytes (Loutfy et al., 2005, Ronsted et al., 2008). The Asian–Australasian region is the richest and most diverse containing about 500 *Ficus* species. In contrast, the richness of *Ficus* in Africa and the Neotropics is lower, with approximately 110 and 130 species, respectively. About half of the *Ficus* species are monoecious and the rest are functionally dioecious (Berg, 2003). All members of the genus *Ficus* share the distinctive fig inflorescence (syconium), which is the site of an obligate mutualism with pollinating fig wasps of the family Agaonidae (Ronsted et al., 2008).

*Ficus religiosa* L. is the most popular member of the genus *Ficus*, and is known by more than 150 names (Appendix A). It is native of the sub-Himalayan tract, Bengal and central India. It has been extensively distributed worldwide through cultivation (McFarland, 1944, Galil, 1984). *F. religiosa* tree begin its life epiphytically and then strangle the host by its far-growing roots that extend to the ground, establishing it as an independent tree. It is found in the areas up to 1500 m elevation having an annual rainfall varying from 50 to 500 cm during the monsoon season and tolerates a wide variation in temperature (below 0 °C and above 40 °C) (Pullaiah, 2006). It is the most sacred tree of South Asia, to both Hindus and Buddhists. The specific epithet “*religiosa*” and synonym “*bodhi tree*” alludes to the religious significance attached to this tree (Kala et al., 2006, Sitaramam et al., 2009). Since antiquity, *F. religiosa* has got mythological, religious and medicinal importance in Indian culture. It is the oldest portrayed tree in India. Atharvaveda (sacred text of Hinduism) links it with the third heaven and discusses its medicinal properties along with Soma and Kustha (holy medicinal herbs). References to *F. religiosa* are found in several ancient holy texts like, Arthashastra, Puranas, Upanisads, Ramayana, Mahabharata, Bhagavadgita, Buddhist literature, etc. (Prasad et al., 2006). The therapeutic utilities of *F. religiosa* have been indicated in traditional systems of medicine like, Ayurveda, Unani, etc. It has been used to cure the disorders of the central nervous system (epilepsy, migraine, etc.), endocrine system (diabetes, etc.), gastrointestinal tract (vomiting, ulcers, stomatitis, constipation, liver diseases, etc.), reproductive system (menstrual irregularities, etc.),



respiratory system (asthma, cough, etc.) and infectious diseases (chickenpox, elephantiasis, leprosy, tuberculosis, gonorrhea, scabies, etc.). Continuous research is in progress to validate its traditional medicinal uses, which is described in detail in the present

## **II. REVIEW AND LITERATURE**

### **1 Introduction**

Define *Ficus glomerata*: provide a brief botanical description of the common name and geographical distribution

2 Background and traditional use: Highlight the historical significance in traditional medicine particularly in Ayurvedic and other systems

3 Research Objectives: State the purpose of the review which is to explore the medical use phytochemical composition and other pharmacological activity of *Ficus glomerata*

4 Medical Applications: Detail in various traditional uses different part of a plant ( bark leaves, fruit, root, sap) for treating conditions like diabetes asthma and diabetes diarrhea

### **PLAN OF WORK**

To evaluate the effects of *Ficus glomerata* on ( Diabetes, inflammatory diseases

To explore the mechanisms underlying information and traditional use of *Ficus glomerata* ( leaves bark fruit flower

To assess the safety and bioavailability of *Ficus glomerata*.

### **PLANT INFORMATION**

With a curved trunk and a spreading canopy, the lovely cluster fig tree *Ficus racemosa* is quite attractive.

Banyan trees have aerial roots, but this tree is not one of them . The most striking aspect of this tree is the clusters of little red, stubby figs that sprout from the tree's stem right away. *Ficus racemosa* is a tree with hundreds of blossoms, thus those looking for it should be aware of this. Extremely tiny wasps that enter via the opening in search of an appropriate location for reproduction fertilize the flowers. Fig trees are incapable of seed reproduction without these pollinators The blossoms respond by giving the wasps' young a secure place to live and food. A common tree in the region is the *Ficus racemosa*..

### **TAXONOMICAL CLASSIFICATION**

The taxonomical classification has been represented in . Taxonomical Classification

Kingdom : Plantae Domain : Eukaryota Phylum : Spermatophyta Subphylum : Angiospermae

Family : Moraceae Order : Urticales Genus : *Ficus* Class : Dicotyledonae

### **CULTIVATION DETAIL**

Both the canopy and understory trees in lowland tropical rainforests use the *Ficus racemosa* linn. tree species.

While many species can be found in monsoon climates and teak woods, including places where the soil dries up, the majority of species require per-humid woodland. Each species of fig tree relies on a unique, highly specialized wasp species that is only capable of reproducing in that particular fig genus. This is how fig trees are fertilized. Male, long-styled female, and short-styled female, also referred to as gall flower, are the three flower types produced by the trees. All three types of flowers are a part of what is often referred to as the fruit structure. The long-styled female flowers are fertilized by the female fig wasp's eggs, which she lays on the short-styled female flowers once she enters the fig. First, the wingless male fig wasps emerge, fertilize the emerging females, and then the winged females dig their escape tunnels. Females emerge, collect pollen from male flowers, and then fly out in search of figs with female flowers that are receptive. For a colony of the pollinator *Ficus* spp. to survive, individual plants must bloom at different times To ensure that at least some plants have overlapped in fig wasp emission and reception at any time of year, a population must exce



**MORPHOLOGY**

*F. racemosa* is an evergreen, moderate to large, spreading, lactiferous, deciduous tree 15-18 m high, without prominent aerial roots. Young shoots are glabrous, pubescent or scaberulous, leaves are dark green colored, 7.5-15 by 3.2- 6.3 cm, ovate oblong, or elliptic-lanceolate, tapering to a bluntish point at the apex, with entire margins, glabrous on both surfaces when mature, base acute or rounded, 3-nerved; lateral main nerves 4-6 pairs; petioles 1.3-3.8 cm long, glabrous; stipules 2 cm long, ovate-lanceolate, scarious, pubescent; fruit receptacles 2-5 cm in diameter, subglobose or pyriform, found in large clusters on short leafless branches arising from main trunk or large branches. Leaves: The leaves are enormous clusters at ancient nodes of the main trunk, dark green, 6-10 cm long, and glabrous. The receptacles are small subglobose or piriform.







Infections of the bile duct are treated with a mixture of leaves powder with honey [31].

Bark: It has a velvety, greyish, or reddish-grey surface (0.7-1.9 cm).



The inside and outside are both light browns, have a mucilaginous taste, and have no characteristics or odor. In addition to being advised for the treatment of menorrhagia, leucorrhoea gonorrhea, urinary disorders, and skin illnesses, it is quite helpful in cases of imminent abortion

**Latex:** The sort of mucus known as latex is secreted on the bark's outwardly sliced portion. It helps treat edema in conditions like GIT diseases and reduces swelling brought on by adenitis, parotitis, orchitis, traumatic swelling, toothaches, and vaginal disorders [33].

Latex is used externally to reduce swelling, discomfort, and infection in chronically infected wounds and speed up healing [34].

**Flowers:** A portion of the Ficus fig carries thousands of blossoms in its graceful, fair-looking flower.

Additionally, it has positive biological effects on ophthalmology, antiulcer, and heart illnesses [35].

**Fruits:** The main trunk or major branches produce enormous clusters of pyriform, 3-6 cm in diameter fruit receptacles that are borne in a rosette-like fashion. Initially green and resembling figs, the fruits ripen to orange, dull reddish, or dark crimson. The spherical, 1.5 to 2-inch-long fruit of Ficus racemosa is of the size [36]. The fruit can be used to treat menorrhagia and hemoptysis since it is astringent, stomachic, and carminative. Leprosy is believed to be cured by taking a fruit and bark bath **Seeds:** The tiny, numerous, and granular seeds are present. The bark's exterior layer is composed of uniformly hard, easily detachable transparent flakes that range in color from grey to rusty brown. It is employed to treat skeletal disorders, diabetes, and pectoris

**Root:** The fig's roots have a lengthy, asymmetrical shape and size, dark hue, strong odor, and somewhat bitter flavor [39]. It has both internal and external uses. Wound healing, bone fracture, and inflammatory activity are the traditional advantages [40].

## PHYTOCHEMISTRY

Flavonoid glycosides, alkaloids, phenolic acids, steroids, saponins, coumarins, tannins, and triterpenoids, including oleanolic acid, ursolic acid, hydroxy ursolic acid, protocathechuic acid, and malonic acid, are found in the Ficus racemosa Linn species [41].

Flavonoids, vitamin C, and phenolic chemicals are some of the non-enzymatic components [42]. It contains phytochemicals related to flavonoids with isoprenoid substituents and stilbenes. Ascorbate oxidase, ascorbate peroxidase, catalase, and peroxidase are the current enzymatic components. Gallic acid and ellagic acid are two of the phenolic chemicals found

## TRADITIONAL USES

In order to treat a variety of disorders, Ficus racemosa linn. has also been widely used in traditional medicine (Table:2). Its bark, fruits, leaves, roots, latex, seeds, and other parts of the plant are all utilized medicinally in some way [37–43]. Traditional Utilization of F.racemosa.

**Plant Part Traditional Disease Curring Application Leaves**

- Bilious infection is treated with a mixture of leaves and honey.
- Dysmenorrhea is treated with a leaf decoction.
- Boils, blisters, and measles are prevented by leaf latex.
- Hair is rubbed with leaf juice to prevent splitting.
- Cervical adenities, abscesses, persistent wounds, dysentery and diarrhea, glandular swelling, and hemoptysis

**Fruits •** Serve as a stimulating tonic for the stomach's healthy operation.

- Hemoptysis and menorrhagia are treated with fruit juice.
- Treat diarrhea, constipation, and visceral blockage.
- Diabetes and leprosy treatments.
- Leucorrhoea, loss of voice, renal and spleen problems, astringent to the colon, stomachic, refrigerant dry cough, Bark
- Mouthwash infused with bark is used to treat dysentery, menorrhagia, and spongy gums.
- Bark decoction is used to wash wounds, burns, asthma, piles, and edema.
- It is crucial to prevent numerous urinary tract illnesses inuoropathy.





- Probable abortion, menorrhagia, leucorrhoea, gonorrhea, urinary infections, bleeding, and skin conditions
- Impending abortion, menorrhagia, leucorrhoea, gonorrhoea, urinary illnesses, bleeding, & skin problems

#### Latex

- It is used to make aphrodisiac medications that increase fertility.
- It functions as a remedy for cholera, mumps, and stomach ailments.
- It is employed in the management of bone fractures.
- It also serves as an adhesive for a variety of uses.
- Boils, traumatic pain and swelling, toothaches, inflammatory enlargements, hemorrhoids, diarrhea, diabetes, and so forth. Sap of Root

#### Roots

- Diabetes and gonorrhea are both treated with sap of root.
- Diabetes, inflammatory diseases, cattle malaria are among conditions that are treated with root sap.
- Diabetes, inflammatory diseases, menorrhagia, hematuria, smallpox, and the mumps.
- Diarrhea, hyperglycaemia, pectoral issues, mumps, and different inflammatory glandular enlargements, in addition to hydrophobia.

## II. CONCLUSION

Traditional Chinese Medicine (TCM), which is an important component of most healthcare systems, is based on natural components and has been used for thousands of years to protect people's health and prevent sickness. TCM therapeutic efficacy has aided in the development of formulations, which increase effectiveness by treating a variety of objectives that are usually linked to the synergistic nature of numerous herbs and substances. Numerous pharmacologically active chemicals have been discovered in the ficus plant, including -sitosterol, glauanol acetate, flavonoids, lupeol, stigmasterol, and tetracyclic triterpene glauanol, according to various phytochemical research. Its ethanolic, methanolic, and aqueous extracts have shown antifungal, hypoglycemic, hypolipidemic, larvicidal, renal anticarcinogenic, and memory-enhancing properties.

It is strongly believed that the comprehensive information offered in this review on the different therapeutic effects of the constituents may provide comprehensive evidence for the usage of this plant in various medicines. However, animal models should be used to isolate and characterize the active ingredients of a distinct section of *Ficus rasemosa* as well as its pharmacological properties. Because of the lack of research on these compounds' biological activity and possible medical applications, further research is needed before their therapeutic potential can be completely explored. Because the aqueous extract has been marketed, scientists are adequately encouraged to study more about this medicinal plant in order to capitalize on its commercial potential. For more significant results, *F. racemosa* should be the topic of extensive research and development.

## REFERENCES

- [1] B. Ravishankar, V.J. Shukla, Indian systems of medicine: a brief profile, *Afr. J. Trad. CAM* 4 (3) (2007) 319–337.
- [2] S. Kumar, G.J. Dobos, T. Rampp, The significance of ayurvedic medicinal plants, *J. Evid. Based Complement. Altern. Med.* 22 (3) (2017) 494–501.
- [3] Y. Cai, D.L. Boyd, R.R. Coeytaux, T. Østbye, B. Wu, Z. Mao, Treatment of chronic conditions with Traditional Chinese Medicine: findings from Traditional Chinese Medicine hospitals in Hubei, China, *J. Altern. Complement. Med.* 21 (1) (2015) 40–45.
- [4] B. Joseph, S.J. Raj, Psychopharmacological and phytochemical properties of three *Ficus* species-an overview, *Int. J. Pharma Bio Sci.* 1 (4) (2010) 246–253.
- [5] P.P. Joy, J. Thomas, S. Mathew, B.P. Skaria, Medicinal plants. *Tropical horticulture*, NayaProkash 2 (2001) 449–632.



- [6] P.M. Paarakh, *Ficus racemosa* linn.-an overview, *Nat. Prod. Radiance* (8) (2009) 84–90. [7] , in: *The Wealth of India*, Council of Scientific and Industrial Research, New Delhi, India, 1952, pp. 35–36.
- [8] World Agroforestry Transforming Lives and Landscapes with Trees, World Agroforestry, 2020 [Internet]. Transforming Lives and Landscapes with Trees [cited 21 March 2020].
- [9] C.P. Khare, in: *Encyclopaedias of Indian Medicinal Plants: Rational Western Therapy, Ayurvedic and Other Traditional Usage*, Springer, Botany, 2004, pp. 216–217.
- [10] R.N. Chopra, I.C. Chopra, K.L. Handa, L.D. Kapur, in: *Indigenous Drugs of India*, Academic Publisher, Calcutta, 1958, pp. 508–675.
- [11] K.M. Nadkarni, A.K. Nadkarni, R.N. Chopra, in: *Indian Materia Medica*, Popular Prakashan, Bombay, 1976, pp. 548–550.
- [12] P.K. Warriar, in: *Indian Medicinal Plants-A Compendium of 500 Species (Vol. III)*, Orient Longman Ltd, Chennai, 1996, pp. 34–35. © 2023 IJNRD | Volume 8, Issue 10 October 2023 | ISSN: 2456- 4184 | IJNRD.ORG IJNRD2310056 International Journal of Novel Research and Development (www.ijnrd.org) a507
- [13] R.N. Chopra, I.C. Chopra, K.I. Handa, L.D. Kapur, U.N. Dhur, in: *Indigenous Drugs of India*, Sons Pvt. Ltd, Calcutta, 1958, pp. 674–675.
- [14] R.N. Chopra, I.C. Chopra, B.S. Varma, in: *Supplement to Glossary of Indian Medicinal Plants*, (Reprintededn), CSIR, New Delhi, 1992, pp. 29–30.
- [15] P.K Warriar, in: *Indian Medicinal Plants-a Compendium of 500 Species*, Orient Longman Ltd: Chennai, 1996, pp. 34–35.
- [16] A.K. Mohiuddin, S.A. Lia, Phytochemical screening & biological investigations of

