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Pharmacological Potentials of – Ficus Racemosa Linn

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Abstract

Ficus racemosa Linn. and its Possible Applications in Pharmacotherapy Abstract Fig trees, or cluster figs, Ficus racemosa Linn, are important medicinal plants that have been used for centuries for their healing qualities in many different civilisations. The pharmacological potential of this substance is highlighted in this review, which includes anti-inflammatory, antioxidant, antibacterial, and antidiabetic properties. Research has shown that bioactive substances such flavonoids, tannins, and phenolic acids are present in extracts taken from the fruit, bark, and leaves of this plant, which may be responsible for some of its pharmacological effects. Treating conditions like diabetes, gastrointestinal issues, and infections may benefit from the use of this plant. Its verified function in lowering oxidative stress and accelerating wound healing is another. To completely understand its mechanisms and substantiate its traditional usage, more study is needed, including clinical studies.

Keywords - Ficus Racemosa Linn, Audumbar, Pharmacological, Gular and Cluster Fig

INTRODUCTION

The Umbar tree, also called the Audumbar. The indigenous habitats of this plant are the Indian Subcontinent, South-East Asia, Malaysia, and Australia. One of its distinctive features is that its cauliflory figs grow on or close to the intoxicated tree. [1]. The Moraceae family includes the quite large avenue plant Ficus racemosa (Linn), sometimes known as the Indian Fig Tree, Cluster Fig Tree, or Goolar (Gular) Fig. [2].India's rich biodiversity contributes to a wealth of indigenous medicinal resources, passed down through generations, highlighting the importance of plants like Ficus racemosa in holistic health practices.[3].Herbal tea, churna, herbal powder, syrups, and Ayurvedic capsules are some of the Ayurvedic preparations of Ficus racemosa Linn.[4].

Language	**Names**
Marathi	Umbar, Audumbar
Bengali	Mayen
Kannada	Alhi,Atthimara
Tamil	Athi
Nepali	Dumrii
Assamese	Dimaru
Hindi	Gular, Udumbar,Jantuphala
Telugu	Medipandu
Malayalam	Aththi
Chinese	Ju Guo Rong

***Table 1*:** *Vernacular Names*

Kingdom	Plantae
Sub-kingdom	Tracheobionata
Class	Angiosperms
Family	Moraceae
Genus	Ficus
Species	Ficus Racemosa Linn

***Table 2*:** *Taxonomical Classification*

Microscopical study of Ficus Racemosa Linn

Cork

They are either polygonal or rectangular cells. These rectangular or polygonal cells comprise the cork, whereas one or two layers of thin-walled cells comprise the phellogen.[6]

Cork cambium

Comprising dense tissue made up of parenchymatous cells or tiny clusters of sclereids, it is lignified with simple pits.

Cortex

A resinous substance is found in the cortical cells, and the tissue is made up of several thick-walled, pitted, rectangular, or isodiametric sclereids. Prismatic calcium oxalate crystals are found inside the cells. It is composed of sclereids, phloem fibres, medullary rays, phloem parenchyma, sieve tubes, and companion cells. Starch can be either spherical or ovoid in grain shape. Lactoferous ,the vessels have a granular, brown form. They are within the phloem region. 2-3 layer of tangentially elongated walled present within cambium region. [7,8].

Leaf

Dorso-ventral characteristics are attributed to the single layer of palisade cells that make up its upper epidermis. The upper and lower epidermis both have a large number of uniseriate, unicellular, thin-walled covering trichomes.

Mesophyll

While sclerenchymatous cells envelop the vascular bundle in the central region of the leaf between the upper and lower epidermis, collenchymatous cells are found in the mesophyll between the vascular bundles and the lower epidermis.

Vesicles bundle

The vascular bundle, located in the middle of the midrib, contains xylem and phloem.[9].

Size	10-13cm long, 6-8cm width
Shape	elliptical, bilateral, stipulated
Petiole	3-5cm long, 1-4cm diameter
Appearance	Green
Scent	Aromatic
Flavour	Astringent

Table3: *Microscopical Characteristics*

Histology of Ficus Racemosa Linn

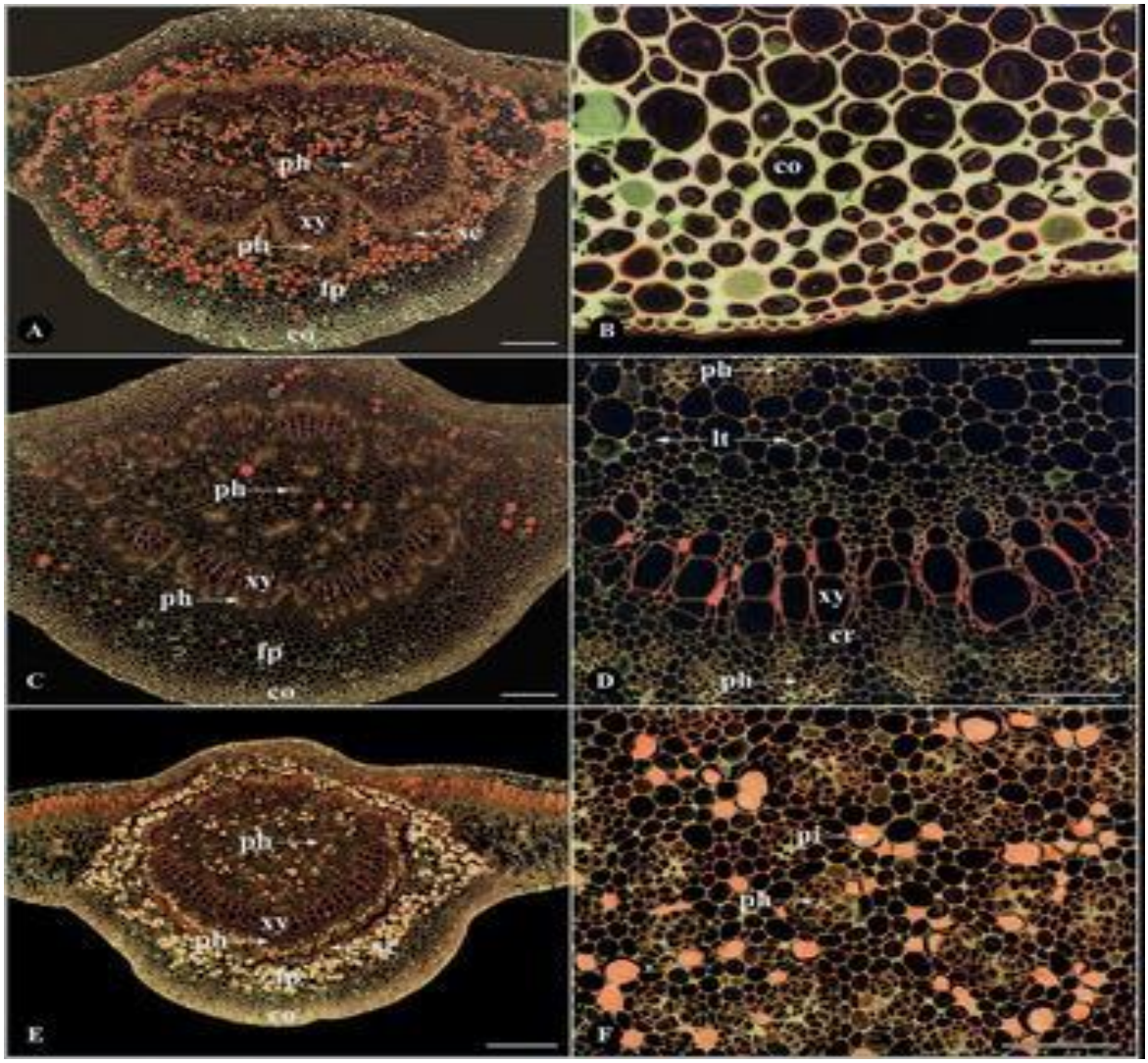

Figure 1*: *Histology

Chemical Constituents

Friedelin, higher hydrocarbons, tiglic acid, β-sitosterol, lupeol acetate, hentriacontane, glauanol, β-sitosterol, glucose, and other phytosterols. [10,11]. The leaves are good for diarrhoea and dysentery, and they make a great wash for wounds and sores. [12,13]. The bark and leaf infusion are ingested for menorrhagia and dysentery, and used as a mouthwash for spongy gums [14]. Additionally, it works effectively as a treatment for haemoptysis, cervical adenitis, abscesses, chronic wounds, and glandular swelling.[15].

Sr. No.	Minerals	Intensity (ppm)	Sr. No.	Minerals	Intensity (ppm)
1	$Ca2^{++}$	13.02	8	Cobalt	ND
2	Iron	159.2	9	Nickel	0.14
3	Cadmium	ND	10	Manganese	1.9
4	Phosphorus	443	11	Chloride	263
5	Aluminium	ND	12	Magnesium	196.2
6	Arsenic	ND	13	Zinc	0.49
7	Chromium	0.38	14	Cobalt	ND

Table 4*: *Mineral Elements Intensity of Ficus Racemosa Linn

Powder characteristics

The powder has an astringent taste, a pale pink to light brown hue, and a slight smell. Under a microscope, it reveals the presence of many calcium oxalate prismatic crystals. The wavy appearance of medullary ray cells conceals tiny starch grains that might be spherical, ovoid, simple, or two to four compounds in nature. Occasionally, brownish-coloured parenchymatous cells are observed. In surface view, cork cells are polygonal. The powder has an astringent taste, a pale pink to light brown hue, and a slight smell. Under a microscope, it reveals the existence of many prismatic views.[16].

Physical constant

Foreign matter about 2%
Water soluble ash extraction 9%
Alcohol soluble extraction 7%
Acid insoluble ash extraction 1%
Total ash 14%

Parts of Plants and Their Uses

Figure 2*: *Parts of Plants

Uses

Leaves

Bloating, Ulcers, bronchitis, and douche in dysmenorrhea. Leaves extract is applied topically for stop hairfall. Utilising infused with water to clean and bandage wounds. Lumps, douche in dysmenorrhea, bronchitis, piles, and bilious illnesses. Leaf juice is applied topically to prevent hair breakage. the use of leaf infusions to cleanse and heal wounds.

Fruits

Compounds with phenolic properties, as ellagic and gallic acids. Furanocoumarins comprise luteol acetate, friedelin, gallic acid, ellagic acid, tiglic acid, β-sitosterol, tetracyclic triterpene, luteol acetate, begapten, hydrocarbons, sterols, glycosides, polysaccharides, and α-amyrinphenolic compounds. Furanocoumarins include things like glucanol, tiglic acid, taraxasterol, psoralen, bergapten, β-sitosterol, tetracyclic triterpene.

Stem

Menorrhagia, leucorrhea, gonorrhoea, urinary tract infections, haemorrhage, and skin disorders are among the ailments for which it is recommended. It is particularly useful in cases of imminent abortion. It is highly advised to use the bark for piles, leprosy, diabetes, hiccups, and urological conditions.

Roots

Diabetes, pectoral issues, diarrhoea, hydrophobia, and the mumps. Fruits: more effective in treating diabetes; astringent, stomachic, menorrhoea, haemoptysis, constipation, diarrhoea, dry cough, urinary tract infection, and blood issues. Effective against intestinal worms, burns, menorrhagia, leucorrhoea, and leprosy.diarrhoea, hydrophobia, pectoral issues, hyperglycemia, and the mumps. [17].

Latex

Applicable externally on wounds to show anti-inflammatory, aphrodisiac, cholera, diarrhoea, haemorrhoids, oedema, stomachache, blisters, boils, measles, and, most significantly, adhesive qualities. Aphrodisiac, anti-inflammatory, haemorrhoidal, diarrhoeal, dysentery, cholera, measles discomfort, oedema, boils, blisters, and most importantly, adhesive characteristics can all be demonstrated by external treatment on wounds.[18].

Pharmacological Profile

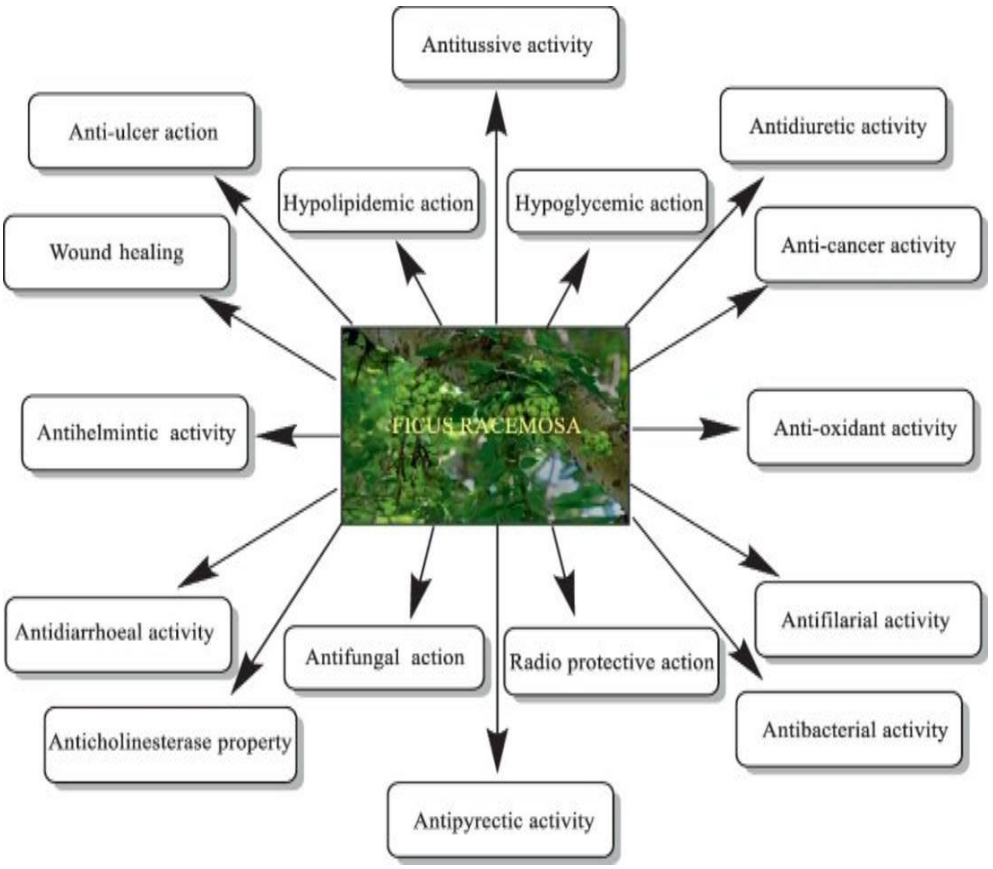

Figure 3*: *Pharmacological Profile

Anticancer activity

Substantial recovery of the antioxidant enzymes and renal glutathione level, reduction in the enhancement of the activity of the renal ornithine decarboxylase, DNA synthesis, blood urea nitrogen, and serum creatinine.[19].

Hypolipidemic

Fruits high in dietary fibre caused a markedly hypocholesterolemic effect in rats by increasing the excretion of bile acid and cholesterol in the faeces.[21].

Antiulcer

Half of the fruit's ethanolic extract is used as an antiulcer and to protect the stomach's mucosal lining from oxidative damage.[20].

Antioxidant

By using the free radical scavenging method, the extract of stem and leaves was compared to standard butylated hydroxytoluene (BHT) and shown antioxidant activity. [22,23].

Antidiabetic

According to research, the plant's leaves, bark, and fruit all have hypoglycemic properties that may help lower blood sugar levels.[24].

Larvicidal

Because of their larvicidal qualities, ethanolic or aqueous extracts are utilised.[25].

Wound healing property

Using stem bark ethanol extract, wound healing was demonstrated.[26].

Antidiuretic activity

Urine osmolarity rising and the Na+/K+ ratio suggesting several mechanisms of action for its antidiuretic action. [27,28].

Antitussive

The cough reflex pathways may be modulated as part of the antitussive action, potentially by peripheral or central nervous system action.[29].

Anthelmintic activity

The potential effectiveness of Ficus racemosa has been supported by its usage in treating parasite illnesses in a variety of traditional medical systems.[30].

Antibacterial

The water extract has anti-Streptococcus faecalis action. Methanolic extract exhibits anti -B. subtilis properties.[31].

Antipyretic

Fever and infections have long been treated using infusions and decoctions prepared from Ficus racemosa leaves or bark.

Cardioprotective activity

Plants may help control blood pressure, which would improve cardiovascular health in general.

Adverse effects

Audumbar is a cooling tree that should be used with caution in kapha dominating individuals who frequently have colds, coughs, and allergic rhinitis.

Avoid using ripe fruit in cooking as it can worsen or cause an intestinal worm infestation.[32].

When pregnant, precautions are taken. [33].

CONCLUSION

A significant group of trees with great therapeutic significance is the genus Ficus. In their daily work, traditional medical professionals frequently employ medicinal plants to cure a range of

ailment. Entire plant, have been suggested in traditional medicine as treatments for conditions like gastric ulcers, diarrhoea, wound healing, diabetes, hypertension, and more. Ayurveda, Siddha, Unani, and homoeopathy are among the traditional medical systems that highly value this herb.A current study demonstrates the pharmacological, phytochemical, and therapeutic potential of several bioactive substances found in Ficus racemosa (Linn). Further research on the clinical and pathological aspects of this plant's bioactive components would be beneficial in determining its potential applications in the pharmaceutical and neutraceutical industries.

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