

Ficus religiosa Lam: A Magical Tree with Various Therapeutic Approaches

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ABSTRACT

Individuals' essential needs to be alive or to care for themselves are provided by nature. Nature, in addition to meeting fundamental needs such as food and shelter, also has medicinal properties due to the existence of different complex chemical molecules known as secondary plant metabolites in one or more components. Since ancient times, hundreds of medicinal plants have been utilised to treat a variety of ailments. Among herbal plants, *Ficus religiosa* (Peepal) holds a prominent position. Herbal medicines are made from almost every part of this tree, including the leaves, bark, seeds, and fruits. *F. religiosa* is sacred tree, which is having great traditional uses as well as pharmacological activities. Almost all parts of the tree are useful in traditional system. The various parts like leaf, bark, fruit, and seeds are beneficial in treatment of gastrointestinal diseases, healing and curative, heart diseases, constipation, mumps and boils, gynaecological problems, fever and joint pains, respiratory problems, skin diseases or dental and ear problems. *F. religiosa* tree shows pharmacological activities analgesic, antioxidant, anticonvulsant, antimicrobial, wound healing, ant amnesic, anti-acetyl cholinesterase, proteolytic activity. The presented exhausted review article also covers the comprehensive data of *F. religiosa* ethnobotanical information, natural product chemistry and detailed pharmacological data.

Keywords: Active principles, Ayurvedic formulations, *Ficus religiosa*, Herbal remedies, Pharmacological properties.

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INTRODUCTION

Plants are livestock that supplies basic need of the universe in the form of food, clothing, and shelter. With this key satisfies, they also possess the therapeutic properties utilized in the form of pharmaceuticals, tobacco, coffee, alcohol, and other drugs throughout the planet.¹ Medicinal plants have played a significant role in maintaining human health and improving the quality of human life for thousands of years. Also,

they have served humans as valuable components of medicines, seasonings, beverages, cosmetics and dyes. Numerous plants synthesize substances that are useful in maintaining health in humans and animals.^{2,3} Intending to increase the wide range of medicinal usages, the present-day entails new drugs with more potent and desired activity with less or no side effects against a particular disease.⁴⁻⁷ The genus *Ficus* (Moraceae) constitutes one of the largest genera of angiosperms includes with more than 800 species and 2000 varieties of *Ficus* genus, occurring in most tropical and subtropical forests worldwide.^{8,9}

Vedic History

Ficus religiosa, commonly known as Peepal, is the most popular member of the genus *Ficus* and it is known by more than 150 names (Figure 1).¹⁰ *F. religiosa* has got mythological, religious and medicinal importance in Indian culture. References to *F. religiosa* are found in several ancient holy texts like Arthasastra, Puranas, Upanishads, Ramayana, Mahabharata, Bhagavadgita and Buddhist literature etc.¹¹⁻¹⁴ *F. religiosa* is a variety of fig tree that was already known as the bodhi tree, even before Gautama Buddha sat under its branches meditating and achieved enlightenment.¹⁵ It is the



Figure 1: Green leaves of *F. Religiosa*

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oldest depicted tree in Indian art and literature and it can be said that this is the mythical 'World Tree' or the 'Tree of Life' of the Indian subcontinent.¹⁶⁻²⁰ This plant is considered sacred by the followers of Hinduism, Jainism and Buddhism, and hence the name 'Sacred Fig' was given to it. Siddhartha Gautama is referred to have been sitting underneath a Bo Tree when he was "enlightened" (Bodhi) or "awakened" (Buddha).²¹ Thus, Bo Tree is well-known symbol for happiness, prosperity, longevity and good luck.²² *F. religiosa* (Bo-Tree) is well-known symbol for happiness, prosperity, longevity and good luck. The name 'Sacred Fig' was given to it because it is considered sacred by the followers of Hinduism, Jainism and Buddhism.²³⁻²⁷ Peepal tree or sacred fig is a large deciduous tree. It is often planted near temples and holy places.²⁸ It is supposed to be one of the longest-living trees and there is one in Sri Lanka which is said to be over one thousand years old.

According to Skanda Purana, the peepal should be regarded as one if one does not have a son. As long as the tree lives, the family name will continue.²⁹ To cut down a peepal is considered a sin equivalent to killing a Brahmin, one of the five deadly sins or Panchapataka.

According to Skanda Purana, a person goes to hell for doing so. Some people are

Particular to touch the peepal only on a Saturday. The Brahma Purana explains why saying that Ashvattha and peepal were two demons who harassed people. Ashvattha would take the form of a peepal and peepal the form of a Brahmin. The fake Brahmin would advise people to touch the tree, and as soon as they did, Ashvattha would kill them. Later they were both killed by Shani. Because of his influence, it is considered safe to touch the tree on Saturdays. Lakshmi is also believed to inhabit the tree on Saturdays.³⁰ Therefore it is considered auspicious to worship it. Women ask the tree to bless them with a son tying red thread or red cloth around its trunk or on its branches.

Botanical Classification

Botanical classification of this holy plant has been summarized in Table 1.

Various Names of *F. religiosa* in the Different States of India

This plant is also known as with its different synonyms all over the country. Various names of this holy plant have been summarized in Table 2.

ACTIVE CONSTITUENTS

Phytochemistry word is used to define the chemistry of natural commodities utilized as novel drugs. Preliminary *F. religiosa* is rich in tannins, saponins,

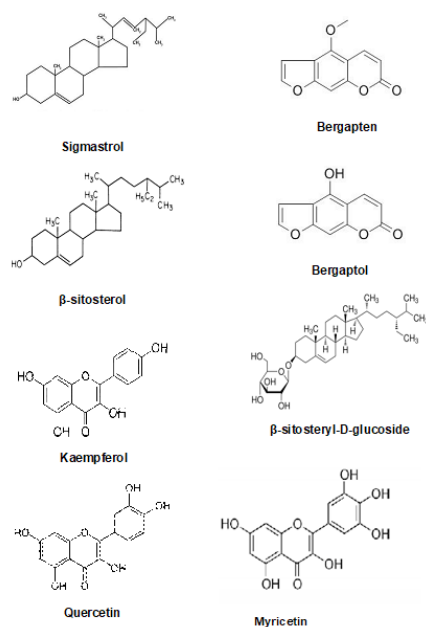


Figure 2: Chemical structures of active principles of *F. religiosa*

Table 1: Botanical classification of *F. Religiosa*.³¹

Domain	Eukaryota
Kingdom	Plantae
Subkingdom	Viridaeplantae
Phylum	Tracheophyta
Subphylum	Euphyllopsida
Class	Magnoliopsida
Subclass	Dilleniidae
Order	Urticales
Family	Moraceae
Tribe	Ficeae
Genus	Ficus
Specificepithet	ReligiosaLinnaeus
Botanicalname	Ficus religiosa

Table 2: Different names of *F. Religiosa*.³²

Assam	Ahant
Bengali	Aswatha, asud, aswat
English	Pipul, peepal tree
Gujrati	Piplo, pipul, jari
Hindi	Pipal, pipar, pipali
Kannada	Arali, aswaththa, basari, ranji
Kashmiri	Bad
Malayalam	Arasu, arayal, thullal
Marathi	Pimpal, ashvatha
Nepal	Pipal
Oriya	Jari, aswatha
Punjabi	Pipal
Sanskrit	Bodhivriksha, pippala, ashwatha
Telgu	Ravichettu
Tamil	Kanavam
Urdu	Peepal

flavonoids, steroids, terpenoids, cardiac glycosides, wax, etc.³³ The barks of *F. religiosa* possess enormous bearing of bergapten, lanosterol, β -sitosterol, stigmasterol, lupen-3-one, β -sitosterol-d-glucoside, leucocyanidin-3-0- β -D-glucopyranoside, leucopelargonidin3-0- β -D-glucopyranoside, lupeol, cerylbehenate, lupeol acetate, α -amyrin acetate. Peepal leaves have an abundance with campesterol, α -amyrin, lupeol, tannic acid, n-nonacosane, hexacosanol and n-octacosane. The fruit part comprises (e)- β -ocimene, athujene, α -pinene, α -terpinene, limonene,

α -ylangene, α -copaene, β -caryophyllene, α -humulene, γ -cadinene and cadinene Figure 2 and Table 3.

Herbal remedies of *F. religiosa*

F. religiosa is a traditional religious plant in India and is used to treat several health ailments as a home-based remedy either in glycorin combination with other herbs. It has been traditionally used in the treatment of heart ailments, nose bleeding, diabetes, constipation, fever, jaundice etc Table 4.³⁹

Table 3: Pharmacological description of different parts of *F. religiosa*³⁴⁻³⁸

Plant parts	Active principles	Medicinal property	Animal study	Mechanism of action
Fruits	Terpenoids, glycosides, flavonoids, serotonergic content.	Broncho constriction activity	Methanolic extract of fruits (0.5, 1 and 2 mg/ kg of body weight) showed significant effects in histamine and acetylcholine induced guinea pig	Significantly potentiated the EC (50) doses of both histamine and acetylcholine
		Anti-fertility activity	Methanolic extract of fruits (1%) showed anti-fertility effects on Uterus of goats	Decreased diameter of uterine glands and Myometrium thickness
Bark	Steroids, flavonoids, alkaloids, phenol content, glycosides, tannins, saponins, polyphenolic compounds, sterols.	Anti-diabetic	Aqueous extract of bark (50 and 100 mg/kg of body weight) showed hypoglycemic effects in Streptozotocin induced type2 diabetic rats	Serum insulin levels were increased and triglycerides were decreased
		Anti-inflammatory activity	Ethanollic extract of bark (100 mg/kg of body weight) showed anti-inflammatory effects in Carrageen induced golden Syrian hamsters	Reactive oxygen species were increased in their body
		Anti-ulcer activity	Ethanollic extract of bark (200 and400 mg/kg of body weight) showed anti-ulcer effects in male albino wistar rats	Volume of gastric juice and free acidity were reduced
Leaves	Flavonoids, terpenoids, tannins, phenols, sterols.	Wound healing activity	Ethanollic extract of leaves (300 mg/kg of body weight) showed wound healing activity in wistar albino strain rat	Significant increase in wound closure rate, skin breaking strength, granuloma breaking strength was observed
		Anti-parkinson activity	Petroleum ether extract of leaves (400 mg/kg of body weight) showed anti-Parkinson effects in induced experimental rats	Motor performance improved and oxidative damage was reduced
		Anti-ulcer activity	Ethanollic extract of leaves (2000 mg/ kg of body weight) showed antiulcer property in albino mice	Ulcers are prevented and gastric secretion was reduced
		Anti-asthmatic activity	Aqueous extract of leaves (150 and 300 mg/kg of body weight) showed anti-asthmatic property in guinea pigs	Development of histamine-induced pre-convulsion dyspnea was delayed
Roots	Tannins, alkaloids, saponin, β -sitosteryl-D-glucoside.	Anti-convulsant activity	Aqueous extracts of roots (100 mg/kg of body weight) showed anticonvulsant activity in Pentylene tetrazol induced mice	Increased latency of onset of convulsions
		Wound healing activity	Ethanollic extracts of roots (10%ointment) showed wound healing activity in wistar albino rats	Period for epithelialisation was decreased and hydroxyl proline content was high
Latex	Alkaloids, glycosides, amino acids, flavonoids, tannins.	Nephro-protective effects against acute renal failure	Methanolic extracts of latex (200mg/ kg of body weight) showed nephro-protective activity in cisplatin induced acute renal failure in wistar adult male rats	Levels of urea and creatanine were decreased

Table 4: Application of *F. religiosa* in different ailments

Health issues	Active Parts	Different ways to use
Mumps and infection	Leaves	A bandage of leaves coated with ghee and slightly exposed to fire is reported to treat Mumps and infection (skin abscess or boils)
Wound healing	Leaves	Leaves tied on bleeding wounds are reported to immediately stop the blood flow.
Constipation	Leaves	Pills of powdered leaves, fennel seeds (saunf), and jaggery are beneficial in constipation.
Mumps and infection	Leaves	A bandage of leaves coated with ghee and slightly exposed to fire is reported to treat Mumps and infection (skin abscess or boils).
Fever and flu	Leaves	Twice a day, consuming a mixture of five leaves of <i>F. religiosa</i> Milk and sugar can cure fever and flu.
Jaundice	Leaves	Twice a day intake of extract of two-three leaves of <i>F. religiosa</i> mixed with water and Sugar can cure jaundice.
Nose bleeding	Leaves	Putting a few drops of leaves sap in nostrils has been reported to stop nose bleeding.
Ear problem	Leaves	Cooking of filtrate of grinded leaves in gingely (sesame) oil and its application on the Diseased part has been reported to get relief from ear pain.
Dental care	Bark	Fresh twigs of <i>F. religiosa</i> are used as toothbrush (<i>Daatun</i>). It gives strength to gums and is used to kill bacteria
Skin problem	Bark	Paste of bark powder mixed with honey gives freshness to face by applied on skin

Table 5: Ayurvedic formulation of *F. religiosa*

Formulation	Plant part	Health problem
Nalpamardithailam / Nalpamaradi oil (Kerala ayurveda, Nagarjuna)	Bark of <i>F. religiosa</i> / few drops apply on skin and twice in day.	Dermatitis, scabies, eczema, acne, urticaria etc.
Sarasa syrup/Ayurvedic proprietary medicine (Imis)	2 tsp in 4 tsp of water twice a day	Dermatitis, itching, urticaria, Eczema and fungal infections
Nyagrodhadi churna /Ayurvedic medicine in powder form (GMP guidelines and Vhca Ayurveda)	Stem bark of <i>F. religiosa</i> is used/1-3 gm with honey	Diabetes, urinary disorders like dysuria
Sarivadyasava /Kerala ayurved as aribadya savam, Kottakkal saribadyasavam	Bark of <i>F. religiosa</i> / twice a day With equal amount of water	Urinary diseases, renal diseases
Panchav alkaditailam /Ayurvedic skin care oil (AryaVaidya Pharmacy)	Bark of <i>F. religiosa</i> / applied with cotton for one hour	Eczema, dermatitis, herpis and skin conditions with bleeding

Ayurvedic Formulations of *F. religiosa*

F. religiosa is consumed as herbal medicine in Ayurvedic medicinal system as a treatment for several ailments. Parts of *F. religiosa* can be consumed in the form of oil, as ointments, capsules, tablets or in raw form.⁴⁰ Each formulation has its own function and can be effective in particular kind of disease. *F. religiosa* also being consumed in the powder form by drying it and grind in traditional grinders. Powder form is also very effective for some conditions like diabetes mellitus (DM), urinary disorders etc. Powder of stem bark of *F. religiosa* is considered more effective if taken with honey, before or after meal. Similarly, there are various products or formulations available in the market known to treat diseases (Table 5).⁴¹

CONCLUSION

The world is enriched with a rich wealth of medicinal plants. Universally, there is an expanding concern in herbal medicines characterized by extended laboratory research into the pharmacological qualities of the bioactive constituents and their strength in treating various diseases. *F. religiosa* is a branched tree with heart-shaped, long-tipped leaves widely used in the

Indian system of medicine to cure several disorders and infections. The present review reveals about *F. religiosa* comprises numerous phytoconstituents and dispenses various pharmacological activities.

Numerous studies have been conducted on different parts of *F. religiosa*, but it has not yet been developed as a drug by the pharmaceutical industry. A detailed and systematic study is required for the identification, cataloging and documentation of plants, which may provide a meaningful way to promote the traditional knowledge of the herbal medicinal plants. Given the nature of the plant, more research work can be done on humans so that a drug with multifarious effects will be available in the future market

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