



Pharmacological Activities, Phytochemicals, Nutritional Value And Uses Of Anjeer (Ficus Carica Linn) – The Review

¹Samiya Sameer Momin, ²Sufiya Jahangir Mulani, ³Akshay A. Thorat.

¹Student, ²Student, ³Assistant Professor.

¹Pharmaceutical Chemistry department, ¹Late Adv. Dadasaheb Chavan Memorial Institute Of Pharmacy Malwadi Masur, Karad.

Abstract: Anjeer, or Ficus carica Linn., is indeed a versatile fruit with a rich history in traditional Unani medicine. Its diverse pharmacological activities make it valuable in treating various health conditions. Apart from its medicinal benefits, Anjeer is also packed with essential nutrients, making it a nutritious addition to one's diet. This review aims to shed light on both the medicinal and nutritional properties of Anjeer, emphasizing its potential health benefits for people. The traditional uses in Unani medicine, its pharmacological activities, and its nutritional composition. Anjeer appears to be a versatile fruit with antioxidant, anti-cancer, anti-tuberculosis, antispasmodic, hypoglycemic, hypolipidemic, antipyretic, hepatoprotective, and antimicrobial properties. Additionally, its high content of phytochemicals and nutraceuticals contributes to its nutritional value and potential immune-boosting effects. Overall, Anjeer seems to offer a range of health benefits and could be a valuable addition to one's diet and wellness routine.

Keywords : Ficus carica linn , Unani medicine , Pharmacological activities , Nutritional value , Health benefits

1. Introduction:

The Ayurvedic system of traditional medicine in India offers a rich mine of therapeutic measures for various ailments. It has drawn the attention of researchers worldwide, including the World Health Organization, and several efforts are underway to standardize and validate traditional systems of medicine.



Ficus carica Linn. (Anjeer in India) is a plant which is widely used in the Unani system of medicine as a remedy for several ailments. It belongs to the family Moraceae and is a native plant of the South European region[1]. It is cultivated throughout India. According to Unani philosophy, it is hot and dry in the second degree and is a good laxative. It expels vitiated black bile humor out of the body from the large intestine. It is also tonic and maturant. The fruit is said to be highly nourishing and energy-giving. Taking into account its therapeutic uses mentioned in Unani literature, a study was planned to screen various pharmacologic activities of *Ficus carica* Linn. fruits in experimental animals. A literature search revealed that no comprehensive study has been carried out to evaluate the safety and efficacy of Anjeer. Therefore, the present study would not only help validate therapeutic uses of Anjeer mentioned in Unani literature but also provide data for its safety. Figs indeed have a fascinating role both for humans and wildlife. Their unique texture and taste make them a delightful treat, and their seeds add a subtle texture to their overall experience. A comprehensive review aiming to explore the chemical composition of figs and their potential health benefits. By analyzing existing scientific evidence and identifying research gaps, it can pave the way for further investigations and advancements in understanding the role of figs in human health[42]. Figs have a rich history of being valued for their potential health benefits across various domains, ranging from gastrointestinal to cardiovascular health. Exploring these effects scientifically can provide valuable insights into their traditional uses.[42]

1.1. Background of Anjeer :



Based on the present knowledge about the constitution and nutritional value of the fruit, the following study was made to evaluate the pharmacological effect of the fruit. According to the modern system, the fruit is a well-known mild laxative. The nutritive composition of the fruit per 180g includes moisture (45-70g), proteins (1.3-1.7g), carbohydrates (34-42g), fibers (10-14mg), minerals (3-4g), calcium, and phosphorus. It also contains a good quantity of non-reducing at least 9% of its weight of potassium, an alkaloid, and some amount of vitamin A and B. The fruit has been widely recommended for its use in various diseases as well as general weakness in modern system of medicine as well as Ayurveda and health-promoting country. In India,

it is found growing in the western Himalayas, Kashmir, and up to Lahaul and Marward Hills; Himalayas including Tehri-Garhwal, Kumaun (UP); hills of central India including hills of Orissa and Gangetic plains around Saharanpur. The fig, Anjeer (Sanskrit: Anjir), is one of the most relished fruits in India and has been cultivated throughout the country. It is known botanically as *Ficus carica* or *Ficus sylvatica* and is a member of the mulberry family. It is a deciduous plant native to Asia Minor and stretching from but naturalized in nearly all the temperate parts of India up to a height of 1650 meters.

Vernacular names :[1]

Arabic : Teen

Persian : Anjeer

Urdu : Anjeer

Bengali : Anjir

English : Fig

Gujarati : Anjir

Hindi : Anjir

Kannada: Anjura,

Simeyetti Malayalam: Simayatti

Punjabi : Fagari

Sanskrit : Anjira

Tamil : Simaayatti, Tenatti

Telegu : Anjuro, Manjimedi

•**Taxonomy**: [2,3]

Kingdom - plantae

Subkingdom - tracheobionta

Superdivision - spermatophyta

Division - magnoliophyta

Class - maghnoliosida

Subclass - hamamelididae

Order - urticales

Family - moraceae

Genus - Ficus

Species - carica

Description: [1,2]

Macroscopic :

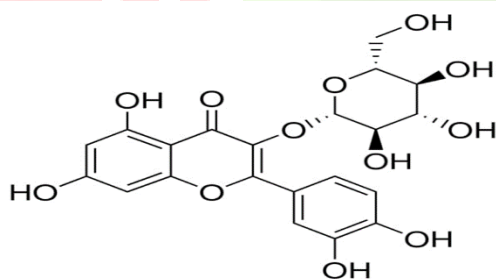
Ficus carica, commonly known as the common fig, is a deciduous tree or large shrub that can reach heights of 7–10 meters (23–33 feet). It has smooth white bark and fragrant leaves that are 12–25 cm (4½–10 inches) long and 10–18 cm (4–7 inches) wide. These leaves are deeply lobed, typically with three or five lobes. The dried fruits of *Ficus carica* are compressed into a circular shape with a central hole, measuring 4–6 cm in diameter and 1 cm thick. The surface of the fruit is wrinkled and can range in color from light yellow to brown. The fruit contains numerous small seeds embedded in its flesh and contain many small seeds in pulpy mesocarp.

Microscopic:

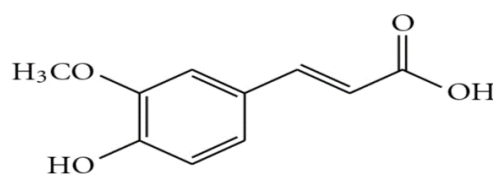
The common fig, *Ficus carica*, has a number of unique features when viewed in microscopic detail. In a transverse section, the epidermis of the epicarp is made up of a single layer of oval or barrel-shaped cells covered in a thick layer of cuticle. The hypodermal region is made up of large, thin-walled parenchymatous cells that are squarish in shape and lack intercellular spaces. The cells contain yellowish-brown contents and some may have brownish-black rosette crystals of calcium oxalate. This area is home to latexers, which are long, tubular formations. Certain branching varieties exhibit a positive tannin test result. When viewed from the surface, the epicarp exhibits oval to polygonal-shaped parenchymatous cells with thick walls. It is noted that there are several anomocytic stomata. The many circular to oval guard cells are filled with starch granules. Under a microscope, the powdered medication has a brown color and contains thick-walled parenchymatous cells, hypodermis, and epidermis cells. These minute characteristics offer important details for *Ficus carica*'s identification and description.

Phytochemistry: [3]

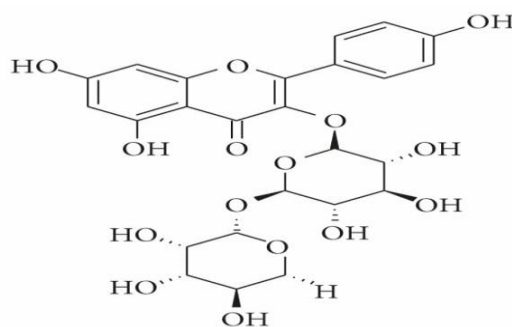
Phytochemical studies on *Ficus carica* have identified a range of compounds, including phytosterols, anthocyanins, amino acids, organic acids, fatty acids, phenolic components, hydrocarbons, aliphatic alcohols, and volatile components. These phytochemicals are primarily found in the latex, followed by the leaves, fruit, and roots of the plant. Some of these phytoconstituents have practical applications, such as in the production of sunscreens and coloring agents. Ferulic acid, quercetin-3-o-glucoside, quercetin-3-o-rutinoside, psoralen, bergapten and various organic acids like oxalic, citric, malic, shikimic and fumaric acids are indeed found in figs[4]. These compounds contribute to the health benefits and nutritional value of figs.



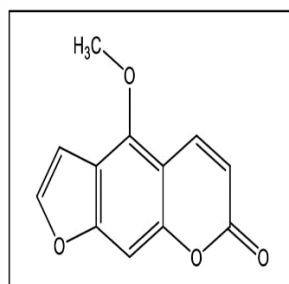
Quercetin-3-O-glucoside



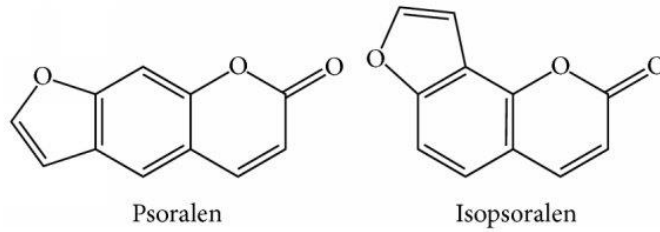
Ferulic acid



Quercetin-3-O-rutinoside



Bergapten



Types of Anjeer :



[1] Black Mission Figs : [5]



The Black Mission Fig, also known as the Franciscan Fig, is indeed a remarkable variety. With its purplish-black skin and strawberry-colored flesh, it sets the standard for fig taste. This tree is notably productive, yielding both an early crop called breba and a substantial late crop. Whether eaten fresh or dried, its fruit is delicious. Interestingly, it was brought to California by Franciscan friars in the late 1700s. When shipped, the fig trees are typically 2-3 feet tall. If you're interested, I can provide more details on our available fruit trees for sale.

[2] Brown Turkey Figs : [6]

The 'Brown Turkey' fig is indeed a robust and cold-hardy cultivar known for its tasty fruit. It's a great choice for gardeners in colder climates who want to grow figs. With its rapid growth and large size, it can make an impressive addition to any garden landscape. The 'Brown Turkey' fig is a self-pollinating variety, which means you don't need multiple plants for fruit production. Its dual harvests make it a favorite among gardeners, providing a longer fruiting season compared to many other fig varieties. It's no wonder it's so popular in the United States.

[3] Sierra Figs : [7]

The Sierra fig from California sounds absolutely delicious! Its large size and light-green color make it visually appealing, while its sweet flavor and jelly-like texture when ripe promise a delightful eating experience. It's no wonder this variety is highly regarded for its excellent quality. Sounds like a fig worth trying. The Sierra Fig sounds lovely! With its sweet, sugary flesh and vibrant leaves, it's not only a treat for the taste buds but also a beautiful addition to any garden. Its versatility makes it perfect for both fresh consumption and cooking, adding a touch of romance to summer landscapes. It sounds like a delightful choice for fig enthusiasts.

[4] Calimyrna Figs : [8]

Calimyrna figs are indeed a special treat! Their golden color and plump shape make them stand out, often becoming part of festive holiday displays alongside nuts, fruit baskets, and other tasty treats. Available year-round, they're a versatile and delicious addition to both sweet and savory dishes. Their unique appearance and sweet flavor make them a favorite choice for many. Calimyrna figs are often sold dried due to their perishable nature, which allows them to be enjoyed year-round. When fresh, they feature a light-green, smooth skin that adds to their unique appearance. Whether dried or fresh, their sweet and nutty flavor makes them a popular choice for snacking, cooking, and baking.

[5] Kadota Figs : [9]

Kadota figs are indeed a versatile and popular variety. Their large, oval-shaped fruits with green or yellow-green skin make them easily recognizable. The sweet, juicy pink or amber flesh is perfect for enjoying fresh, and their rich flavor lends itself well to baking, preserving, and various culinary uses. Their easy-to-peel skin adds to their appeal, making them a favorite among fig enthusiasts for both eating and cooking.

Health benefits : [10]

Anjeer, or figs, are indeed packed with nutritional benefits. They are rich in fiber, vitamins, minerals, and antioxidants. These nutrients contribute to various health benefits such as improving digestion, regulating blood pressure, strengthening bones, and reducing cholesterol levels. Moreover, soaking anjeer overnight can enhance its health benefits by breaking down soluble fibers, making it easier to digest and aiding in better bowel movement. Overall, anjeer is a delicious and nutritious fruit that can be a valuable addition to a balanced diet.

Traditional and current uses : [11]

Ficus carica, commonly known as the fig tree, has a long history of traditional medicinal use. The fruit, leaves, and roots of the fig tree have been used to treat various disorders ranging from gastrointestinal issues like colic and indigestion to respiratory problems such as sore throats and coughs[11]. Additionally, it has been used as a laxative, diuretic, and anti-inflammatory agent in different traditional medicinal systems like Ayurveda and Unani medicine. The fig tree's therapeutic properties include being antispasmodic, anti-

inflammatory, and having laxative effects. Overall, it's fascinating to see how this ancient fruit continues to be valued for its medicinal benefits today.



1. Anjeer for skin :

Using anjeer or figs for skincare is a great natural remedy. The antioxidants and vitamins present in figs can rejuvenate the skin, making it smoother and more refreshed. Figs can also help in reducing wrinkles by promoting collagen production and maintaining skin elasticity. Additionally, the vitamin C in figs can help lighten dark spots, scars, and hyperpigmentation, resulting in a more even skin tone. Creating a face mask with anjeer and honey can further enhance these benefits. Honey acts as a natural moisturizer, locking in moisture and making the skin feel softer.

To make the mask, blend three small figs into a smooth paste and mix it with two spoonfuls of honey. Apply this mixture to your face and neck, avoiding the eye area, and leave it on for about 20 minutes before rinsing it off. This simple DIY mask can help nourish and hydrate your skin, giving it a healthy glow.

2. Anjeer for Hair :

Anjeer, or figs, offer a plethora of health benefits for both skin and hair. Rich in antioxidants, vitamins, and minerals, anjeer can rejuvenate the skin, reduce wrinkles, and even out skin tone. The vitamin C in figs can lighten dark spots and scars, making the skin appear brighter and more even-toned. Additionally, the latex from fig trees can help heal boils and warts. For hair care, anjeer promotes faster hair growth and helps maintain moisture, resulting in healthy and shiny hair. Anjeer extracts are often added to conditioners to help with hair conditioning and detangling.

Here are two DIY masks to harness the benefits of anjeer for skin and hair:

Face Mask with Anjeer and Honey

- 3 small anjeer
- 2 spoonfuls of honey

Blend the figs into a smooth paste, mix it with honey, and apply the mixture to your face and neck. Leave it on for 20 minutes before rinsing it off.

Hair Mask with Anjeer, Yoghurt, and Egg

- 2 anjeer
- 2 millilitres of yoghurt
- 1 egg yolk
- 1 millilitre of honey

Mix the mashed fig with the other ingredients to form a thick paste. Apply the mask to your hair, leave it on for an hour, then wash it off with a gentle shampoo. Repeat this twice a week for best results. Explore our premium microwave-safe dishware collection to enhance your culinary experience.

Pharmacological actions :**1. Antioxidant activity: [12,13]**

The antioxidant activity of *Ficus carica* (fig tree) is indeed noteworthy due to its high content of phenolic compounds. These compounds play essential roles in plants and offer various health benefits to humans by acting as antioxidants. The antioxidants in fig fruits can function in multiple ways, such as reducing agents, hydrogen donors, free radical scavengers, and singlet oxygen quenchers. Studies have shown that different commercial fig varieties, regardless of their color (black, red, yellow, and green), contain high levels of polyphenols, flavonoids, and anthocyanins. These compounds contribute to the fruit's antioxidant capacity. The antioxidant properties of figs have been evaluated using methods like the ferric reducing antioxidant method, which measures the ability of antioxidants to reduce ferric ions.

Overall, the fig tree's antioxidant-rich composition makes it a valuable dietary addition that may help combat oxidative stress and associated health conditions.

2. Anti-cancer activity: [14]

. A mixture of 6-O-acyl- β -D-glucosyl- β -sitosterols isolated from fig (*Ficus carica*) latex has demonstrated anticancer activity. This compound exhibited in vitro inhibitory effects on the proliferation of various cancer cell lines. The findings suggest that *Ficus carica* may contain bioactive compounds with potential cytotoxic properties against cancer cells, making it a promising candidate for further research in cancer treatment.

3. Anti tuberculosis activity: [14]

The 80% methanol extract from the leaves of *Ficus carica* (fig tree) has shown anti-tuberculosis activity against *Mycobacterium tuberculosis* H37Rv. In a colorimetric microplate-based assay, the extract exhibited an MIC (Minimum Inhibitory Concentration) value of 1600 μ g/mL. This suggests that the extract may contain compounds with potential anti-tuberculosis properties, highlighting its possible role in tuberculosis treatment or prevention.

4. Antispasmodic and antiplatelet activity: [15]

The aqueous-ethanolic extract of *Ficus carica* (fig tree) was studied for its antispasmodic and antiplatelet activities. The extract was found to contain various bioactive compounds like alkaloids, flavonoids, coumarins, saponins, sterols, and terpenes. In the antispasmodic study using isolated rabbit jejunum, *Ficus carica* extract at concentrations ranging from 0.1 to 3.0 mg/mL induced relaxation of spontaneous and low potassium-induced contractions. However, it had an insignificant effect on high potassium-induced contractions. This relaxation effect was similar to that caused by cromakalim, a potassium channel opener. When the tissue was pretreated with glibenclamide, there was a rightward shift in the curves for low potassium but not for high potassium. On the other hand, verapamil equally repressed the concentration of potassium ion at both levels. These findings suggest that *Ficus carica* possesses antispasmodic properties, potentially through potassium channel modulation. This study also indicates its potential antiplatelet activity, although further research is needed to fully understand its mechanisms and therapeutic implications.

5. Hypoglycemic activity: [16]

The leaf extract of *Ficus carica* (fig tree) has shown promising hypoglycemic effects in diabetic rats. When administered orally or intraperitoneally to streptozotocin-induced diabetic rats, the leaf extract induced a significant decrease in blood glucose levels. Additionally, the treated diabetic rats did not experience weight loss, and there was a considerable alteration in plasma insulin levels.

These results suggest that the aqueous extract of *Ficus carica* possesses notable hypoglycemic activity, indicating its potential as a natural treatment option for managing blood sugar levels in diabetes. However, further research is essential to understand the underlying mechanisms and to validate these findings in human studies.

6. Hypolipidemic activity: [17]

The leaf extract of *Ficus carica* (fig tree) has been found to potentially modulate triglyceride (TG) and total cholesterol (TC) secretion in poultry liver [18]. In an experiment using eight-week-old rooster livers with high abdominal fat, the liver slices were cultured with increasing concentrations of the leaf extract, insulin, or a combination of both. Insulin was found to significantly increase TG secretion, TG content, and TC secretion beyond the basal levels. However, when the leaf extract was added to the culture, these effects of insulin were reduced to the basal levels in a concentration-dependent manner. This suggests that the leaf extract of *Ficus carica* could be a beneficial supplement for regulating lipid metabolism in poultry, potentially

helping to manage excessive fat accumulation in the liver. Further studies are needed to explore the mechanisms behind these effects and to validate these findings in broader contexts.

7. Antipyretic activity: [19]

The ethanol extract of *Ficus carica* (fig tree) demonstrated significant dose-dependent antipyretic (fever-reducing) effects in a study. When administered at doses of 100, 200, and 300 mg/kg, the extract caused a notable reduction in normal body temperature and effectively countered yeast-induced elevated temperatures.

The antipyretic effect of the extract persisted for up to five hours after administration. When compared to the standard antipyretic agent, paracetamol, the extract's efficacy in reducing fever was observed, indicating its potential as a natural alternative for managing fevers.

8. Hepatoprotective activity: [20,21]

The petroleum ether extract from the leaves of *Ficus carica* (fig tree) showed hepatoprotective activity in rats that were treated with 50 mg/kg of rifampicin orally. Rifampicin is an antibiotic known to cause liver damage in some cases. The study found that the extract from fig leaves was able to significantly reverse the biochemical, histological, and functional changes induced by rifampicin in the rats. This suggests that the fig leaf extract has potential hepatoprotective properties, meaning it may help protect the liver from damage caused by harmful substances like rifampicin. The findings highlight the therapeutic potential of *Ficus carica* in supporting liver health and potentially treating liver-related disorders.

9. Irritant potential: [4]

A mouse ear assay was used to assess the irritant activity of methanol extract and isolated triterpenoids from the leaves of *Ficus carica* (fig tree). The results indicated that these compounds showed the potential to cause irritation on mice ears. Of the compounds tested, calotropenyl acetate, methyl maslinate, and lupeol acetate were found to be the most potent irritants. Interestingly, the potency of these compounds' irritant effects was found to be less than that of euphorbium but somewhat closer to psoralen. These findings suggest that some of the compounds found in *Ficus carica* may have irritant properties that should be taken into consideration when investigating their potential therapeutic uses.

10. Anthelmintic activity: [22]

Syphacia obvelata, *Aspicularis tetraptera*, and *Vampirolepis nana* infections in NIH mice were used to test the anthelmintic activity of the latex from *Ficus carica* (fig tree). For three days in a row, doses of 3 mL/kg/day of latex were given. According to the findings, 41.7% of *S. obvelata* could be effectively removed by the latex. Nevertheless, it did not result in a statistically significant removal of *A. tetraptera* (2.6%) and *V. nana* (8.3%). Furthermore, the latex showed significant acute toxicity, which resulted in hemorrhagic enteritis. It is not advised for traditional medicine to utilize this latex due to its poor anthelmintic efficiency and documented toxicity. This emphasizes how crucial it is to thoroughly assess the safety and effectiveness of natural items before thinking about using them therapeutically.

11. Antimutagenic: [23]

The antimutagenic activity of the plant extract from *Ficus carica* (fig tree) was studied concerning its effects on mutations induced by environmental xenobiotics. The extract demonstrated a reduction in the level of mutations induced by N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) in *Vicia faba* cells, chlorophyll mutations in *Arabidopsis thaliana*, and NAF-induced mutability in rat marrow cells.

These findings suggest that the extract has the ability to decrease the genotoxicity of environmental mutagens, highlighting its potential protective role against DNA damage caused by harmful environmental agents. This antimutagenic property of *Ficus carica* extract could be beneficial in preventing or reducing the risk of mutagenesis and potentially carcinogenesis.

12. Oxidative stress: [24]

In a study examining oxidative stress in rats, four groups were compared: streptozotocin-induced diabetic rats, diabetic rats receiving a single dose of a basic fraction of *Ficus carica* extract, diabetic rats receiving a single dose of a chloroform fraction of the extract, and normal rats. The diabetic animals exhibited significantly higher values for erythrocyte catalase normalized to hemoglobin levels, plasma vitamin E, monounsaturated fatty acids (MUFA), polyunsaturated fatty acids (PUFA), saturated fatty acids (SFA), and linoleic acid compared to the normal animals. Both fractions of *Ficus carica* extract were found to normalize the values of fatty acids and plasma vitamin E in diabetic animals. Specifically, the chloroform fraction normalized the vitamin E/C 18:2 ratio.

13. Antibacterial and antifungal activity: [25]

The methanol extract of *Ficus carica* (fig tree) has demonstrated strong antibacterial activity against oral bacteria, with MICs (Minimum Inhibitory Concentrations) ranging from 0.156 to 5 mg/mL and MBCs (Minimum Bactericidal Concentrations) from 0.313 to 5 mg/mL. Additionally, when combined with antibiotics like ampicillin or gentamicin, the methanol extract showed synergistic effects against oral bacteria, suggesting its potential as a natural antibacterial agent.

In another study, various extracts of *Ficus carica* latex, including hexane, chloroform, ethyl acetate, and methanol extracts, were evaluated for their antimicrobial properties. The methanol fraction exhibited complete inhibition against *Candida albicans* at a concentration of 500 µg/mL and a negative effect against *Cryptococcus neoformans*. Furthermore, the methanolic extract strongly inhibited *Microsporum canis*, while the ethyl acetate extract showed significant inhibition at a concentration of 750 µg/mL. These findings highlight the potential of *Ficus carica* as a source of natural antibacterial and antifungal agents, which could be explored further for therapeutic applications against various microbial infections.

Conclusion:

Indeed, figs, or Anjeer, are rich in various phytochemicals and nutraceuticals such as phytosterols, anthocyanins, amino acids, organic acids, fatty acids, phenolic components, hydrocarbons, aliphatic alcohols, volatile components, and other secondary metabolites. These compounds contribute to the nutritional and pharmacological properties of figs. Consuming foods rich in phytochemicals and nutraceuticals, like figs, can potentially help support immune function due to their antioxidant and anti-inflammatory properties. Including figs in a balanced diet may assist in strengthening the immune system and supporting overall health, especially during recovery from illnesses like COVID-19 that can impact immune function. Figs, with their array of essential nutrients and bioactive compounds, not only provide nutritional benefits but also exhibit various pharmacological activities that can potentially support overall health and well-being. As highlighted in the information about *Ficus carica* Linn., it stands out as a valuable plant from ethnobotanical, pharmacological, and nutritional perspectives. Its diverse phytochemical profile offers a blend of nutritional and therapeutic properties, making it a promising addition to diets aimed at enhancing immunity and overall health. Incorporating figs into a balanced diet can be a practical way to harness their potential benefits, supporting the body's natural defenses and promoting better health outcomes.

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