Ficus religiosa Lam: A Magical Tree with Various Therapeutic Approaches

Hemlata Yadav*, Diksha Singh

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 oral and ear problems. F. religiosa tree shows pharmacological activities analgesic, antioxidant, anticonvulsant, antimicrobial, wound healing, anti-amoebic, anti-acetyl cholinesterase, proteolytic activity. The presented exhaustive 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. 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. 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. 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.

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). 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 Buddhistic literature etc. 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.
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.\(^{22}\) \textit{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 \textit{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 \textit{F. religiosa} is rich in tannins, saponins,
flavonoids, steroids, terpenoids, cardiac glycosides, wax, etc. 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-amyрин acetate. Peepal leaves have an abundance with campesterol, α-amyрин, lupeol, tannic acid, n-nonacosane, hexacosanol and n-octacosane. The fruit part comprises (e)-β-ocimene, α-thujene, 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 glyorin 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>
<thead>
<tr>
<th>Plant parts</th>
<th>Active principles</th>
<th>Medicinal property</th>
<th>Animal study</th>
<th>Mechanism of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>Terpenoids, flavonoids, glycosides, serotonergic content.</td>
<td>Broncho constriction activity</td>
<td>Methanolic extract of fruits (0.5, 1 and 2 mg/ kg of body weight) showed significant effects in histamine and acetylcholine induced guinea pig</td>
<td>Significantly potentiated the EC (50) doses of both histamine and acetylcholine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anti-fertility activity</td>
<td>Methanolic extract of fruits (1%) showed anti-fertility effects on Uterus of goats</td>
<td>Decreased diameter of uterine glands and Myometrium thickness</td>
</tr>
<tr>
<td></td>
<td>Steroids, flavonoids, alkaloids, phenol content, glycosides, tannins, saponins, polyphenolic compounds, sterols.</td>
<td>Anti-diabetic</td>
<td>Aqueous extract of bark (50 and 100 mg/kg of body weight) showed hypoglycemic effects in Streptozotocin induced type2 diabetic rats</td>
<td>Serum insulin levels were increased and triglycerides were decreased</td>
</tr>
<tr>
<td>Bark</td>
<td>Anti-inflammatory activity</td>
<td>Ethanolic extract of bark (100 mg/kg of body weight) showed anti-inflammatory effects in Carrageen induced golden Syrian hamsters</td>
<td></td>
<td>Reactive oxygen species were increased in their body</td>
</tr>
<tr>
<td></td>
<td>Anti-ulcer activity</td>
<td>Ethanolic extract of bark (200 and 400 mg/kg of body weight) showed anti-ulcer effects in male albino wistar rats</td>
<td></td>
<td>Volume of gastric juice and free acidity were reduced</td>
</tr>
<tr>
<td></td>
<td>Wound healing activity</td>
<td>Ethanolic extract of leaves (300 mg/kg of body weight) showed wound healing activity in wistar albino strain rat</td>
<td></td>
<td>Significant increase in wound closure rate, skin breaking strength, granuloma breaking strength was observed</td>
</tr>
<tr>
<td></td>
<td>Anti-parkinson activity</td>
<td>Petroleum ether extract of leaves (400 mg/kg of body weight) showed anti-Parkinson effects in induced experimental rats</td>
<td></td>
<td>Motor performance improved and oxidative damage was reduced</td>
</tr>
<tr>
<td></td>
<td>Anti-ulcer activity</td>
<td>Ethanolic extract of leaves (2000 mg/kg of body weight) showed anti-ulcer property in albino mice</td>
<td></td>
<td>Ulcers are prevented and gastric secretion was reduced</td>
</tr>
<tr>
<td></td>
<td>Anti-asthmatic activity</td>
<td>Aqueous extract of leaves (150 and 300 mg/kg of body weight) showed anti-asthmatic property in guinea pigs</td>
<td></td>
<td>Development of histamine-induced pre-convulsion dyspnea was delayed</td>
</tr>
<tr>
<td></td>
<td>Anti-convulsant activity</td>
<td>Aqueous extracts of roots (100 mg/kg of body weight) showed anticonvulsant activity in Pentylenetetrazol induced mice</td>
<td></td>
<td>Increased latency of onset of convulsions</td>
</tr>
<tr>
<td></td>
<td>Wound healing activity</td>
<td>Ethanolic extracts of roots (10%ointment) showed wound healing activity in wistar albino rats</td>
<td></td>
<td>Period for epithelialisation was decreased and hydroxyl proline content was high</td>
</tr>
<tr>
<td></td>
<td>Alkaloids, glycosides, amino acids, flavonoids, tannins.</td>
<td>Nephro-protective effects against acute renal failure</td>
<td>Methanolic extracts of latex (200 mg/kg of body weight) showed nephro-protective activity in cisplatin induced acute renal failure in wistar adult male rats</td>
<td>Levels of urea and creatinine were decreased</td>
</tr>
</tbody>
</table>

**Table 3: Pharmacological description of different parts of *F. religiosa***34-38
A bandage of leaves coated with ghee and slightly exposed to fire is reported to treat Mumps and infection (skin abscess or boils).

Leaves

Leaves tied on bleeding wounds are reported to immediately stop the blood flow.

Leaves

Pills of powdered leaves, fennel seeds (saunf), and jaggery are beneficial in constipation.

Leaves

A bandage of leaves coated with ghee and slightly exposed to fire is reported to treat Mumps and infection (skin abscess or boils).

Leaves

Twice a day, consuming a mixture of five leaves of F. religiosa Milk and sugar can cure fever and flu.

Leaves

Twice a day intake of extract of two-three leaves of F. religiosa mixed with water and Sugar can cure jaundice.

Leaves

Putting a few drops of leaves sap in nostrils has been reported to stop nose bleeding.

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.

Bark

Fresh twigs of F. religiosa are used as toothbrush (Daatun). It gives strength to gums and is used to kill bacteria.

Bark

Paste of bark powder mixed with honey gives freshness to face by applied on skin

A bandage of leaves coated with ghee and slightly exposed to fire is reported to treat Mumps and infection (skin abscess or boils).

Leaves

Leaves

Leaves

Leaves

Leaves

Leaves

Leaves

Leaves

Leaves

Leaves

Bark

Bark

Table 5: Ayurvedic formulation of F. religiosa

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

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. 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).

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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