

PHARMACOLOGICAL PROPERTIES OF *FICUS RACEMOSA* – A REVIEW

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Summary

The present review describes the morphological, phytochemical and pharmacology aspects of *Ficus racemosa* (Moraceae). It is an evergreen, moderate to large sized spreading, lactiferous, deciduous tree, without much prominent aerial roots found throughout greater part of India. It is popular in indigenous system of medicine like ayurveda, siddha, unani and homoeopathy. In the traditional system of medicine various plant parts such as bark, root, leaves, fruits and latex are used in wound healing, dysentery, diarrhoea, diabetes, stomachache, piles and as carminative and astringent and also as antioxidant and anticancer agent. So, an overview of phytochemical and pharmacological properties are given in the present paper.

Keywords: *Ficus racemosa*; Pharmacognosy; Phytochemistry; Pharmacological profile.

Introduction

The plant grows all over india in many forests and hills. It is frequently found around the water streams and is also cultivated. The tree is medium, tall, growing 10-16m in height. The rich green foliage provides a good shade. The bark is reddish grey and often cracked.

The plant is large deciduous distributed all over India from outer Himalayan ranges, Punjab, Bihar, Orissa, West Bengal, Rajasthan and common in South India¹. According to Ventakamaran², the taxonomy treatment of the Moraceae family constitutes large taxa of over fifty genera and nearly 1400 species, including some important groups like Artocarpus, Morus and Ficus. Several species belonging to the genera of Ficus were reported to contain furanocoumarins which is an important plant phototoxins³. Ventakamaran also claimed that Moraceae family contains phytochemistry related to flavonoids, flavonoids with isoprenoid substituents and stilbenes. Antioxidants from figs can protect lipoproteins in plasma from oxidation and produce a significant increase in plasma antioxidant capacity⁴.



Botanical name: *Ficus racemosa*

Family: Moraceae

Common name: Cluster Fig, Indian Fig, Cratock, Rumbodo, Atteeka, Redwood Fig

Part used: Bark, Root, Latex, Fruits

Habitant: is cultivated all over india and also grows wild in many forests and hills.

Product offered: Fruits

Ficus racemosa Linn (Moraceae) is an evergreen, moderate to large sized spreading, lactiferous, deciduous tree, without much prominent aerial roots found throughout greater part of India in moist localities and is often cultivated in villages for its edible fruit⁵. The astringent nature of the bark has been employed as a mouth wash in spongy gum and also internally in dysentery, menorrhagia and haemoptysis⁶. All parts of this plant (leaves, fruits, bark, latex, and sap of the root) are medicinally important in the traditional system of medicine in India. The leaves powdered and mixed with honey is given in bilious infections⁷.

Plant is propagated using cutting of stem and root suckers. Natural regeneration is very good from seeds dispersed by animals and birds. Four months old seedling are transplanted to polythene bags and then planted in field after one month⁸. The bark is antiseptic, antipyretic and vermifugal, and the decoction of bark is used in the treatment of various skindiseases, ulcers and diabetes. It is also used as a poultice in inflammatory swellings/boils and regarded to be effective in the treatment of piles, dysentery, asthma, gonorrhoea, gleet, menorrhagia, leucorrhoea, hemoptysis and urinary diseases⁹.

MORPHOLOGY

The tree is medium tall with quite rich green foliage that provides good shade. The leaves are dark green, 7.5-10 cm long, ovate or elliptic. The fruit receptacles 2-5 cm in diameter, pyriform, in large clusters, arising from main trunk or large branches. The fruits resemble the figs and are green when raw, turning orange, dull reddish or dark crimson on ripening. The seeds tiny, innumerable, grainlike, the outer surface of the bark consists of easily removable translucent flakes grayish to rusty brown, uniformly hard and non-brittle. Bark is grayish green, soft surface and uneven 0.5-1.8 cm thick. On rubbing, white papery flakes come out from the outer surface, inner surface is light brown fracture fibrous, taste mucilaginous without any characteristics odour¹⁰⁻¹¹.

PHYTOCHEMISTRY

Very little phytochemical work has been carried out on *Ficus racemosa*. The stem bark shows the presence of two; Leucyanidin-3-O- β -glucopyranosides, leucoperalagonidin 3-O- α -L-rhamnopyranoside, β -sitosterol, unidentified long chain ketone, lupeol, its acetate, α -amyrin acetate. A new tetracyclic triterpene, glauanol acetate which is characterized as 13 α , 14 β , 17 β H, 20- α H-lanosta-8, 22-diene 3- β -acetate and racemosic acid were isolated from leaves¹²⁻¹⁴.

Stem: campesterol, hentriacontane, hentriacontanol, kaempferol, stigmasterol, methyl ellagic acid.

Leaves: Tetra triterpene, glauanol acetate, racemosic acid.

Fruit: glauanol, hentriacontane, β sitosterol, glauanolacetate, glucose, tiglic acid, esters of taraxasterol, lupeolacetate, friedelin, higher hydrocarbons and other phytosterol.

Root: cycloartenol, euphorbol and its hexacosanoate, taraxerone, tinyatoxin; Bark euphorbol and its hexacosanate, ingenol and its triacetate, taraxerone¹⁵⁻¹⁹.

PHARMACOLOGICAL ACTIVITIES

Antialgestic:

The ethanol extract of bark and leaves evaluated for analgesic activity by analgesiometer at 100, 300 and 500mg/kg was found to possess dose dependent analgesic activity²⁰.

Antidiuretic:

The decoction (D) of the bark of *Ficus racemosa* at a dose of 250, 500 or 1000 mg/kg induced antidiuresis, had a rapid onset (within 1 h), peaked at 3 h and lasted throughout the study period (5 h). However, antidiuretic potential of D was about 50% lower than that of ADH. The D was well tolerated even with subchronic administration. The D caused a reduction in urinary Na⁺ level and Na⁺/K⁺ ratio, and an increase in urinary osmolarity indicating multiple mechanisms of action. This proves its efficacy as antidiuretic agent²¹.

Antifungal activity:

The 50% methylene chloride in hexane flash column fraction of the extract of the leaves of *Ficus racemosa* was found to have antifungal activity. The extract inhibited the growth of several plant pathogens (*Curvularia* sp, *Colletotrichum gloeosporioides*, *Alternaria* sp, *Corynespora cassiicola* and *Fusarium* sp). Psoralen was identified as the active compound and was shown to be biodegradable, having the potential to be developed as a fungicide against pathogens causing diseases on crops of economic importance²².

Anti bacterial activity:

Different extracts of leaves were tested for antibacterial potential against *Escherichia coli*, *Bacillus pumitis*, *Bacillus subtilis*, *Pseudomonas aureus*. Out of all extracts tested, petroleum ether extract was the most effective extract against the tested microorganism²³.

Hypoglycemic activity:

The ethanol extract (250mg/kg/day) lowered blood glucose level within 2 weeks in the alloxan diabetic albino rats confirming its hypoglycemic activity²³. B-sitosterol isolated from the stem bark was found to possess potent hypoglycemic activity when compared to other isolated compound²⁴.

Anti-tussive:

The methanol extract of stem bark exhibit maximum inhibition of 56.9% at dose of 200mg/kg p.o. 90min after administration of sulphur dioxide gas in mice proving its antitussive potential against cough induced model²⁵.

Wound healing:

Ethanol extract of stem bark showed a potential wound healing in excised and incised wound model in rats²⁶.

Antipyretic:

The methanol extract of stem bark was evaluated on normal body temperature and yeast induced pyrexia in albino rats at the dose of 100, 200 and 300mg/kg p.o. The extract shows the significant dose dependent reduction in normal body temperature and yeast provoked elevated temperature which extended to 5th after drug administration²⁷.

Anti-inflammatory:

Ethanol extract of leaves at dose of 400mg/kg exhibited maximum anti-inflammatory effect with 30.4, 32.2, 33.9 and 32% with carrageenin, serotonin, histamine and dextran induced rat paw edema models, respectively. Ethanol extract of stem bark also exhibited COX-1 and IC₅₀ value of 100ng/ml proving the drug use in the treatment of inflammatory condition²⁸.

Conclusion

The multiple benefits of *Ficus racemosa* made it a true miracle of nature. Numerous studies have been conducted on different parts of *Ficus racemosa*, but this plant has not yet developed as a drug by pharmaceutical industries. In view of 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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