



STUDY OF ETHANOLIC EXTRACT OF LEAF OF FICUS RELIGIOSA IN ANTIULCER ACTIVITY IN WISTAR RAT MODEL

Neha Gusain^{1*}, Amandeep Singh², Neelam Painuly³

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Abstract

The ficus Religiosa also known as peepal and it is a traditional plant which are located near the temples in india for spirituality. This plant used in treatments and cure of diseases. Its consists different kinds of chemicals constituents like alkaloid tannins, phenols, saponins, sugars ,essential oils methionine, terpenoids, flavonoids, glycosides, proteins, separated amino acids ,volatile oil ,etc and it is also have different types of pharamacological properties anti-Parkinson's, anticonvulsant, anti-amnesic, anticholinergic, antidiabetic , analgesic, cytotoxic, anti-ulcer, wound healing, antioxidant, anti- asthmatic, reproductive antimicrobial, anti-parasitic, which are use in different kinds of diseases. Different part of ficus religiosa used in different diseases. Here we are studies the Antiulcer property of ficus religiosa with ethanolic extract of leaf (200- 500mg/kg) on inducing stress ulcer in animal model and Ranitidine is standard drug .In results the ethanolic extract of leaf of ficus Religiosa is prevent ulcer and protect the gastric mucosa, gastric secretion and these are analysed in dose dependent manner .

Keywords: ficus religiosa, ethanolic extract , leaf ,antiulcer ,different ,disease.

^{1*}Research Scholar, School of Pharmacy and Research, Dev Bhoomi Uttarakhand University, Dehradun, India

²Professor, School of Pharmacy and Research, Dev Bhoomi Uttarakhand University, Dehradun, India

³Associate Professor, School of Pharmacy and Research, Dev Bhoomi Uttarakhand University, Dehradun, India

Email: ^{1*}Nehagusain9639@gmail.com

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1. INTRODUCTION

For hundred million of year we are used traditional and herbal medicines to treat the diseases. ficus religiosa is a traditional plant which are commonly known as papal and it is belong to moraceae family . ficus religiosa is located near the temples for spirituality. ficus religiosa also known as by other names like –peepal tree,acase maram, sacred fig ,bodhi tree and ashvattha tree. Ficus religiosa have large board leaf and it is a evergreen tree. Ficus religiosa grow fastly and it having heart shape leaf .ficus religiosa is not emits only oxygen but it also have medicinal properties. The medicinal properties of ficus religiosa are analgesic, cytotoxic, anti-ulcer, wound healing, antioxidant, anti-asthmatic, reproductive, antimicrobial, anti-parasitic ,gonorrhoea, gastric problems ,eye troubles ,migraine ,anti Parkinson,anti amnesic,anticonvulsant,anti inflammatory . The chemicals constituents of ficus religiosa alkaloid tannins, phenols, saponins, sugars

,essential oils methionine, terpenoids, flavonoids, glycosides, proteins, separated amino acids ,volatile oil.The different part of the tree are used in different disease treatment.

Around 60-80% population are suffering from the gastric and ulcer disease. The traditional and herbal medicines are used cure health and these traditional and herbal medicines are beneficial for treatment and protection of ulcer.The ethanolic extract of leaf of ficus religiosa are used to treat the ulcer and protect the gastric mucosa.

PLANT PROFILE

The ficus religiosa is also called peepal and it belong to moraceae family and this trees have been on earth for 50-80 million years. ficus religiosa is widely branches trees and evergreen trees . The hight of the tree is around 20m tall and 1.6-3m dbh,shape are irregular with spreading wide branches with out aerialroots and their trunk is regular shaped. The leaves are arranged spirally ,broadly ovate ,glossy and dark green leaves 10-20 by 8.0-10cm long.





FIGURE: Leaves of *Ficus Religiosa*

SYNONYMS: *Ficus rhynchophylla* Steud., *Ficus superstitionis* Link., *Urostigma affine* Miq. and *Urostigma religiosum* (L.) Gasp[15].

TAXONOMICAL CLASSIFICATION OF *FICUS RELIGIOSA*

Domain	Eukaryota
Kingdom	Plantae
Subkingdom	Viridiplantae
Phylum	Tracheophyta
Subphylum	Euphyllophytina
Class	Magnoliopsida
Subclass	Dilleniidae
Order	Urticales
Family	Moraceae
Tribe	Ficeae
Genus	<i>Ficus</i>
Specific epithet	<i>Religiosa</i>
Botanical name	<i>Ficus religiosa</i>

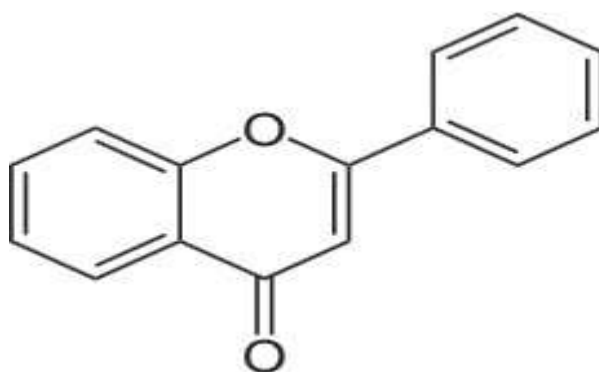
Phytochemicals Properties of *Ficus religiosa*

The stem bark of *F. religiosa* are reported phytoconstituents of phenols, tannins, steroids, alkaloids and flavonoids, β -sitosterol-D-glucoside, vitamin K, n-octacosanol, methyl oleanolate, lanosterol, stigmasterol, lupen-3-one. The active constituent from the root bark *F. religiosa* was found to be β -sitosterol-D-glucoside, which showed a peroral hypoglycemic effect in fasting and alloxan-diabetic rabbits and in pituitary-diabetic rats. The fruits contain 4.9% protein having the essential amino acids, isoleucine, and phenylalanine. The seeds contain phytosterol, β -sitosterol, and its glycoside, albuminoids, carbohydrate, fatty

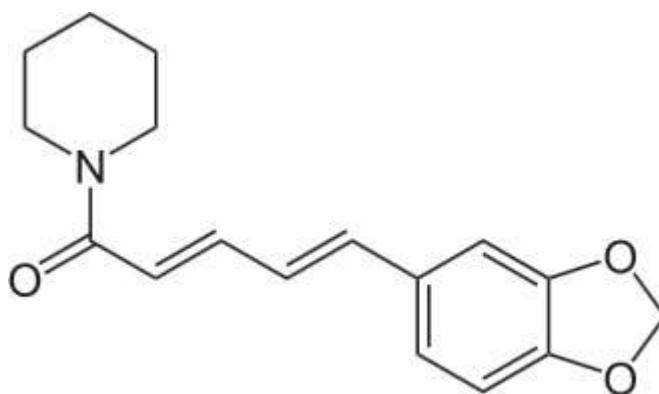
matter, coloring matter, caoutchouc 0.7–5.1%. *F. religiosa* fruits contain flavonols namely kaempferol, quercetin, and myricetin. Leaves and fruits contain carbohydrate, protein, lipid, calcium, sodium, potassium, and phosphorus. The aqueous extract of dried bark of *F. religiosa* has been reported to contain phytosterols, flavonoids, tannins, furanocoumarin derivatives namely bergapten and bergaptenol.

The fruit of *F. religiosa* contained appreciable amounts of total phenolic contents, total flavonoid, and percent inhibition of linoleic acid. Generally higher extract yields, phenolic contents, and plant material antioxidant activity were obtained using aqueous organic

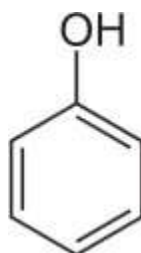
solvents, as compared to the respective absolute organic solvents. Although higher extract yields were obtained by the refluxing extraction technique, in general higher amounts of total phenolic contents and better antioxidant activity were found in the extracts prepared using a shaker.



Flavanoids



Piperine



Phenol

Pharmacological activity of *ficus religiosa*

Anti diabetic activity-

Chlorogenic acid and chicoric acid are the two most notable antidiabetic phytoconstituents isolated from this plant which can increase glucose uptake in L6 muscular cells. Both phytochemicals can

also upraise insulin secretion from the INS-1E insulin-secreting cell line and rat islets of Langerhans.

Antimicrobial activity

Plants are rich in a wide variety of secondary metabolites, such as tannins, terpenoids, alkaloids, and flavonoids, which have been found in vitro to have

antimicrobial properties. The antibacterial study was carried out by agar disc diffusion method. Leaves extracts were prepared with water, acetone, ethanol, and methanol. In case of *Ficus religiosa* aqueous and ethanolic leaves extracts showed antibacterial activity against *E. coli* and *P.*

Ani cancer activity

Tannic acid or their isomers were detected as active compounds in chloroform extract of

F. religiosa plant which serotonin showed cytotoxicity on cancer cells. *F. religiosa* leaf extract showed **promising anticancer activity against human breast cancer cell.**

Analgesic activity:

The analgesic activity of stem bark of *F. religiosa* is explored by Sreelekshmi et al. using the acetic acid induced writhing (extension of hind paw) model in mice. It showed dropping in the number of writhing of 71.56 and 65.93%, respectively at a dose of 250 mg/kg and 500 mg/kg bodyweight.

Thus, it can be concluded that extract showed the analgesic effect probably by inhibiting synthesis or action of prostaglandins³⁶.

Wormicidal Activity:

Iqbal et al. explored that *F. religiosa* bark methanolic extract was 100% lethal for *Haemonchus contortus* worms during in vitro testing³³.

Wound healing activity:

It has been reported that tannins possess ability to increase the collagen content, which is one of the factor for promotion of wound healing³⁴⁻³⁵. This activity was explored by incision and excision wound models using *F. religiosa* leaf extracts which was prepared as lotion (5 and 10%) and applied on Wistar albino strain rats. High rate of wound contraction, decrease in the period for

epithelialisation, high skin breaking strength were detected in animals treated with 10% leaf extract ointment when compared to the control group of animals.

Anticonvulsant activity:

In Ayurveda it is claimed that leaves of *F. religiosa* also possess anticonvulsant activity³⁸. The anticonvulsant effect of the extract obtained from the leaves of *F. Religiosa* was evaluated against pentylene tetrazole induced convulsions PTZ (60mg/kg, i.p) induced convulsion in albino rats. The study revealed 80 to 100 % protection against PTZ induced convulsions when given 30-60 minutes prior to induced convulsion, respectively³⁹. Figs of the plant *F. religiosa* have been reported to contain highest amount of Serotonin which is responsible for its anticonvulsant effect.

Antiulcer activity

The ethanol extract of stem bark showed potential antiulcer activity. The activity was evaluated in vivo against indomethacin and cold restrained stress induced gastric ulcers and pylorus ligation assay⁴¹. The extract (100, 200 & 40mg/kg) significantly reduced the ulcer index in all assay used⁴².

Anti-inflammatory activity

Viswanathan et al investigated the anti-inflammatory and mast cell proliferative effect of aqueous extract of bark of *F. religios*. The anti-inflammatory effect was evaluated against acute (carrageenan induced hind paw oedema) and chronic (cotton pellet implantation) models of inflammation. *F. religiosa* has found to be potential anti-inflammatory & analgesic property. It was found that the leaf extract of *F. religiosa* has potential anti-inflammatory activity against carrageenan induced paw oedema.

Anti-amnesic activity:

To investigate the anti-amnesic activity of *F. religiosa* methanol extract of figs of *F. religiosa* were used. Figs are known to comprise a high serotonergic content and modulation of serotonergic neurotransmission which plays a crucial role in the pathogenesis of amnesia. The anti-amnesic activity was investigated using methanolic extract of figs of *F. religiosa* on scopolamine-induced anterograde and retrograde amnesia in mice. The result showed anti-amnesic activity against scopolamine induced amnesia, in a dose dependent manner.

Anthelmintic activity

Methanolic extract *F. religiosa* bark was 100% lethal for *Haemonchus contortus* worms⁴⁶. The stem and bark extracts of *F. religiosa* proved lethal to *Ascaridia galli* in vitro. The pharmacological studies has accepted that anthelmintic activity is due to a proteolytic fraction called ficin. It is evident from above that methanolic extracts of *F. religiosa* possibly exerted anthelmintic effect because of ficin.

Immunomodulatory activity

To study the immunomodulatory effect of alcoholic extract of the bark of *F. religiosa* various hematological and serological tests were carried out in mice. Administration of extract remarkably ameliorated both cellular and humoral antibody response. It is concluded that the extract possessed promising immune stimulant properties⁴⁸.

Antioxidant activity

The aqueous extract of *F. religiosa* reduces oxidative stress in experimentally induced type 2 diabetes in rats. Type 2 diabetic rats gained relatively less weight during the course of development as compared to normal rats. The aqueous extract of *F. religiosa* improved the body weight of diabetic rats.

Hypolipidemic activity

Dietary hemicelluloses peepalbanti (*F. religiosa*) has cellulose, and lignin as predominating constituents it showed a significant negative correlation with serum and liver cholesterol and a significant positive correlation with fecal bile acids. The dietary fiber influenced total lipids, cholesterol, triglycerides, and phospholipids of the liver to varying extents⁵⁰.

Hypoglycemic activity:

From the root bark of *F. glomerata* and *F. religiosa*, B-Sitosterol-Dglycoside was isolated which has a peroral hypoglycemic.

2. CONCLUSION

The present review describes the history, origin, mythological, phytochemical, pharmacology and therapeutic potential of *Ficus Religiosa* (Moraceae). The present review reveals that *F. religiosa* contains several phytoconstituents like β -sitosterol Dglucoside, vitamin K, noctacosanol, kaempferol, quercetin, and myricetin. The plant has been studied for its various pharmacological activities like antibacterial, antifungal, anticonvulsant, immunomodulatory, antioxidant, hypoglycemic, hypolipidemic, anthelmintics, and wound healing activities. *F. religiosa* has a great therapeutic potential for the treatment of diseases like asthma, diabetes, epilepsy, cancer, hyperlipidemia, inflammatory disorders, infectious disorders etc..

The ethanolic extract of leaves are used to treat the ulcer because leaf has flavanoid which are helpful to treat the ulcer.

Sharma et.al.,(2016) Human life has existed and survived on this planet only due to the presence of one of the greatest gifts of god that is PLANTS. *Ficus religiosa* commonly known as "Peepal" has played a significant role in improving

health and alleviate illness of mankind. *Ficus religiosa* is a large evergreen tree found throughout India. It was explored and used in various systems of medicine like Ayurveda, Siddha, Unani and Homeopathy.

Al-Snafi et.al.,(2013) Herbal medicine is the oldest form of medicine known to mankind. It was the mainstay of many early civilizations and still the most widely practiced form of medicine in the world today. The World Health Organization (WHO) estimates that 4 billion people, 80 percent of the world population, presently use herbal medicine for some aspect of primary health care.

Gregory et.al., (2013) Objective: To evaluate the anti-ulcer activity and acute toxicity of *Ficus religiosa* (*F. religiosa*) leaf extract. Materials and Methods: The acute toxicity of *F. religiosa* leaf extract was evaluated with the and acute toxicity studies of *F. religiosa* also carried out. Results: The phytochemical screening extract treatments prevented ulcer area and gastric secretion in a rat model. Conclusion: The extract is non-toxic even at relatively high concentrations. The anti-ulcer activity is probably due to the presence of flavanoids.

Sandeep et.al.,(2018) Medicinal plants play a vital role in improving health of people. Hundreds of medicinal plants have been used to cure various diseases since ancient times. *Ficus religiosa* (Peepal) has an important place among herbal plants. Almost every part of this tree i.e. leaves,

bark, seeds and fruits are used in the preparation of herbal medicines. Therapeutic properties of this tree in curing a wide range of diseases can be attributed to its richness in bioactive compounds namely flavonoids, alkaloids, tannins, saponins, phenols etc. Its antimicrobial, anti-diabetic, anticonvulsant, wound healing, anti-inflammatory and analgesic properties have made it a popular herbal tree and its parts are placed as important ingredient in modern pharmacological industry. The documentation of traditional and modern usage of *F. religiosa* under one heading can help researchers to design and develop new functional foods from *F. religiosa*.

Murugesu et.al.,(2021) *Ficus* is one of the largest genera in the plant kingdom that belongs to the Moraceae family. This review aimed to summarize the medicinal uses, phytochemistry, and pharmacological actions of two major species from this genus, namely *Ficus benghalensis* and *Ficus religiosa*. These species can be found abundantly in most Asian countries, including Malaysia. The chemical analysis

report has shown that *Ficus* species contained a wide range of phytoconstituents, including phenols, flavonoids, alkaloids, tannins, saponins, terpenoids, glycosides, sugar, protein, essential and volatile oils, and steroids. Existing studies on the pharmacological functions have revealed that the observed *Ficus* species possessed a broad range of biological properties, including antioxidants, antidiabetic, anti-inflammatory, anticancer, antitumor and antiproliferative, antimutagenic, antimicrobial, anti-helminthic, hepatoprotective, wound healing, anticoagulant, immunomodulatory activities, antistress, toxicity studies, and mosquitocidal effects. Apart from the plant parts and their extracts, the endophytes residing in these host plants were

discussed as well.

Chandrasekar et.al(2010) Herbs have always been the principal form of medicine in India. Medicinal plants have curative properties due to the presence of various complex chemical substances of different composition, which are found as secondary plant metabolites in one or more parts of these plants. *Ficus religiosa* (L.), commonly known as peepal belonging to the family Moraceae, is used traditionally as antiulcer, antibacterial, antidiabetic, in the treatment of gonorrhoea and skin diseases. *F. religiosa* is a Bo tree, which sheltered the Buddha as he divined the "Truths." The present review aims to update information on its phytochemistry and pharmacological activities.

A. Parasharami et.al,(2014) *Ficus religiosa* L., commonly known as Peepal tree is a medicinally important tree species belonging to the Moraceae family. It is considered a sacred tree in India and is respected by followers of many religions. It is extremely popular in indigenous system of medicine like Ayurveda, Siddha, Unani and Homeopathy. Studies have been carried out in the past that validate the antimicrobial property of *Ficus religiosa* and have been documented. Recent pharmacological reports show the potential of this tree as a source of many bio medicinally active compounds/molecules that could be used for future drug synthesis.

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