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Review Article

A Review on Pharmacological Activities and Potent Health Benefits of Ficus Bengalensis

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Abstract:

Ficus benghalensis commonly known as banyan fig and the "indian banyan" which is the national tree of india, a genus of family moraceae is a tropical, deciduous, evergreen tree with more than 800 species. This review aimed to summarize the potent health benefits and pharmacological actions of F. bengalensis. Today medicinal plants are widely used in their natural as well as processed form because these are harmless, many possess medicinal properties and still many are toxic. Scientifically a lot of pharmacological work has been done on various part of F. Bengalensis, still some other traditionally important pharmacological uses are also remaining to proof scientifically. The bark of F. bengalensis considered useful in burning sensation, ulcers, painful skin diseases and toothache. The leaves are used as ulcer protective, leprosy and fever, inflammations (Ayurvedic). The milky juice is useful in piles, diseases of the nose, gonorrhea. The aerial root of banyan considered useful in anxiety-reducing, muscle relaxing, memory enhancing, seizure modifying properties and inflammation of liver.

Introduction

Plants synthesize majority of chemical and biochemical compounds which perform vital biological functions.

Medicinal plants(Medicinal herbs) have been discovered for decades and are used widely in non-industrialized societies and developing countries in Asia, Africa and Southern America, mainly because they are thought to be very effective, cheaper and readily available.

One such tree with remarkable medicinal properties is the Ficus benghalensis, also known as Indian Banyan Tree and Bargad, cultivated as a Garden tree or Spiritual tree. *Ficus* have been known for their wide range of species, consisting of more than 800 species including trees, vines, shrubs, epiphytes, and hemiphytes. It has remarkable medicinal property which helped in curing various life-threatening diseases. The banyan tree was widely used as a medicine for treatment of various diseases in ancient medical systems such as Ayurveda, Siddha, Unani and Homeopathy. Various parts of F. benghalensis including leaves, stem bark, root, latex, and fruits, were investigated for their potential health benefits.

Systemic Classification

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnolipsida
Order	Urticales
Family	Moraceae
Genus	Ficus
Species	Bengallensis

Chemical Constituents of Ficus Benghalensis:

Plant Part	Chemical constituents
Leaf	Flavonoids, terpenoids, phenols and terpenes
Bark	Flavonoids, terpenoids, phenols, terpenes, quinone, furanocoumarin
Root	Sterols, amino acids, fatty acids
Fruits	Fatty acids

Geographical Distribution and Habitat of Banyan

Primarily the banyan tree is native to tropical Asia. It is found widely in many tropical countries of the world including India, Myanmar, Thailand, southern China, Malaysia, many in North America, the West Indies, West Africa, Australia, the Middle East and even the Pacific Ocean.

Banyan trees require warm, moist and humid climatic conditions, well-draining soil in order to bloom properly.

Common Names of Ficus Benghalensis

Some of its common names in the regional languages are as follows:

Sanskrit	Vata Vriksha, Raktaphal, Shrungi, Vanadpathi, Jatala, Yakshavasaka, Yakshataru, Rohini, Danta, Kanchana, Dhruva, Vitapi, Mandali, Vanabhu, Avarohi
English	Banyan, Banyan fig, Indian banyan
Hindi	Bad, Baragad
Bengali	Bat, Bat Briksha
Tamil	Ala
Telugu	Peddamari
Malayalam	Peroal
Marathi	Vad
Kannada	Alada mara, Aala, Vatavruksha
Oriya	Vata, Bara
Gujarati	Vad
Punjabi	Bhod, Bhaur

Pharmacological Activity of Ficus Bengalensis

1. Anti-diarrhoeal and Anthelmintic activity:
Mukherjee et al. in 1998 reported that the ethanol extract of the hanging roots of F. benghalensis, when administered per orally reduced diarrhoea by inhibiting gastrointestinal motility and PGE2-induced entero-pooling against castor oil induced diarrhoea. In addition the methanolic, aqueous, chloroform and petroleum ether extracts of the roots of F. benghalensis have potent anthelmintic activity when compared with conventionally used drug, as they were found not only to paralyze but also to kill the worms.

2. Analgesic activity: The analgesic activity of Stem bark extraction of Ficus benghalensis tested using acetic acid induced writhing model on rats, showed significant analgesic activity as demonstrated by Vishnu et al., in 2010.

3. Anti-inflammatory activity: In a study conducted by Prathap Kumar et al. in 2013 to determine the anti-inflammatory effect of methanolic extracts of the leaves of Ficus benghalensis which was evaluated in experimental animals indicated that the methanolic extract
of Ficus benghalensis exhibited significant activity in the treatment of inflammation compared with the standard drug diclofenac, in formalin-induced hind paw edema model in rats as measured using plethysmometrically. In trinitrobenzenesulfonic acid(TNBS) induced Inflammatory Bowel Disease (IBD) another inflammatory disease model in rats, aqueous extract of Ficus benghalensis bark exhibited a significant protective effect on the colonic tissuemalondialdehyde(MDA), myeloperoxidase (MPO), superoxide dismutase (SOD), and nitric oxide (NO) levels and percent mast cell protection in mesentery as compared to prednisolone in rats.

4. Anti-stress, Anti-allergic and Immunomodulatory activity:

Various extracts (aqueous, ethanol and ethyl acetate extracts) of Ficus benghalensis bark screened for their anti-allergic and anti-stress potential in asthma model by milk-induced leucocytosis and milk induced eosinophilia, demonstrated significant decrease in leucocytes and eosinophils in the order given while petroleum ether and chloroform extracts were inactive. This shows the application of polar constituents of Ficus benghalensis bark as anti-stress and anti-allergic agents in asthma. 21

5. The Immunomodulatory activity:
Aerial roots of Ficus benghalensis for its effect on both specific and non-specific immunity and successfully proved that the extract exhibited a significant increase in percentage phagocytosis by human neutrophils in the in vitro tests. In an in-vivo study, the extract was found to exhibit a dose related increase in the hypersensitivity reaction, to the Sheep RBC antigen. It also resulted in a significant increase in the antibody titer value, to Sheep RBC. 22

6. Anticancer and anti-bacterial activity:
The fruit extract of Ficus benghalensis has been documented for its anti-cancer activity in the potato disc bioassay, but none of the tested extracts showed any marked inhibition on the uptake of calcium in to rat pituitary cell-line GH4C1.The extracts of the four tested Ficus species had significant antibacterial activity, but no antifungal activity. The results of this preliminary investigation support the traditional use of these plants in folk medicine for respiratory disorders and certain skin diseases.

7. Anti-diabetic and Ameliorative effect:
The aqueous sex tract of Ficus benghalensis bark at a dose of

500mg/kg/day exhibited a significant anti-diabetic and ameliorative activity as evidenced by histological studies in normal and Ficus benghalensis treated streptozotocin induced diabetic rats. In addition, leucocyanidin derivative isolated from Ficus benghalensis was proved to have significant Insulin sparing action.

8. Anti-Oxidant Activity: Anti-oxidant activity of the methanolic extract of the bark of Ficus bengalensis (MFB) were studied at doses of 100, 200 and 300 mg/kg (i.p) using the Freund's Complete Adjuvant induced arthritis model, the Formalin induced arthritis model and the Agar induced arthritis model. The extract produced marked inhibitory effect on edema especially on secondary immunological arthritis and caused graded inhibition of both phases of Formalin- induced pain .The present study validates the traditional use, demonstrating that the methanolic extract of bark of Ficus bengalensis possesses dose dependent anti-rheumatic activity in all the models with a possibility of acting through the central and peripherally mediated activities.

Conclusion

The Banyan is blessed with exceptional medicinal potency which helps to treat life-threatening disease. A lot of pharmacological work has been done scientifically on various part of F. bengalensis but Hence it not be wrong to state that some other traditionally important therapeutically uses and unexploited potential of ficus are also remaining to proof scientifically till now.

Since researches are working on F. benghalensis over different scenarios such as myocardial infection, diabetes, cancer etc. The production and usage of drugs from F. benghalensis will boost the growth of pharmaceutical word.

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