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Review Article

A Review Study on Phytochemical and Pharmacological Properties of *Ficus benghalensis* (Indian Banyan Tree)

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ABSTRACT

Commonly referred to as a banyan tree, Ficus bengalensis is an evergreen tree that is a member of the Moraceae family. A significant medicinal plant with several bioactive components is Ficus benghalensis. The entire Ficus bengalensis plant, including the leaves, fruits, and bark, has anti-oxidant, anti-cancer, and antimicrobial qualities. It is also used to cure a number of illnesses. The goal of this review is to provide current knowledge about Ficus bengalensis's botanical description, pharmacological characteristics, and phytochemicals.

INTRODUCTION

In the Indian medical system and other traditional medical systems around the world, plants have been the primary source of pharmaceuticals. The Rig-Veda contains the earliest explanation of the therapeutic qualities of medicinal herbs. The Sushrusha Samhita and Charaka Samhita provide thorough descriptions of a variety of therapeutic herbs. About 7.5 percent of India's population is made up of 400 distinct tribal and other ethnic groups. In 2001, scientists discovered 122 compounds utilized in contemporary medicine that came from ethnomedical plant sources [1], and 80% of these compounds had ethnomedical uses that were the same as those of the active synthesized medications today [10]. The natural resources found nearby have helped tribal, rural, and primitive communities find solutions for nearly all of their needs and issues, including the treatment of sickness [3]. There are about 750 plant species in the genus Ficus, which are found in the majority of tropical and subtropical forests worldwide. The wide range of habits among its species makes the genus noteworthy [5].

I. METHODS AND MATERIAL: --

1. Taxonomic Classification

Kingdom = Plantae

Sub Kingdom = Tracheobiota

Super division = Spermatophyta

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Division = Magnoliophyta

Class = Magnoliopsida

Subclass = Hamamelidae

Order = Urticales

Family = Moraceae

Genus = Ficus

Species = Ficus benghalensis

2. Synonyms

Sanskrit = Vata

English = Banyan tree

Hindi = Vada

Bengali = Bot

Gujrati = Vad

Marathi = Vad

Telugu = Maricheta

Tamil = Vada

Malayalam = Perala

Punjab = Bera

3. Botanical Description: --

The base is cordate, the leaves are broadly ovate and obtuse, and the lamina is 10-30 cm long and 7-20 cm wide. The lateral veins are 5-7 pairs, with the basal pair being the most prominent and reaching 1/3 of the lamina length; the petiole is 1.5-7 cm long and 5mm wide, puberulous, with thick, 1-1.5 cm long and wide, puberulous stipules. A pair of sessile, puberlous, depressed globular figs that are 1.5–2 cm in diameter and become orange to red as they mature; the ostiole is broadly unbonate and surrounded by three flat apical bracts; the basal bracts are foliaceous, obtuse, 2–8 mm long, and 10–15 mm wide. Pedicellate male flowers have two or three tepals, while sessile female flowers have two or four tepals, and gall flowers have three or four inches of tepals [6].

II. RESULTS AND DISCUSSION

1. **DISTRIBUTION: --** Native to India, Ficus benghalensis grows from low elevations to 2,000 feet (610 meters), particularly in arid areas [9]. F. benghalensis is native to a large region of Asia, including Thailand, Southeast Asia, southern China, Malaysia, and Myanmar (Burma), according to Riffle [11].

2. **CHEMICAL CONSTITUENTS: --** In addition to beta-sitosterol glucoside and meso inositol, stem bark contains a variety of anthocyanidin derivatives, including methyl ethers of leucodelphinidin-3-O-Lrhamnoside, leucopelargonidin-3-O-L-rhaamnoside, and leucocyanidin-3-O-D-galactosyl cellobioside, as well as aliphatic long chain ketones (pentatriacontan-5-one, tetratriacont-20-en-2one, and heptatriacont-6-en-10-one). 9.63% crude protein, 26.84% crude fibres, 2.53% calcium oxalate, and 0.4% phosphorus are all present in the leaves. Sterols, flavonoids, phenol, tannins, and saponins are abundant in the ethanol and aqueous leaf extracts according to several qualitative chemical tests, however this plant was completely devoid of volatile oils, gums, mucilage, carbohydrates, triterpenoids, and aromatic acids. Quercetin-3-galactoside and rutin have been identified as the flavanols found in the leaves [7], [12], and [15].

3. **PHARMACOLOGICAL PROPERTIES: -**

Anthelmintic: -- When compared to commonly used drugs, the methanolic, chloroform, and pet ether extracts of Ficus bengalensis roots exhibit

strong anthelmintic activity and are equivalent to standard anthelmintic drugs [2].

Analgesic activity: -- When evaluated on rats utilizing an acetic acid-induced writhing model, the analgesic activity of Ficus benghalensis stem bark extraction demonstrated a noteworthy analgesic effect [15].

Immunomodulatory: -- To assess Ficus bengalensis aerial roots' immunomodulatory potential. The percentage of phagocytosis increased significantly in the subsequent methanol and water extracts when compared to the control. At dosages of 100 and 200 mg/kg, the subsequent methanol extract was observed to show a dose-related increase in the hypersensitive reaction to the SRBC antigen in the in vivo investigations. In animal experiments, it also led to a notable rise in the antibody titer value to SRBC at dosages of 100 and 200 mg/kg [4].

Hypolipidemic:-- In rabbits with alloxan-induced diabetes mellitus who had adequate glycaemic control, the hypolipidemic effect of a water extract of Ficus bengalensis bark was studied. It also corrected the anomalies in the blood lipid profile linked to diabetes mellitus. given that Ficus bengalensis water extract can enhance lipid and carbohydrate metabolism [13].

Anti-diabetic and Ameliorative effect:-- Histological tests in both normal and Ficus benghalensis-treated streptozotocin-induced diabetic rats shown a strong antidiabetic and ameliorative effect of the bark's aqueous extract at a dose of 500 mg/kg/day [8].

Antistress and anti-allergic:-- Milk-induced leucocytosis and milk-induced eosinophilia were used to screen several extracts of Ficus benghalensis bark for their antiallergic and antistress capabilities in asthma. Petroleum ether and chloroform extracts were inactive, while leucocytes and eosinophils significantly decreased in response to aqueous, ethanol, and ethyl acetate extracts, in that order. This demonstrates how polar components of F. benghalensis bark are used as antistress and anti-ant allergens in asthma [14].

III. CONCLUSION: --

The herb is typically used in traditional medicine to treat a variety of illnesses and health issues. As this research discusses, Ficus banghalensis possesses significant pharmacological properties, including anthelmintic, antistress and antiallergic, antioxidant, antidiabetic, hypolipidemic, wound healing, and growth-promoting properties.

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