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## Phytochemical and Antimicrobial Activity of *Ficus Carica* L. Leaves and Bark of Quetta, District of Balochistan

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### Abstract

*From the last few years, there has been a study about phytochemicals. Phytochemicals are those chemical compounds that have many benefits. The natural source of phytochemicals in plants. ficus carica is a well-known plant throughout the world. Ficus carica [Family Moraceae] commonly known as fig. It has been used for centuries as the best nutritional diet. And use as a traditional drug for the treatment of many diseases. Now the studies on it tell us that it contains a bioactive compound which is useful for human. Ficus carica is used for a long period in various chronic diseases therapeutically. It is a reputed plant with various multiple formulations that have been used in the treatment of many diseases and has several activities including diabetes, cough, skin disease. The fruit, stem, roots, and latex of ficus contain these active compounds which act as an antioxidant antibacterial, antidiabetic, anti-inflammatory activity. This review gave a brief note on ficus carica plant uses and importance.*

**Keywords:** Phytochemical, ficus carica, plants, disease, bioactive compounds, various natural sources.

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## **INTRODUCTION**

The isolation purification and characterization of pharmacologically active compounds present in plants are continuously used. The drugs from medicinal plants were isolated from various methods and excludes too many steps which are involved in the analysis (Balunas et al., 2005). Plants are a natural source of nutrients. They are used for food and medication. Fruits are a good source of vitamins, minerals, sugar and contain some different chemicals which are used to treat diseases. The plant contains some chemicals which have properties to protect or preventive from disease. And these chemicals are called phytochemicals which are non-essential nutrients for human beings, it means that those chemicals are not required by the human body for life. These chemicals are used by plants for their protection, in new studies, these chemicals are used for the treatment of several diseases.

Many known phytochemicals are discovered. Phytochemicals are naturally present in many foods, but it is expected that through bioengineering new plants will be developed, which will contain higher levels of phytochemicals. This would make it easier to incorporate enough phytochemicals into our food.

The plant contains some chemicals which are known as Phytochemicals, and these phytochemicals are non-nutritive plant chemicals and have properties to protect or prevent diseases. phytochemicals are non-essential nutrients; it means they are not required by the human body for supporting life. Plants produce these chemicals to protect themselves. In current research reveals that they can also protect against several diseases. Many phytochemicals are discovered. Phytochemicals are naturally present in many foods, but it is expected that through bioengineering new plants will be developed, which will contain higher levels of phytochemicals. This would make it easier to incorporate enough phytochemicals with our food [Ajuru M.G et al 2017]

### **Ficus carica**

Medicinal plants are one of the best health-promoting properties. Their constituents can prevent several decease. The ficus carica is a natural plant that provides fruits which are commonly called fig. this plant has

a natural source of medicinal, the leaves, stem, root, stem bark is used for the cure of many diseases. The ficus carica is found in Asia, Syria, and the Mediterranean region. Ficus is a member of the Moraceae family. Some countries such as Italy, Spain, turkey produce as farming fruits. The fig health benefits are also mentioned in Quran. The leaves of ficus carica have the property to heal cough, asthma, diabetes. In this review, we focused on the health properties of ficus carica its antimicrobial, anti-inflammatory, phytochemical. [Rahmani A.H et al 2017]. Fig fruit has a different color (black, red, yellow, and green) [Barolo M.I et al 2014]. less than 50% of medicinal plants are used in drugs. Medicinal plants are the natural and easy source to make drugs [Van wyk B.E et al 1997]. review is about the plant [ficus carica] which is used as a nutritional fruit, but it also has an important medicinal property [Pati V.V et al 2011]. The new research report that medicinal plants are natural products and use in modern drugs, medicinal plants play an important role in human lives [Gonzalez- Lamothe R 2009]. Fresh fruit of ficus carica use as a jam product in industries. There are many fig factories in china. Fig fruits and leaves, contain plenty of amino acids and inorganic elements, showing their high nutritional value. Fig stem and root also contains several medical components which can be used in cardiovascular disease medicine production [Weibin J et al 2001]. Liver disease is a serious and common disease. there is some complicated treatment to cure liver disease, but after all that risk of infection accurse. The extract of many medicinal plants can use to treat several diseases including liver disease. ficus carica stem extract can use for liver disease [Saoudi M ET AL 2012]. The leaf of ficus carica. Can use as a traditional drug for kidney and liver disease [Kaurc et al 2001]. many studies prove that ficus carica carries that chemical compounds which are antibacterial, anti-inflammatory, antioxidant, and anticancer activities. Leaves of ficus carica are used as a traditional drug for respiratory disease and skin disease [saeed M.A et al 2002, Mawa S ET AL 2013]. a syrup is made traditionally by leaves of ficus used for cough and lung disease [Khare C.P 2004]. In Pakistan, it is commonly called the injeer plant, but in different languages, it has different names. Fig has an abundant source of vitamins, carbohydrates, minerals, and bioactive compounds. Not only fruit has used all organs of this plant are useful. The latex of fig is used as an antioxidant and antimicrobial agent. A technique that is used in

this process is called gas chromatography- mass spectrometer shows that the fig latex has 38 bioactive e compounds. Although not only latex of fig shows the antioxidant activity the other organ like fruit and bark also show antioxidant activity [Shahinuzzaman et al 2020]. the leaves and fruits of figs have the ability of anticoagulant activity, a compound that can help to prevent the bleeding disorder [Belatter H.H 2021]. Fruit of fig can be used to treat inflammation liver disease, spleen disease, weakness, bleeding disease, and increase hair growth [Patil Vikas V et al 2010]. Ficus carica treats anemia, paralysis, and ulcer disease [Badgujar A et al 2012]. The Ficus plant considers a medicinal plant comparing to other families. Ficus (genus) treats metabolic disorders. Ficus carica Linn has more perseverance as compare to other species of this genus because its fruit is edible. Fig fruit contains polyphenolic compounds which are used for years to treat human disorders [Tian J et al 2014]. The presences of biomolecules in plants are the main attraction for the researchers, for the concentration to prevent the disease. The intake of these natural products reduces the rate of risk of several diseases. Ficus carica can reduce the rate of common cancers, diabetes vain blockage, and degenerative diseases. The free radical is present in the human which can cause oxidative damage to the molecules such the proteins, lipids, and the nucleic acid which can involve into the instigation of the disease. The presence of the antioxidant compound in plants such as phenolic, organic, and vitamin E and the carotenoids, search the free radicals to inhibit the oxidative mechanism to prevent the degenerative disease (Oliveira et al., 2009. The ficus latex extract shows antimicrobial activity. The substance present in the latex of ficus showed antifungal and antibacterial activity. So, in drugs, the latex extract is used for infection therapy disease, use for fungal and bacterial disease.

The ficus latex extracts use in drugs that are involved in the treatment of fungal infection. This is an advantage for the pharmaceutical industries to make new drugs from these natural components which are wildy present in most of the area of the world wild. [Aref, H.L et al., 2010]. Some products of ficus carica are using as animal feed. The ficus carica is using as an industrial product, for the formation of jams and beverages products. The fig is a very nutritional value as a food, because of this nutritional value is also used in industrial products. It is rich in vitamins, mineral elements, water, and

fats. Figs are one of the highest plant sources of calcium and fiber. The dried fruit of ficus carica is used as a good source of nutrition for diabetic patients (B joseph et al., 2011).

### **Botanical information of ficus Carica**

Ficus carica belongs to the family of Moraceae. Ficus C tree is 15 -20 ft tall. And have several branches, the diameter is 7-8 ft [Chawal A et al 2012]. the leaves are long and multi-lobes. The genera of approximately 800 species, some of them are trees, shrubs, climbers in the world wild [Frodin D G 2004]. Botanical information is below [Joseph B et al 2010]

Kingdom; Plantae  
Subkingdom; tracheobionta  
Division: mangoliophyta  
Class: magnolipsida  
Subclass: hamamelididae  
Order: urticales  
Family: moraceae  
Genus: ficus L  
Species: ficus carica

Ficus carica has a good source of traditional medicine for the treatment of various ailments such as anemia, cancer, diabetes, leprosy, liver diseases, paralysis, skin diseases, and ulcers. It is a promising candidate in pharmaceutical biology for the development/formulation of new drugs and future clinical uses [Badgujar S.B et al 2014].

Ficus plant has Important biologically active compounds which have been found in different organs of different Ficus species [Kuetze V et al 2008].

### **Antibacterial activity**

In pharmaceutical industries, the drugs reduce bacterial growth or prevent the risk of bacterial infection or disease. The bacteria are resistant to that drugs. So, it's challenging for drug industries to introduce new drugs which decrease the risk of bacterial disease.

The ficus carica plant shows very good results against antimicrobial activity. The ficus carica latex could reduce bacterial growth. The latex can treat with several chemicals to form extracts.

The methanolic extract has less reduction against other bacteria but the methanolic extract shows strong antimicrobial activity against oral bacteria. Ethyl acetate shows strong behavior towards bacterial growth it shows a result against five bacterial inhibition.

Fig leaves show the antibacterial effect against *E faecalis* bacteria. extract of fig leaves shows the result is 50% no bacterial growth [Nirwana I et al 2018]. some studies tell us that various species of ficus have strong antimicrobial and antifungal activities [Vazquez L H et al 2012]. Some species of ficus have a biochemical composition that shows antifungal, antibacterial, and anticancer potentials [Kumar V.D.R et al 2008].

## **Phytochemical**

Phytochemicals are those compounds that are helpful in recent drugs. They are more effective to treat diabetes and obesity [Holubkova A et al 2012]. Fig carry phytochemicals in different organs. Figleaves report flavonoid and triterpenoid and fruit contain the glycoside. latex contains some amino acids glycine, serine, tyrosine and contain many fatty acids. ficus leaves contain a high number of antioxidants as compare to red wine and tea [Patil S.P 2020]. The phytochemicals present in fig leaves have flavonoids, coumarin, triterpenoids, hydroxycinnamic acid, hydroxybenzoic acid, furanocoumarins chemicals are found [Frodin D.G 2004, Camero M et al 2014]. Ethanolic extract of ficus carica contains phytochemicals such as alkaloids, flavonoids, tannin but steroids are absent [Belatter H.H 2021]. Phytochemicals are the recent attractive subject for biomedical and nutrition for the scientist. These chemicals reduce the risk of epidemiological disease. Phytochemicals can promote healthy function in various human diseases, such as diabetes, blockage of veins, obesity, cancers, heart disease, decries blood cholesterol level, and reducing inflammatory action (Z Xu et al., 2012, LR Howard et al., 2012).

## **Antimicrobial**

the plant kingdom has many species which have valuable medicinal properties. Which are still discovered. Medicinal plants are a natural gift for mankind. The tree of fig(FC) is a natural source of food as well

as an ideal medicinal plant, because not only the fruit of fig is used for food, it also uses for several diseases the leaves, roots, stem, and bark also use for may disease [F Azam et al., 2013]

## **Antioxidants**

Antioxidants are used to cure unhealthy conditions. The researcher shows positive and high interest in natural accruing antioxidants. The compound which is mainly found in natural plants, such as polyphenolic compounds is important for the human body, and this compound act as an antioxidant. Many polyphenolic compounds are found in plants. These plants are the biggest source of the natural drug. Ficus carica contains a high number of polyphenolic compounds [Shahinuzzaman et al 2020]. the fruit of ficus carica contain a high amount of antioxidant, these antioxidants can increase the capacity of antioxidants in blood plasma [Benmagnhia S et al 2021]. The antioxidants do not themselves become free radicals by providing electrons because they are stable in also form. Antioxidants defuse free radicals by giving one of their electrons, ending the electron-stealing reaction. Fruits naturally occurring compounds communicate bright colors to fruits and proceed as antioxidants in the body by searching harmful free radicals, which are concerned in most degenerative diseases. They are the most important source of dietary antioxidants that raise the plasma antioxidant ability consequential in inhibition of atherosclerosis-related diseases in humans. The all-natural bioactive are bio- guided isolated components may establish to have significant value additives in the future [Kaurc et al 2001].

## **DISCUSSION**

In this review article the study about ficus carica. Commonly called fig which is used as a fruit, but from centuries fig fruit and other organs are used as drug traditional this plant has multiple of benefits for mankind fig is a common fruit used for nutrition. The leaves, stems, bark, roots, and latex are used as locale drugs for centuries. Ficus carica has high nutritional values. The stem of ficus contains numerous phenolic compound, which is used as antioxidants, antibacterial, antifungal. The antibacterial effect of ficus carica can be used as a new

drug in pharmaceutical industries as an agent of new pathogenic bacteria.

Ficus carica organs contain flavonoids which can reduce the free radical in the hum body act as an antioxidant.

## **Recommendations**

The dry fruit of ficus carica is known as a good source of nutrients among other dried fruits. The cultivation of ficus carica can be an increase in Pakistan. The fruit can use in food industries as a jam product and the other organs can use in pharmaceutical industries, to introduce good effective drugs against pathogenic microbes.

## **Author's declaration**

I, Maryam Dawood, M.phil scholar, Institute of Biochemistry, University of Balohistan, Quetta, hereby declare that this review titled “Evaluation of phytochemical and antimicrobial activity of FICUS CERICA Leaves and Bark Quetta District of Balochistan” is my own written work and has not been submitted anywhere else in country or a board.

Author's contribution in the main script

1. Maryam Dawood organized whole written material
2. Nida Nazar analyzed the tools
3. Shahida Karim collected research articles
4. Naheeda Jalal analyzed the data
5. Dr ashif sajjad conceived and designed the work
6. Khalid Mehmood guided and supervised the whole work

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