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A REVIEW ON FICUS CARICA PLANT

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ABSTRACT

Ficus carica, the common fig is a deciduous shrub or small tree belonging to Moraceae or mulberry family and it is widely seen in the regions of sub-tropical and tropical countries. Ficus carica commonly is known as edible fig or anjir in hindi. Different parts like fruits, seeds, leaves, tender, bark, shoots and latex have many medicinal applications and its constituents have confirmed their role in diseases prevention and treatment. The dried fruits of F. carica have been reported as an important source of vitamins, minerals, carbohydrates, sugars, organic acids, and phenolic compounds. The plant has been used in traditional medicine for a wide range of ailments related to digestive, endocrine, reproductive, and respiratory systems, and also cancer. Additionally, it is also used in gastrointestinal tract and urinary tract infection. A high number of phenolic compounds was found in whole fruit (n = 19), peel (n = 26), pulp (n = 24) and leaves (n = 42). Quercetin-3-O-rutioside was reported as the major individual phenolic compound in whole figs. Phytochemical studies on the leaves and fruits of the plant have shown that they are rich in phenolics, organic acids, and volatile compounds. However, there is little information on the phytochemicals present in the stem and root. Reports on the biological activities of the plant are mainly on its crude extracts which have been proven to possess many biological activities. Some of the most interesting therapeutic effects include anticancer, hepatoprotective, hypoglycemic, hypolipidemic, and antimicrobial activities.

keywords: Ficus carica, fruit, therapeutic, nutrition, anjir, leaves, antioxidant.

1. INTRODUCTION

Ficus carica is the most popular member of the genus Ficus, and the family Moraceae. Plants are an essential component of the universe. Human beings have used plants as medicine from the very beginning of time. After various observations and experimentations medicinal plants were identified as a source of important medicine, therefore, treatment through these medicinal plants, began in the early stages of human civilization. The genus Ficus (Moraceae) comprises one of the largest genera of angiosperms with more than 800 species of trees, shrubs, hemiepiphytes, climbers, and creepers in the tropics and subtropics worldwide. F. carica is an important plant of this genus and commonly referred to as fig. F. carica is thought to have originated in western Asia. The therapeutic utilities of F. carica have been indicated in the traditional systems of medicine such as Ayurveda, Unani, and Siddha. It has been used to cure disorders of the endocrine system (diabetes), respiratory system (liver diseases, asthma, and cough), gastrointestinal tract (ulcer and vomiting), reproductive system (menstruation pain), and infectious diseases (skin disease, scabies, and gonorrhoea). Fresh plant materials, crude extracts, and isolated components of Ficus carica have shown a wide spectrum of biological (pharmacological) activities.

TAXONOMY OF FICUS CARICA:[1]

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Rosales

Family: Moraceae

Genus: Ficus

Species: Carica

VERNACULAR NAMES OF FICUS CARICA:[2]

English- common fig tree,

Hindi- angir,

Sanskrit- angira,

Bengali- angir.

Kannad-anjura,

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Tamil- tenatti,

Telgu- anjuru,

Marathi- anjra,

Punjabi-Fagari

2. VARIOUS PARTS OF FICUS CARICA

1. **Leaf:**

   The leaves are bright green, single, alternate and large, usually up to 1 ft in length. They are rough hairy on the upper surface and soft hairy on the underside, deeply lobed with 1–5 sinuses. In receptacles the flowers are seen; arise from the axils of old leaves.

2. **Fruit:**

   Figs are axillary on leafy branchlets, paired or solitary, and usually pear shaped.[3]

3. **Flower:**

   The lower part of receptacle is occupied by male flowers and the upper part by female flowers.

4. **Seeds:**

   The seeds are edible, generally hollow, unless pollinated. The pollinated seeds provide the characteristic nutty taste to the dried figs. The interior portion is a white, inner ring containing a seed mass bound with jelly-like flesh.

5. **Root:**

   The root system in the plant is typically shallow and spreading. Sometimes covering 50 ft of the ground, but in the permeable soil some of the roots may descend up to 20 ft.[4]

6. **Bark:**

   The bark is smooth. The outer bark is ash to silvery gray in color, along with exfoliated irregular rounded flakes. The middle bark section is brownish or light reddish brown in color in appearance.

PHYTOCHEMISTRY:

Part of plant	Constituent
1.Whole fig	Catechin[5]
	Epicatechin[6]
	Gallic Acid
	Ellagic Acid
	Rutin
	Quercetin-3-glucoside
	Chlorogenic Acid

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2. Leaf	Caffe-oylmalic acid[7]
	p-Coumaroyl derivative
	Rutin (quercetin-3-O-rutinoside)[8]
	kaempferol 3-O-glucoside (astragalin)[9]
	Caffeic acid derivative
	Ferulic acid
	Pyrogallol
	Dihydroxybenzoic acid
	Salicylic acid
3. Pulp	Catechin[10]
	Epicatechin
	Quercetinrutinoside
	Chlorogenic Acid
	Pelargonidin-3-rutinoside[11]
	Quercitin-3-acetylglucoside

3. METHODS OF EXTRACTION

The extraction of Ficus carica leaves can be performed by following methods:

a) Aqueous extract-
Finely ground leaf powder suspended in 96 mL deionized water filtered by sterilized membrane filter, concentrated by using a rotary evaporator at 50 ◦C and then dry in oven at 50 ◦C.[12]

b) Powdered extract-
Ethanol and chloroform were used as extracting solvents.[13]

c) Fresh Leaf-
Fig leaf extract, 96% ethanol by the maceration method.[14]

PHARMACOLOGICAL ACTIVITIES:

1.Antioxidant activity:

Dried fruits of ficus carica has shown an antioxidant activity. Dried figs are in vitro antioxidants after human consumption. These findings suggest that dried fruits should be a greater part of the diet as they are dense in phenol antioxidants and nutrients mostly fibres. Fruits contained the highest levels of polyphenols, flavonoids, and anthocyanins and exhibited the highest antioxidant capacity.[15]

The leaves of Ficus Carica were found to possess stronger antioxidant activity than that of fruits, wood, and bark of Ficus Carica. The leaves collected in the month of July were found to possess stronger antioxidant activity than that collected in the months of June and September. 70% Ethanol, methanol, and water extracts of leaves exhibited strong antioxidant activity.

2.Immunostimulant:

The immunomodulatory effect of ethanol extract of the leaves of Ficus carica was studied in mice. This study was carried out with the help of various haematological and serological tests. Administration of extract remarkably ameliorated both cellular and humoral antibody response. Thus, the ethanol extract of the leaves of Ficus carica possess promising immunostimulant property.[16]

3.Anticonstipation effect:

Constipation is one of the most common gastrointestinal complaints worldwide. This study examined the effects of fig paste for the treatment of loperamide-induced constipation in a rat model. Fig paste was administered for 4 weeks to assess its anticonstipation effects. Fig paste was administered for 4 weeks to assess its anticonstipation effects.[17]

4.Antipyretic:

Ethanolic extract of F.carica is responsible for a significant dose-dependent decline in body temperature and yeast provoked high body temperature at a dose of 100,200 and 300 mg/kg. Compared to the standard antipyretic agent, Paracetamol (150 mg/kg body weight, p.o), and the effect of F.carica extract can be extended up to 5 hours after drug

administration. This effect may be related to the inhibitory action of these extracts on heat shock proteins or due to their effect on the thermoregulatory center.[18]

5.Haemostatic effect:

Ficin (mixture of proteases) present in latex of Ficus carica possessed the significant haemostatic effect by shortening the activated partial thromboplastin time and the prothrombin time. This showed that the haemostatic potency of Ficus proteases was based on the activation of human coagulation factor X.[19]

6.Hypoglycemic:

FC leaves were used to treat diabetes. Ethanol extract (70%) of FC leaves reduced the increase blood glucose levels in diabetic rats to the normal level . The aqueous extract of leaves was reported to reduce the plasma glucose levels in the diabetic rat via increased uptake of glucose by skeletal muscle.[20]

The hypoglycaemic effect of an aqueous extract of leaves has been demonstrated in streptozotocin-induced diabetic rats, where weight loss was prevented in these animals. Additionally, treatment resulted in an increase in the survival index that correlated with increased plasma insulin level.[21]

7. Hepatoprotective:

The methanol extract of the leaves of Ficus carica was evaluated for hepatoprotective activity in CCl_4-induced liver damage in a rat model. The extract of 500 mg/kg (oral dose) exhibited a significant protective effect reflected by lowering the serum levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), an index of lipoperoxidation of the liver.[22]

The petroleum ether extract from leaves of F. carica was evaluated for hepatoprotective activity on rats treated with 50 mg/kg of rifampicin orally, and significant reversal of biochemical, histological, and functional changes induced by rifampicin on rats indicated potential hepatoprotective activity.

Antispasmodic activity:

Ficus carica was studied for antispasmodic effect on the isolated rabbit jejunum preparations as well as for antiplatelet effect by ex vivo model of human platelets. The study revealed presence of spasmolytic activity in the ripe dried fruit of Ficus carica along with antiplatelet activity which provided pharmacological basis to be used in the gut motility and inflammatory disorders.[23]

Anti-acne activity:

Anti-acne activity was evaluated against Propionibacterium acnes using agar disc diffusion method and the minimum inhibitory concentration was calculated by using serial tube dilution method.[24]

4. CONCLUSION

Ficus carica is a deciduous tree having wide-range of disease-management activities as it is a rich source of antioxidants. Fig has emerged as a good source of traditional medicine for the treatment of various ailments such as anaemia, cancer, diabetes, leprosy, liver diseases, paralysis, skin diseases, and ulcers and also have important nutritional value. Although there has been an increase in research focused on the bioactive compounds of fig fruits and their by-products, more scientific evidence is needed to establish the potential health properties. Traditionally as well as scientifically various experiments it has been confirmed that fig has potential role in diseases cure. Future investigations should be focused on in vitro and in vivo studies to reveal their beneficial properties. From this review it can be concluded that, Ficus Carica has many beneficial biological activities, these facts can be established clinically by further studies.

5. REFERENCE

[1] Figs, dried, uncooked Nutrition Facts & Calories. Accessed April 2, 2021. https://nutritiondata.self.com/facts/fruits-and-fruitjuices/ 1889/2

[2] Badgujar SB, Patel VV, Bandivdekar AH, Mahajan RT. Traditional uses, phytochemistry and pharmacology of Ficus carica: A review. Pharm Biol 2014;52(11):1487- 1503. doi:10.3109/13880209.2014.892515

[3] D. H. Janzen. How to be a fig. Ann Rev Ecol Syst, 10, 1979, 13-51.

[4] Chawla A, Kaur R, Sharma AK, Ficus carica Linn. A review on its pharmacognostic, phytochemical and pharmacological aspects, Int J Pharm Phytopharmacol Res, 1(4), 2012, 215-32.

[5] Wojdyło, A.; Nowicka, P.; Carbonell-Barrachina, Á.A.; Hernández, F. Phenolic compounds, antioxidant and antidiabetic activity of different cultivars of Ficus carica L. fruits. J. Funct. Foods 2016, 25, 421–432.

[6] Veberic, R.; Mikulic-Petkovsek, M. Phytochemical Composition of Common Fig (Ficus carica L.) Cultivars. In Nutritional Composition of Fruit Cultivars; Academic Press: Cambridge, MA, USA, 2016; pp. 235–255.

[7] Petruccelli, R.; Ieri, F.; Ciaccheri, L.; Bonetti, A. Polyphenolic profiling and chemometric analysis of leaves from Italian Ficus carica L. Varieties. Polyphenol compounds in common fig. Eur. J. Hortic. Sci. 2018, 83, 94–103.

[8] Veberic, R.; Colaric, M.; Stampar, F. Phenolic acids and flavonoids of fig fruit (Ficus carica L.) in the northern Mediterranean region. Food Chem. 2008, 106, 153–157.

[9] Ladhari, A.; Gaaliche, B.; Zarrelli, A.; Ghannem, M.; Ben Mimoun, M. Allelopathic potential and phenolic allelochemicalsdiscrepancies in Ficus carica L. cultivars. S. Afr. J. Bot. 2020, 130, 30–44.

[10] Pereira, C.; López Corrales, M.; Martín, A.; Villalobos, M.C.; Córdoba, M.G.; Serradilla, M.J. Physicochemical and nutritional characterization of brebas for fresh consumption from nine fig varieties (Ficus carica L.) grown in Extremadura (Spain). J. Food Qual. 2017, 2017, 6302109.

[11] Dueñas, M.; Pérez-Alonso, J.J.; Santos-Buelga, C.; Escribano-Bailón, T. Anthocyanin composition in fig (Ficus carica L.). J. Food Compos. Anal. 2008, 21, 107–115.

[12] El Dessouky Abdel-Aziz, M.; Darwish, M.S.; Mohamed, A.H.; El-Khateeb, A.Y.; Hamed, S.E. Potential activity of aqueous fig leaves extract, olive leaves extract and their mixture as natural preservatives to extend the shelf life of pasteurized buffalo milk. Foods 2020, 9, 615.

[13] Desta, W.; Shumbahri, M.; Gebrehiwot, S. Application of Ficus carica L. And Solanum incanum L. Extracts in Coagulation of Milk. And Case of Traditional Practice in Ab'ala Area, Afar Regional State, Ethiopia. Biochem. Res. Int. 2020, 2020, 9874949.

[14] Nirwana, I.; Rianti, D.; Helal Soekartono, R.; Listyorini, R.D.; Basuki, D.P. Antibacterial activity of fig leaf (Ficus carica Linn.) extract against Enterococcus faecalis and its cytotoxicity effects on fibroblast cells. Vet. World 2018, 11, 342–347.

[15] Marwat SK, Khan MA, Khan MA, Rehman FU, Akbari AH, Ahmed M. Zafar M, Ahmad F, Medicinal and Pharmacological Potentiality of the Plant At-Tîn-Common Fig (Ficus carica L), Asian J Chem, 23(1), 2011, 1-10.

[16] Vikas V, Patil V. Evaluation of anti-pyretic potential of Ficus carica leaves. Undefined. Published online 2010. Accessed april 2, 2021. /paper/evaluation-of-antipyretic- potential-of-Ficus-vikas Patil/92845dfd0aaf8d17cd36e5aa6674235154b61e70.

[17] Nicotra G, Vicentini S, Mazzolari A. Ficus carica. Nutrafoods. 2010;9(3):27-30. doi:10.1007/BF03223339.

[18] Patil VV, Bhangale SC, Patil VR, Evaluation of antipyretic potential of Ficus carica leaves, Int J Pharm Sci Rev. Res, 2, 2010, 48-50.

[19] Richter G, Schwarz HP, Dorner F, Peter L. Activation and inactivation of human factor X by proteases derived from Ficus carica Linn. British Journal of Haematology, 2002, 119:1042-1051.

[20] El-Shobaki FA, El-Bahay AM, Esmail RSA, El-Megeid A a. A, Esmail NS. Effect of figs fruit (Ficus carica L.) and its leaves on hyperglycemia in alloxan diabetic rats. World J Dairy Amp Food Sci. 2010;5(1):47-57.

[21] Canal JR, Torres MD, Romero A, Pérez C. A chloroform extract obtained from a decoction of Ficus carica leaves improves the cholesterolaemic status of rats with streptozotocin-induced diabetes. Acta Physiol Hung. 2000;87(1):71-76. doi:10.1556/APhysiol.87.2000.1.8.

[22] Lee H-Y, Kim J-H, Jeung H-W, et al. Effects of Ficus carica paste on loperamide-induced constipation in rats. Food Chem Toxicol Int J Publ Br Ind Biol Res Assoc. 2012;50(3-4):895-902. doi: 10.1016/j.fct.2011.12.001.

[23] Gani G, Fatima T, Qadri T, Beenish, Jan N, Bashir O, Phytochemistry and pharmacological activities of fig (Ficus carica): A review, IJRPPS, 3(2), 2018, 80-82.

[24] Bouyahya A, Bensaid M, Bakri Y, Dakka N, Phytochemistry and Ethnopharmacology of Ficus carica, IJBCRR, 14(1), 2016, 1-12.