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A REVIEW ON MORPHOLOGY, PHARMACOGNOSTIC, PHYTOCHEMISTRY AND PHARMACOLOGICAL STUDY OF BANYAN TREE (FICUS BENGALNESIS L.)

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ABSTRACT:

Ficus Bengalnesis L. or banyan tree which belongs to the mulberry family (Moraceae). The traditional medicinal system like ayurveda, siddha, unani and homeopathy. It is a massive tree having branches with hanging aerial roots downwardly. The all-plant part of banyan tree (Ficus Bengalnesis L.) that is leaves, fruits and stem bark, aerial roots are used as anti-helminthic, anti-bacterial, anti-oxidant, anti-cancer, antimicrobial Activities and also diarrhea, diabetes leucorrhea, nerve disorders, tonic and astringents properties. In this review aims to the information on the, pharmacognosy, physicochemical parameters, phytochemistry, pharmacological studies of Ficus Bengalnesis L.

Keywords: Ficus Bengalnesis L., banyan tree, Moraceae.

INTRODUCTON:

Banyan tree (Ficus Bengalnesis L. FB) is a large and traditional medicinal plant, it is used for thousands of years and has become an essential medicinal plant in the medicinal field. In Ayurveda it is used to treat piles, diarrhea, dysentery, and other digestive issues. Rheumatism, skin conditions such sores, hypoglycemic immune system. The fruit extracts from Ficus Bengalnesis L. have also been discovered to limit the activity of liver and kidney extracts, which have anti-tumor properties. As a byproduct of their typical metabolic processes, all plants synthesize chemical compounds. There are two categories of these phytochemicals: Principal metabolites, which include sugars and all plants include lipids, which are found in them; and Secondary metabolites—compounds that are present in lower amounts range of plants, each with a more specialized purpose.

ORIGIN

The native Indian tree, widely found in plane area and mountainous areas and grow up to 1600m or 4750ft from sea level. Ficus originating from Eastern and Northern India. it is also distributed in wild.

HABITAT

It is found in India and also found in Bengal from sea level to 1200m.

SYNONYMS

Sanskrit	Vata
Marathi	Vad
Hindi	Vada
English	Banyan tree
Gujrati	Vad
Bengali	Bot
Tamil	Vada
Telegu	Maricheta
Punjab	Bera

BOTANICAL DESCRIPTION

Taxonomy

Kingdom	Plantae
Sub kingdom	Tracheobiota
Family	Moraceae
Genus	Ficus
Species	Ficusbengalnesis
Order	Urticales
Division	Magnoliophyta
Super division	Spermatophyta
Class	Magnolipsid
Subclass	Hamamelidae

MORPHOLOGY

Leaves

The leaves are opposite in arrangement, coriaceous, slightly bitter tasting, green in colour, oblong to

elliptical. 10–30cm in length, 8–21 cm in breadth, and 2.5–5 cm for the petiole. Leaf powder has a taste that is slightly bitter, is odourless, and is a light shade of green. A microscope reveals trichomes, fibers.

Fig.1. Leaves

Flowers

It consists both male and female. it is a very small pink in color. In male flower the opening of the container is packed, while in female flower the perianth is shorter and longer.

Fig.2.Flowers

Fruits

Fruits are small, axillary, fleshy pericarp and when ripe dark red in color, diameter is 10-2.0cm and tiny seeds are present in the fruit. A fruit is not eating for humans but edible for monkeys, insects and birds.

Fig.3.Fruits

Stem bark

Brownish-gray stem bark with black spots is the hue of dried stems. reddish brown to yellowish brown on the inside surface and a brown outer surface. having a stimulating scent, an astringent flavor, and a rough texture because of the lenticels' presence. The age of the tree affects the bark's thickness. Internal area of outer stem bark is fibrous and brittle. Outer and inner stem bark characterized with having width of 2.7 to3.4 mm respectively.

Fig.4. Stem bark

PHYTOCHEMICAL CONSTITUENT

Wide Varity chemical constituent present in Ficus Bengalnesis L.which is responsible for pharmacological activity. such as flavonols and flavonoids, terpenoids, ketone, other esters.

Flavonols and Flavonoids

Stem bark of Ficus Bengalnesis L. contain flavonoids and leaves contain flavanols, which is

responsible for antioxidant effect. All the flavonoids consist sugar and OH groups.

Terpenes

Terpenes are important biosynthetic building blocks found in almost all living things. For instance, the triterpene squalene is a source of derivatives such as steroids. When Chemical modifications to terpenes, such as oxidation or the consequent rearrangement of the carbon skeleton Terpenoids are a broad term for substances.

Ketones

Three ketones isolated from FB plant, these are 20 tetratriacontene2 one, pentatriacontane 5 one and 6 heptatriacontane 10 one.

Alkaloids

In group of chemical compounds, a nitrogen ring is found which is known as alkaloids. Alkaloids produced by different species like Bactria fungi plants several alkaloids are isolated from crude extract by using acid base extraction. They are used in pharmaceutical industries for medicinal use.

Glycosides

The Ficus Bengalnesis L. consist glycosides which contain sugar and non-sugar part while sugar part is inactive and non-sugar part is active the can made through enzyme hydrolysis which separate sugar part and they can use medicine.

Quinidine

Ephedrine, a medication used to treat asthma, and quinine, an antimalarial medicine. Alkaloids affect a variety of metabolic pathways in both humans and other animals, but they virtually always have a bitter taste.

Polyphenols

Compounds with phenol rings are also referred to as phenolic. The phytoestrogens from soy, the iso Lavone's that give grapes their purple colour, and the tannins that give tea its astringency are all phenolic.

GENRAL USES

Some of FB's healing capabilities have been attributed to the various polyphenolic chemicals. Bioactive peroxides have antiviral and anticancer properties antimalarial, anti-diabetic, and cardiovascular effects that are protective, hepatoprotective, and neuroprotective. According to the Ayurveda medical system, fruits, and FB aerial roots are employed in the treatment of diabetes. Leucopelargonin is a flavonoid that is valued for its antioxidants and as hypoglycemic agents. As a plaster, it is applied on inflammatory swellings. It works well to treat asthma, piles, diarrhea, Hemoptysis, gonorrhea, and urinary problems are also affected. The Nyagrodha decoction of leaves, buds, and aerial roots were incorporated into a honey mixture and used to treat both nausea and thirst.

PHARMACOLOGICAL CHARACTERS

Antioxidant activity

The methanolic and alcoholic extract of Ficus Bengalnesis L. leaves and ascorbic acid was comparatively evaluated. This chosen plant extract analyzed with standard antioxidant such as vitamin c . methanolic extract of Ficus Bengalnesis L. shows antioxidant property with standard ascorbic acid. Reductionist behavior with the increase in dose, the extract displayed increased lowering power action. At the greatest dose of 100 g/ml, which is less than usual, it has demonstrated a considerable and highest lowering power activity.

Leucorrhea

The fruit and root extract of FB or milk is useful for Leucorrhoea. Bark of banyan and Tripahala powder with honey has been taken up to 20 days to cure Leucorrhoea. The bark of FB boil with water and apply locally to cure leucorrhoea.

Anti helminthic

The various extract such as etanolic alcoholic extract from Ficus Bengalnesis L. not only paralyze to earthworms, but also kill them. for example,

methanolic extract were found to very effective to earthworm than anthelmintic drugs.

Anti-inflammatory activity

The latex of the banyan is used by ayurvedic doctors in India to treat rheumatism and other inflammatory illnesses. A study was created to show the methanolic extract of FB's anti-inflammatory effectiveness and potential mechanisms of that action. The edema caused by carrageenan was prevented by MEFB. Similar to non-steroidal anti-inflammatory medicines, it most likely causes an anti-inflammatory reaction by inhibiting the release of protease lysosomal enzyme and prostaglandin. MEFB's various effects on inflammatory mediators, account for its anti-inflammatory action.

Anti diabetic Activity

The alcoholic and aqueous extract of root, bark and fruit of Ficus Bengalnesis L. shows antidiabetic activity. Aqueous stem and bark extract provide better reduction of fasting blood glucose compare than tolbutamide. In streptozotocin create diabetic rats, a hydrated extract of Ficus Bengalnesis L. stem bark significantly lowered the levels of serum electrolytes. Significant morphological alterations in the pancreatic cells, including slight edema and inflammation, at end 12 weeks, the hydrated extract of bark oral administrated (500mg/kg body wt./day) decreased liver as well as kidney lipid peroxide production, decreased pancreatic tissue swelling and inflammation, and restored serum electrolyte, glycolytic enzyme system levels. This shows that Ficus Bengalnesis L. has antidiabetic and ameliorative properties.

Hepatoprotective

The methanolic extract of Aerial root is treatment increases GsH and decrease TBARS in isoniazid and rifampicin induce hepatotoxic rate.

Cytotoxic activity

The methanolic extract aerial root and bark did not displayed toxicity and mortality after oral administration.

Growth promoting character

The hydrated and alcoholic root extract of banyan tree (F. bengalnesis) widely used to promote growth potential.

Anti-allergic and anti-stress

Milk-induced leucocytosis and milk-induced eosinophilia were used to test the antiallergic and antistress properties of various FicusBengalnesis L. bark extracts in asthma.

Piles

The bark of Ficus Bengalnesis L. boil with water and add honey and take 10 to 20 days in the morning, these remedies used to cure piles.

CONCLUSION

This review article contains phytochemicals, pharmacognostic characteristics, pharmacological activity of Ficus Bengalnesis L. (Family - Moraceae) & thus medicinal plant found in India & Bengal. According to their studies about F B plant we can determine various part extract of FB used as antioxidants, Analgesic, Anti-inflammatory, antiallergic Anticancer, antidiabetic activity wound healing properties, and to cure piles.
In this Plant contains various phytochemicals such as Flavonoid, Terpene, Ketones, Ester, Alkaloid, Glycoside and flavonoid responsible for its Anti-inflammatory activity.

REFERENCE

1.Kamalika mazumder1*, himangshu s maji2, nripendra n binvestigation of pharmacognostical, phytochemical, and pharmacological activity of aerial roots of ficusbenghal.nsislinn.asian journal of pharmaceutical and clinical research, vol 11, issue 10, 2018
2.Hafiz Abdul Khaliq, *A review of pharmacognostic, physicochemical, phytochemical and pharmacological studies on Ficusbengalensis L. Journal of Scientific and Innovative Research 2017; 6(4): 151-163
3.LakhwinderSingh,2Antulkumar,3Anujchoudhary,4 Gurwindersran, medicinal and pharmacological properties of different ficus species: a review, ©

2018 IJCRT | Volume 6, Issue 2 April 2018 | ISSN: 23202882.
4.SunitaVerma*, A Review Study on Phytochemical and
Pharmacological Properties of Ficusbenghalensis (Indian Banyan Tree), 2016 IJSRSET | Volume 2 | Issue 4. 4 | Print ISSN: 2395-1990 | Online ISSN: 2394-4099 Themed Section: Engineering and Technology.
5.K Mahammad Areef1*, Mohammed Mazher Ahmed 2, Antibacterial
Activity of Different Leaves and Bark Extracts of FicusBenghalensis, Journal of Research in Medical and Dental Science 2022, Volume 10, Issue 1, Page No: 242-255.
6.S.T. Gopukumar, P.K. Praseetha*, Ficusbenghalensis Linn – The Sacred Indian Medicinal Tree with Potent Pharmacological Remedies, Int. J. Pharm. Sci. Rev. Res., 32(1), May – June 2015; Article No. 37, Pages: 223-227 ISSN 0976 – 044X.
7.Tripathi, I.P. and 2Ruchika Sharma, bio-chemical activities of ficusbanghalensis-a review article, International Journal of Current Research
Vol. 8, Issue, 07, pp.34765-34768, July, 2016
8.C.N. HariPrasath*, A. Balasubramanian, S.Radhakrishnan and M. Sivaprakash, Banyan tree - Indigenous system of medicine, Van Sangyan (ISSN 2395 - 468X) Vol. 6, No. 8, Issue: August 2019.