

DEVELOPMENT & CHARACTERIZATION OF FRUIT OF *FICUS RACEMOSA* HERBAL FACE SERUM FOR ENHANCEMENT OF SKIN CARE

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ABSTRACT

Ficus racemosa Linn. is a medicinal plant that is widely common in India and the majority of Asia. Some of the indigenous countries such as Ayurveda, Siddha, Unani, and Homeopathy have used the plant in the treatment of various health conditions. Different parts of the plant have been therapeutically utilized in treating disorders like diarrhea, dysentery, diabetes, stomach problems and inflammatory problems, including the use of bark, fruits, leaves, roots, latex, etc.

Ficus racemosa fruit has also several phytochemicals that are biologically active and hence it is useful in the treatment of several diseases. “These constituents display different pharmacological action e.g., antioxidant action, anti-inflammatory action, antimicrobial action, antifungal action and anti-cancer action. It is these good qualities that have made the plant of much research interest in the arena of herbal and cosmetics.

The present research article sheds light on the production and characterization of a herbal face serum with the *Ficus racemosa* fruit extract. To extract the extract, Soxhlet extraction was applied after which its antimicrobial potential and denaturation of proteins were taken as one of the biological actions of the extract. These properties suggest that the extract can bring the effects of skin protection in the form of blocking the development of microbes and inflammation.

Generally, *ficus racemosa* is a promising natural ingredient of herbal skin care products. Its future applications in dermatological and cosmetic preparations to improve skin health are justified by its biological activities and the phytochemical richness of it.

KEYWORDS

Acne treatment, *Ficus racemosa*, anti-inflammatory, tannins, antioxidant activity, anticancer activity, antimicrobial activity, phytopharmacology, medicinal plant, herbal cosmetics, antifungal activity.

INTRODUCTION

Medicinal plants have had a very significant role in health care systems since time immemorial. The practiced medical practices by people in other cultures were traditionally immense on use of plant-based remedies due to their medicinal nature and source of remedy. The ancient medical texts such as Vedas, other historical books describe the medicinal value of many herbs, which are used in the treatment of various diseases.

One of these medicinal plants with an outstanding presence in traditional medicine is *Ficus racemosa* Linn. or cluster fig. The plant belongs to the family of Moraceae and is very widely scattered throughout India and other neighboring countries. Medicinal properties were reported in nearly all the plant parts like leaves, bark, fruits, roots and even out of the latex.

It has been scientifically established that *Ficus racemosa* has numerous pharmacological activities. They are antioxidant action, antimicrobial action, anti-inflammatory action, antidiabetic action, hepatoprotective action and anticancer action. The plant has been identified to have phytochemicals as the principal biological activities including flavonoids, tannins, glycosides, terpenoids, and sterols.

The recent attention to herbal cosmetics and skin care products of natural character has motivated researchers to explore the use of plant-based products with dermatological effects. *Ficus racemosa*

has several bioactive compounds in the fruit extract that may be useful in enhancing the skin of people with antioxidant, anti-inflammatory and antimicrobial properties.

The pharmacological effects of the plant and the development of standardized herbal preparation should be done because of the diversity of its therapeutic potential. The phytochemical profile, biological effects, and traditional use of *Ficus racemosa* specifically on its potential application in the development of herbal skin care products shall be used to review the present work.

Rank	Classification
Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Urticales
Family	Moraceae
Genus	<i>Ficus</i>
Species	<i>Ficus racemosa</i>

BACKGROUND

Ficus racemosa is a member of Moraceae family which comprises a number of plant species that are

medicinally important. The plant has been historically referred to in ancient Indian texts such as the Atharva Veda where it was believed to be a good omen and a spiritual one.

The tree is the sacred one in the Hindu traditions and is said to belong to Lord Dattatreya. The plant has been domesticated and preserved in several parts of India since time immemorial because of its medicinal value as well as cultural status.

VERNACULAR NAMES OF *FICUS RACEMOSA*

TAXONOMIC CLASSIFICATION OF *FICUS RACEMOSA*

GEOGRAPHICAL DISTRIBUTION

Ficus racemosa is occurs naturally in a large geographical area encompassing South Asia, Southeast Asia and some parts of Australia. The plant thrives well in tropical and subtropical areas.

It is mostly found in Punjab, Rajasthan, Bihar, West Bengal, Orissa, Chota Nagpur plateau and other parts of South India. It also exists in the adjacent countries such as Pakistan, Nepal, Sri Lanka and Bangladesh. Moreover, the species occurs in Southeast Asian nations including Thailand, Malaysia, Indonesia, and Vietnam and in some parts of southern China and northern Australia as well.

CHARACTERISTICS OF DIFFERENT PLANT PARTS

Language	Common Names
Sanskrit	Jantuphala, Hemadugdha, Udumbara
Hindi	Gular, Umari, Dumbar
English	Cluster fig, Gular fig, Redwood fig
Bengali	Dumur
Telugu	Medi Pandu
Gujarati	Umbaro
Marathi	Umbar
Kannada	Atti Mara
Tamil	Atti
Urdu	Dumar
Nepali	Dumrii
Thai	Ma-Duer Uthumphon
Vietnamese	Sung

Stem Bark

Ficus racemosa possesses the smooth outer layer of the bark that is greyish or reddish-grey. It is made of mucilaginous substances and it is tasteless and has no particular smell. The extracts that were obtained during the Soxhlet extraction process have been utilized in the traditional therapeutic treatment of gastrointestinal diseases, diabetes, ulcers and skin diseases.

Trunk Bark

The stigmasterol and beta-sitosterol are phytochemicals present in the trunk bark. Extract of this part of this plant is normally prepared using maceration. Bark pastries are traditional to dress the wounds, burns, and inflammatory conditions with dressings.

Leaves

The leaves of the *ficus racemosa* are extremely large, dark green, and are commonly 6 cm10 cm long. such grew in clumps over the older part of the trunk. Bilious disorders and wound infection have been treated with extracts of leaves prepared through either maceration or decoction.

Fruits

The fruits are then cultivated in immense clusters on the trunks or larger branches. They are green in their youth, but when they are well ripe, they turn reddish or dark crimson. The fruit contains several bioactive compounds and is usually extracted using the Soxhlet extraction/maceration technique.

Roots

These roots are long, oblong in colour and brown in colour and have common smell. Soxhlet extraction is used in the collection of the extracts of the roots and is said to be medically viable.

Latex

Latex is a sticky fluid that secretes out of the bark during the cut of the plant tissue. Stretches Latex has been used traditionally to treat inflammation of the parotitis, adenitis and other localized infections and swelling reduction.

PHYTOCONSTITUENTS

Different parts of *Ficus racemosa* contain numerous phytochemicals responsible for its pharmacological activities.

Plant Part	Major Phytoconstituents
Leaves	Tannins, flavonoids, steroids, glycosides, terpenoids
Roots	Alkaloids, carbohydrates, tannins, phenols
Latex	Racemosic acid, triterpenes, beta-sitosterol
Fruits	Kaempferol, quercetin, catechin, gallic acid, tannic acid
Stem Bark	Bergenin, coumarin, rutin, psoralen
Trunk Bark	Stigmasterol, beta-sitosterol, lupeol
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These phytochemicals contribute significantly to the plant's medicinal and pharmacological properties.

BIOLOGICAL ACTIVITIES

Antifungal Activity

The *Ficus racemosa* Leaf extracts have been demonstrated to be antifungal towards various pathogenic fungi. Studies have shown that psoralen extracted in the plant possesses an enormous impact of presumption of fungus growth.

Anti-Inflammatory Activity

The experimental studies were able to establish that ethanol extracts of the leaves contain strong effects against inflammation in animals. The extract reduced carrageenan, serotonin and dextran induced inflammation.

Antioxidant Activity

It was reported that the aqueous extract and ethanol extract of *Ficus racemosa* possess good antioxidant ability. These extracts have the ability to scavenge free radicals such as DPPH, ABTS, hydroxyl radical, and

superoxide radicals and therefore prevent cells against oxidative stress.

Anticancer Activity

Ficus racemosa methanolic extracts have been cytotoxic to several types of cancer cell lines including HL-60, HepG2 and NCI-H23. These findings suggest that the plant may be containing compounds that have the potential of anticancer activity.

Antimicrobial Activity

Agar well diffusion method was used in comparison of leaf extracts with Gram-positive and Gram-negative bacteria. The inhibitory properties on the agents such as *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Salmonella typhi* were demonstrated using extracts.

TRADITIONAL USES

Ficus racemosa is a common traditional medical plant which is utilized to treat many health complications.

- Leaves: Prepared as a washing wound, and in case of dysmenorrhea. Leaf latex is used on the skin infections and boils.

□

- Fruits: Fruits were employed as a bowel cleanser and digestive stimulant. They are also applied in the treatment of diabetes and bleeding conditions.
- Bark: Bark decoction is also employed as a mouthwash in gum diseases and also in the treatment of diarrhea and dysentery.
- Latex: This is commonly used in swelling, stomach illnesses, and inflammation.

The plant has a wide range of therapeutic applications and, therefore, has become a significant part of traditional herbal medicine.

CONCLUSION

Ficus racemosa is a useful medicinal plant which possesses a tremendous curative and pharmacological significance. The variety of biological activities which involve the use of the plant in traditional systems of medicine has ensured that its application in medicine is very far-reaching". The plant contains numerous phytochemicals that have been detected in different parts of the plant such as flavonoids, tannin, phenolic compound and sterols among others thus having medicinal properties.

Ficus racemosa has been scientifically established to have antioxidant, antimicrobial, anti-inflammatory, anti-diabetic and anti-cancer properties. The properties endow the plant with a good likelihood of being utilized in the production of herbal products, that is, in the area of dermatology and cosmetic usage.

The fruit extract of *Ficus racemosa* possesses a tremendous potential in the formulation of herbal face serums since it is useful in preventing the occurrence of oxidative damage on the skin cells, inflammatory, and proliferation of microbes. However, there is a need to do more research to identify standardized methods of extraction, toxicity, and clinical trials to ascertain that it is safe and effective.

Overall, *Ficus racemosa* has potential to be used as a source of natural resource in developing efficient herbal skin care products and other pharmaceutical formulations.

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