



PHYTOCHEMICAL ASPECTS OF FICUS RACEMOSA

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Abstract The scientific name for *Ficus racemosa* Linn. is the "gular" or "cluster fig tree" (Family: Moraceae). The fig was highly valued for its medicinal and culinary properties. Vitamin C, carotenoids, flavonoids, phenols, and other physiologically active compounds must be present in a dietary supplement in order for it to have the desired health effects. Both their functional properties and technical possibilities depend on these compounds. Their wide array of physiologically active chemicals, which include hepatoprotective, antibacterial, antidiabetic, and antioxidant qualities, implies that these substances could be used in the creation of novel culinary and pharmaceutical products. Introduction: Pancreatic lipase was most strongly inhibited by the fruit of *F. racemosa*. Diethyl phthalate, for example, has a strong affinity for the pancreatic lipase enzyme, according to molecular docking studies. Secondary metabolites, or bioactive compounds, are produced by plants to help maintain homeostasis, but they can also help humans by altering metabolic pathways. The fig's culinary and medicinal qualities made it extremely valuable. The majority of the effects on health are caused by physiologically active substances such as flavonoids, carotenoids, phenols, and vitamin C. In addition to their functional qualities, these chemicals are necessary for their potential as cutting-edge dietary supplements. Because of their abundant and diverse biological properties, biologically active compounds have anti-inflammatory, antidiabetic, antibacterial, and hepatoprotective effects, to name just a few. Fresh fig fruit and fruit products include ingredients that are biologically active. The nutrient-dense, tasty, and vibrant fruits and vegetables are a wonderful complement to any dish. Bioactive elements, including polyphenols, carotenoids, vitamins, and anthocyanins, that are present in fruits and vegetables and may have health advantages are attracting increased attention. Consuming a diet high in fruits and vegetables can help prevent heart disease, certain types of cancer, and other chronic illnesses. It can also slow down the aging process. These effects seem to be caused by vitamins, minerals, and fiber. The avenue plant *Ficus racemosa* (Linn) is modest in size and a member of the Moraceae family. It is commonly referred to as the Goolar (Gular) Fig, Indian Fig Tree, or Cluster Fig Tree. The Indian Subcontinent, Australia, Malaysia, and Southeast Asia are the native habitats of this plant [1]. *Ficus racemosa* grows in India's jungles and hilly regions. In addition to being grown, it is commonly found along waterways. Most commonly found in India, Sri Lanka, Pakistan, Queensland, South China, and New Guinea; also found along riverbanks and inland woods from plains to 1500 meters. Both vegetative and sexual propagation—using seeds—are options for growing the plant [2]. Its figs grow on or near the tree trunk, which makes it unique. *Ficus racemosa* Linn (Moraceae) is a deciduous tree that is evergreen, spreading, and ranges in size from modest to big. It is lactiferous and lacks many noticeable aerial roots. Approximately 20-meter-tall tree with smooth, whitish-brown bark and often aerial roots Leaves: entire, acuminate at apex, glabrous on both sides, lamina ovate-lanceolate to elliptic-lanceolate, tri-ribbed, 8–10 pairs of lateral pairs from broad to narrowly cuneate, oblique base, stipules triangular-ovate, brown, sub-persistent, cystoliths present only on lower side. Large clusters of green, subpyriform, globose hypanthodia are borne on long peduncles from

tubercles on the main trunk and primary leafless branches. The apical aperture is buried and blocked by brown bracts without internal bristles. Male flowers have joined, sessile, ostiolar, 2-3 whorls, dentate lobes, and stamens.

2.1. Pretending to be an antioxidant, water-soluble vitamin C aids in preventing the nonenzymatic browning of fruits and vegetables. Fruit from fig trees is a rich source of it. It takes the place of artificial antioxidants. Pigment: Certain species of *Ficus* are colored by carotenoids, which are physiologically active substances that are widely distributed in plants. Fig fruit contains nutrients such as minerals, phenolics, anthocyanins, carotenes, and sterols that are good for your health. Carotenoids are antioxidants that can protect cells from oxidative stress and slow down aging by using reactive oxygen species. A good source of minerals [21], carotene [22], anthocyanins [10, 23, 24], crude fiber, phytosterols, and polyphenols [23, 25] is figs. Enzymes . The compounds known as flavonoids are present in many consumable plants, fruits, vegetables, and grains. They are an integral and vital component of the human diet. Because of their antioxidant activity and capacity to delay or reduce a number of illnesses believed to be associated with oxidative stress, such as diabetes, atherosclerosis, cancer, and Parkinson's disease, flavonoids and the foods they contain—wine, tea, soybeans, and licorice—have been investigated for possible health benefits [47]. Flavonoids are abundant in fig fruits. The presence of flavonoids, which have biological activity like anticarcinogenic, anti-inflammatory, and antiatherosclerotic qualities, in the fruits, leaves, and flowers of the *Ficus* species is also responsible for the attractive hue of the flowers. Properties that inhibit antioxidants block the production of reactive oxygen species. The amount of total polyphenols, anthocyanins, flavonoids, and antioxidant capacity in fig extract is directly connected with color appearance. Compared to lighter-colored varieties, fig extracts from darker-colored varieties had a higher phytochemical concentration. In comparison to fruit pulp, fruit peel delivers the highest amount of phytochemicals and antioxidant activity [10]. Abdel-Aty et al. investigated the antioxidant profiles of several fig species [33]. A variety of phytochemical substances with potential pharmacological advantages, such as antifungal, anticancer, antiapoptotic, and anti-inflammatory characteristics, were found in extracts from *Ficus carica* and *Ficus sycomorus*. Because of the differences in its antioxidant concentration, fig extract is an excellent natural source of antioxidants for health. Restraint of Microorganisms The phytochemical screening of fig fruit extracts revealed the presence of the three primary active ingredients: terpenoids, tannins, and flavonoids. Considering the presence of substances that have been shown to have antimicrobial activity and have antibacterial effects, such as tannins, terpenoids, and flavonoids, each of these active molecules has a unique mechanism. Jaundice, diarrhea, and fungal infections are among the conditions for which *Ficus sycomorus* fruits are utilized as a primary therapeutic herb and meal. It is also helpful in treating helminthiasis, epilepsy, stomach issues, TB, infertility, helminthiasis, cough, skin infections, and lactation issues. Anaesthetic Activity: Localized nupercaine as standard (suitable for determining the degree of anesthesia). As a result of the alkylamides, the mean onset of the local anesthetic activity was quite powerful. Anti-inflammatory, antidiabetic, antibacterial, and hepatoprotective actions are only a few of the biological qualities that biologically active chemicals possess because of their rich and varied composition. It is possible to build innovative food and medical items by utilizing bioactive molecules such as these. Let everyone know that *Spilanthes acmella*'s local anesthetic activity has been tested on two distinct animal models: (i) plexus anesthesia in frogs using cocaine as a standard (used to determine the onset of anesthesia); (ii) intracutaneous wheal in guinea pigs using. Effects: Since yeast is frequently used to generate pyrexia, Chakraborty et al. (2010) investigated the antipyretic efficacy of *Spilanthes acmella* using a yeast-induced approach. Accordingly, the dose differs in different research studies. Different workers employed varying yeast dosages and concentrations. The study's findings about *Spilanthes acmella*'s antipyretic efficacy are explained by the presence of flavonoids, which are primarily inhibitors of either lipo- or cyclo-oxygenase. antitumor effect of the methanol extract of *F. Racemosa* was suggested by a researcher to have cytotoxic effects on HL-60, HepG2, NCI-H23, and HEK-293T, among other hepatic malignant cell lines. The findings of their study indicated that, in comparison to other cell lines employed, the methanol extract had more cytotoxic effects on HL-60 and HepG2 cells with very low (50% inhibitory concentration) IC50 values. Vasorelaxant effects on blood flow and antioxidant activity: The plant extracts generated vasorelaxations through prostaglandin-I2 and partially endothelium-induced nitric oxide in a dose-dependent manner. Thus, the scientists theorized that other basic mechanisms might be at play. Remarkably, the diphenylpicryl hydrazine assay demonstrates that the ethyl acetate extract is the most potent antioxidant, exhibiting immediate vasorelaxation at nanogram levels. Vasorelaxation is strongest in the chloroform extract at the highest level of antioxidant content. Lately, studies have also looked into *Spilanthes acmella* leaves' potential as antioxidants. They found that in the crude ethanol extract of the leaves, the plant exhibited high antioxidant activity, which was attributed to tannins, flavonoids, and phenolic compounds. Botanical Name: *Ficus racemosa* Moraceae is a family of Indian Figs; Cluster

Fig, Redwood Fig, Crattock, Rumbodo, and Atteeka are some common names for this plant. Fruits, bark, roots, and latex are among the components used. Habitat: It grows wild in India's hills and forests, and it's farmed everywhere. Excellently supplied: Fruits: *Ficus racemosa* Linn, a lactiferous, deciduous, evergreen tree in the Moraceae family, grows to a moderate to large size and spreads widely. It grows in wet regions of India and is commonly planted in villages for its tasty fruit. Bark has been used internally for hemoptysis, menorrhagia, and dysentery, and as a mouthwash for gum disease due to its astringent qualities. According to the traditional system, this plant's leaves, fruits, bark, latex, and root sap are all medicinally useful. In conclusion, it has hepatoprotective, anti-inflammatory, antibacterial, antidiuretic, and anti-carcinogenic activities in addition to localized anesthetic activity, antipyretic effects, and anticancer benefits. 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