EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 10
Issue: 8
81-87
Year: 2023

PHYTOCHEMISTRY, TRADITIONAL USES AND BIOLOGICAL ACTIVITIES FIG (FICUS CARICA L.) FAMILY (MORACEAE)–A BRIEF REVIEW

Vijaykumar M.[1]*, Sampath Kumar T.[2], Jothimanivannan C.[3], Gnanavel S.[4], Rajaguru A.[5], Nandhkumar D.[6] and Veeraselvan V.[7]

[1,4,5,6,7]Students, SS Institute of Pharmacy, Sankari, Salem, Tamilnadu-637301.
[2]Department of Pharmcognosy Institute of Pharmacy, Sankari, Salem, Tamilnadu-637301.
[3]Department of Pharmaceutical Chemistry, SS Institute of Pharmacy, Sankari, Salem, Tamilnadu-637301.

***Corresponding Author: Vijaykumar M.**
Students, SS Institute of Pharmacy, Sankari, Salem, Tamilnadu-637301.

Article Received on 07/06/2023 **Article Revised on 27/06/2023** **Article Accepted on 17/07/2023**

ABSRACT
The fig, ficus carica is a species of tiny tree in the flowering plant family moraceae that is indigenous Mediterranean region. The Mediterranean region, as well as Asia's west and south. There have cultivated since antiquity and currently widely cultivated all over the world. Figs, among other fruits and leaves, are significant nutrients, including as vitamins, minerals, carbohydrates, and amino acids. And due to the phytochemical makeup, they have negative health impacts. a variety of bioactive substances such flavonoids (flavonols), phenolic compounds (phenolic acids), extracted from the F. carica fruits and leaves, which are the primary components of the manufacturing of a variety of alcoholic drinks, including wine, liqueur, and spirit. This chapter seeks to review the various biological and chemical traits discovered and spirits that people have ingested and been aware of throughout history. Among others, coumarins, sterols, volatiles (monoterpenes, sesquiterpenes, norisoprenoids, ketones, alcohols, esters, etc.), coumarins, flavones, and anthocyanins, as well as others, have been studied. This chapter seeks to review the various biological and chemical traits discovered and spirits) that people have ingested and been aware of throughout history. Traditional medicine has employed the plant to treat a number of conditions, includings cancer, inflammation, and gastrointestinal issues. The therapeutic actions are antibacterial, hypolipidemic, and hypoglycemia action. different disorders such as respiratory (sore throats, cough, andbronchial problems). It is one of the traditional Mediterranean species belonging to the family of Moraceae. Which is widely seen in the regions of sub-tropical and tropical countries. In vitro and in vivo studies has reported that figs fruits, leaves, stem, and latex have health management effect via antioxidant, anti-spasmodic, antimicrobial, anticarcinogenic and many more other effects.

KEYWORDS: Ficus caria, Fig, edible Fig, fig tree, phytochemistry, pharmacological activities.

INTRODUCTION
Ficus carica, the common fig is a deciduous shrub or small tree belonging to Moraceae or mulberry family. Fig is very common fruit crops grown in temperate regions throughout the world for its delicious fruits.[1] The genus Ficus is one of the largest genera of angiosperms in the tropical and sub-tropical regions all over the world having more than 800 species of trees, epiphytes, and shrubs.[2] Ficus carica L. is known as common fig abundantly distributed in southwest Asia and eastern Mediterranean and is also the first figs species that has been cultivated by humans. This common fig has pear-shaped fruit, hollow and fleshy receptacle; can be consumed either in fresh or dry fruit.[3] Fig is mostly grown in Mediterranean climates, but can be grown in more humid regions including the tropics and subtropics. Turkey produces 26% of the total world's figs alone and Egypt, Iran, Greece, Algeria, and Morocco together constitute around 70% of the total world's fig production (FAO, 2006).[4] In addition, a group researchers reported fig's fruits, leaves and roots traditionally used to treat several disorders such as colic, indigestion, loss of appetite and diarrhea, sore throats, coughs and bronchial problems, inflammatory and cardiovascular disorders. Researchers have discovered the enormous resource of medicinal plants like figs to be incorporated in modern pharmaceutical for medicine development for treating severe diseases like cardiovascular, anti-inflammatory and antispasmodic remedy.[5] In addition, Prophet Muhammad the Messenger of Allah also mentioned figs in his hadith as narrated by Abu Darda RA: "Eat figs! If I would say a certain type of fruit was sent down to us from the heavens I would say it's a fig because it has no seeds. It

ends the piles and is useful for rheumatism." Thus, Islam truly recommends human to consume figs as part of daily life because of its superiority compared to other fruits.[6]

Taxonomy
Kingdom: Plantae
Clade: Tracheophytes
Clade: Angiosperms
Clade: Eudicots
Clade: Rosids
Order: Rosales
Family: Moraceae
Genus: Ficus
Subgenus: F. subg. Ficus
Species: F. carica

BOTANICAL DESCRIPTION

Figures 1:

Tree of F. Carica L is generally tall as 15-20 ft that has numerous spreading branches and a trunk more than 7 ft in diameter. The latex of the plant is milky white and mainly contains ficin, i.e., protein hydrolytic enzyme. The species name carica means having papaya-like leaves.[7]

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.[8]

Flower
The lower part of receptacle is occupied by male flowers and the upper part by female flowers. Saikonium, the ripen receptacle contains a large number of small whitish seeds.2 Seeds Seeds may be minute, small, medium or large and range in number from 30 to 1600 per fruit. 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.[8]

FRUIT
Figs are axillary on leafy branchlets, paired or solitary, and usually pear shaped. The fruit (fig) and reproduction systems of species in the genus Ficus are exclusive. It can only be pollinated by their associated agaonid wasps (Hymenoptera: Chalcoidea: Agaonide), and the wasps can only lay eggs within their associated fruit. Pollinator wasp must be present for successful pollination and reproduction of species of F. Carica. On the other hand, for successful reproduction of agaonid wasps to occur, their associated species of F. Carica must be present.[9] Fruit contributed most of the phytochemicals and antioxidant activity compared to that of fruit pulp.[8]

Root
The root system in the plant is typically shallow and spreading.2 Sometimes covering 50 ft of the ground, but

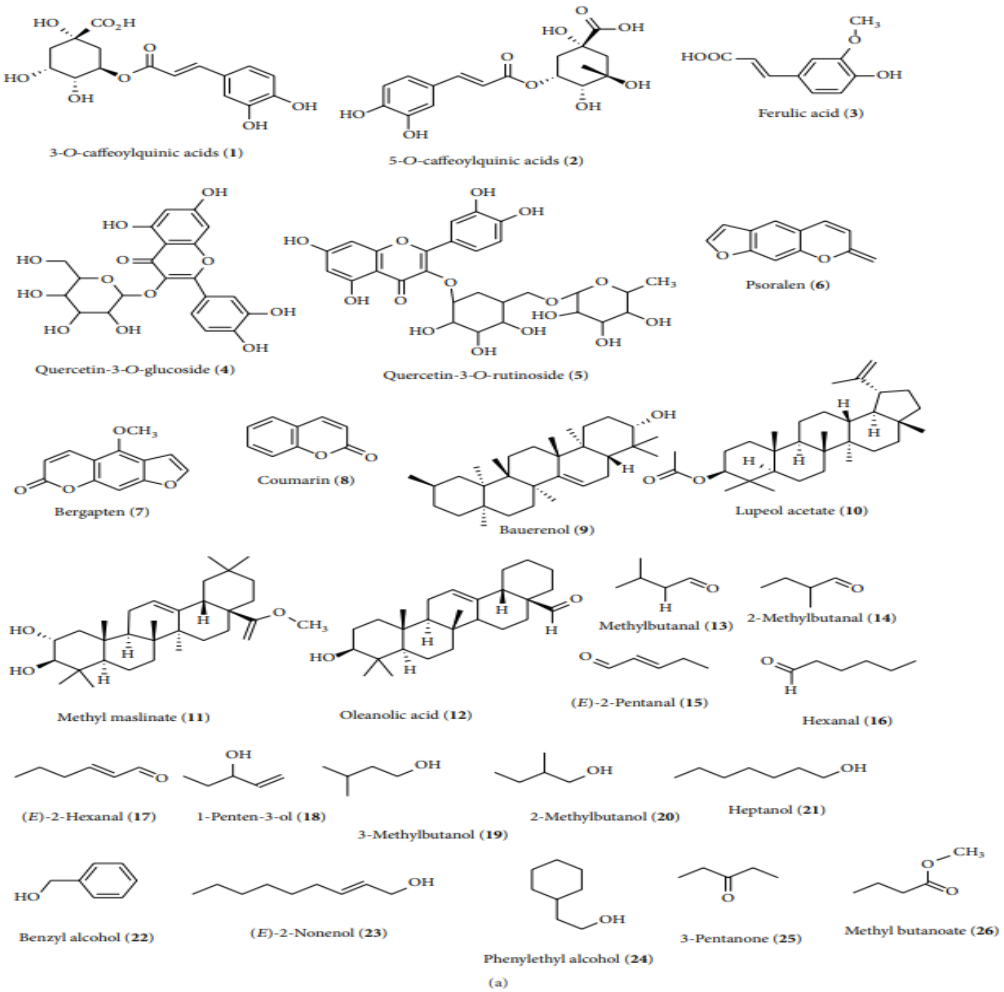
in the permeable soil some of the roots may descend upto 20ft.[7]

Bark

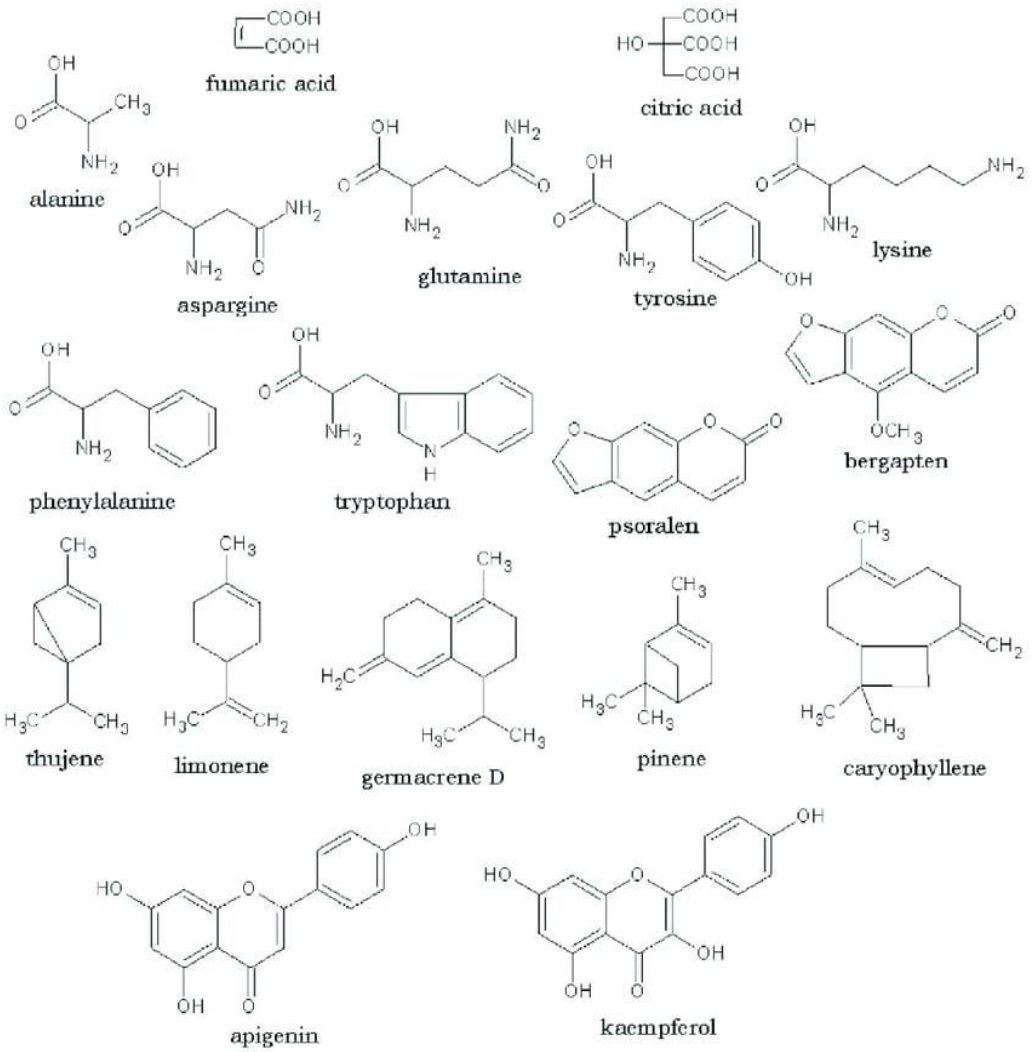
The bark is smooth. The outer bark is ash to silvery gray in color, along with exfoliated irregular rounded flakes. The middle bark section is brownish or light reddish brown in color in appearance. The inner part consists of the layers of light yellowish or orange brown colored granular tissue.[8]

Phytochemistry

Phytochemical studies on F. carica revealed the presence of numerous bioactive compounds such as phenolic compounds, phytosterols, organic acids, anthocyanin composition, triterpenoids, coumarins, and volatile compounds such as hydrocarbons, aliphatic alcohols, and few other classes of secondary metabolites from different parts of F. carica (Figure 1) Most species of F. carica contain phenolic compounds, organic acids, and volatile compounds.[10,11] Fruits constitute various valuable ingredients such as cyanidin-3- O-glucoside, cyanidin-3-Orhamnoglucoside, saturated fat, cholesterol, sodium, insoluble sugars, protein, vitamin A, vitamin C, calcium, iron.4 Dried seeds contain fixed oil that contains the fatty acids like, oleic acid, linoleic acid, linolenic acid, palmitic acid, stearic acid, arachidic acid.[12] It is high-carbohydrate food and a good source of dietary fiber. Ninety-two percent of the carbohydrates in dried figs are glucose, fructose and sucrose. The rest is dietary fiber, insoluble cellulose in the skin, soluble pectin in fruit. A mineral content of figs closely resembles that of human milk. The most important mineral in dried figs is iron. Figs have about 50 % as much iron as beef liver. Calcium and potassium are also present. Various lipid compounds have been identified from the fruit of the fig tree. The main groups are triacylglycerols, free and esterified sterols, mono-and digalactosyl diglycerides, ceramide oligosides, cerebrosides, esterified sterol glycosides and phosphatidyl glycerols (Kolesnik et al., 1986)[13] Phenolic acids such as 3-O- and 5-O-caffeoylquinic acids, ferulic acid, quercetin-3-O-glucoside, quercetin-3-Orutinoside, psoralen, bergapten, and organic acids (oxalic, citric, malic, quinic, shikimic, and fumaric acids) have been isolated from the water extract of the leaves of F. carica L.(16) Coumarin has been isolated from the methanol extract of the leaves of F. carica L. by bioassay-guided isolation, and the isolated coumarin exhibited the strongest nematicidal activity against the nematodes Bursaphelenchus xylophilus, Panagrellus redivivus, and Caenorhabditis eleganswithin 72 hr.[10,14]



Figures 2:



Figures 3:

Biological Activites

Antipyretic Activites

Antipyretic effect Commonly used antipyretic drugs are toxic to liver cells and cause complications. The antipyretic effect of ethanol extract of leaves was evaluated and extracted at doses of 100, 200, and 300 mg/kg body wt. that showed significant dose-dependent reduction in normal body temperature and yeast-provoked elevated temperature and yeast provoked elevated temperature. The effect extended up to five hrs after drug administration while compared to that of standard antipyretic agent, paracetamol (150 mg/kg.b.wt., p.o.).[15]

Anticancer Activity

A mixture of 6-O-acyl-*β*-d-glucosyl- *β*-sitosterols has been isolated as an effective cytotoxic agent from fig (F. carica) latex that showed in vitro inhibitory effects on proliferation of various cancer cell lines.[16,17] F. carica shows role as antitumor through inhibitory effects on the proliferation of various cancer cell lines. A study was carried out in order to check the anticancer effect of latex in different concentration and the results displayed that 5 mg/ml concentration had the greatest effect in inhibition of cancer cell line growth in stomach. Other study reported that latex and its derivatives have been showed to suppress the growth of spontaneous and tumors. Cytotoxicity of fruit and leaf extracts as well as the latex on HeLa cell line were examined and results showed that latex and different extracts could reduce the viability of HeLa cells at concentrations as low as 2 µg/mL in a dosedependent manner.[18] A mixture of acyl moeity with minor amounts of stearyl and oleyl, isolated from fig (Ficus carica) latex have been shown inhibitory effects on proliferation of various cancer cell lines (Shai et al., 2001).[19]

Antioxidant Activity

The F. Carica leaf extract was evaluated for a-tocopherol content, total flavonoid and total phenol content and was investigated for antioxidant capacities. The results visibly confirmed that these extracts have antioxidant capacity, which are consistent with total phenol and flavonoid contents. In another study, fruits of different varieties of fig were analyzed for polyphenols and anthocyanins contents. It was then found out that dark-coloured mission variety contained the highest levels of polyphenols, flavonoids and anthocyanins than red

brown-Turkey variety, exhibiting the highest amount of antioxidant capacity which is correlated well with the amounts of polyphenols and anthocyanin.[20] The extract obtained from the fig can be used for its antioxidant activity and the prominent antioxidants present are; α-tocopherols, flavonoids and phenolic compounds. The highest antioxidant capacity is correlated well with the amounts of polyphenols and anthocyanin in fig.[21,22]

Inflammatory Activity

Fig (0.1-3.0 mg/mL) produces relaxation of spontaneous and low K(+) (25 mM)-induced contractions with negligible effect on high K(+) (80 mM) similar to that caused by cromakalim. Fig (0.6 and 0.12 mg/mL) inhibits the adenosine 5'-diphosphate and adrenalineinduced human platelet aggregation. The presence of spasmolytic activity in the ripe dried fruit of Fig caricapossibly mediated through the activation of K(+) (ATP) channels along with antiplatelet activity provides sound pharmacological basis for its medicinal use in the gut motility and inflammatory disorders (Gilani et al., 2008).[23]

Antidiabetic Activity

Experiment-based studies on F. Carica and its extract has shown to have antidiabetic activity. Antidiabetic effect of methanolic extract of stem bark was carried out and findings confirmed that extract showed significant protection and lowered the blood glucose levels to normal. Another study was performed to evaluate the hypoglycemic effect of an aqueous extract of leaves. Results of the study pointed that extract has a clear hypoglycemic activity in treated versus non-treated diabetic rats.[24,25] It has been observed that the aqueous decoction of fig leaves causes decline in the levels of total cholesterol and total cholesterol/HDL cholesterol ratio, thus, fig extract shows a clear hypoglycaemic effect. Such an effect cannot be mediated by an enhanced insulin secretion, so as yet undefined insulin-like peripheral effect, may be suggested. The addition of fig to diet of insulin diabetes mellitus patients could help to control postpandial glycaemia.[26]

Antipyretic Effect

Commonly used antipyretic drugs are toxic to liver cells and cause complications. The antipyretic effect of ethanol extract of leaves was evaluated and extracted at doses of 100, 200, and 300 mg/kg body wt. that showed significant dose-dependent reduction in normal body temperature and yeast-provoked elevated temperature. The effect extended up to five hrs after drug administration while compared to that of standard antipyretic agent, paracetamol (150 mg/kg.b.wt., p.o.).[27,28]

Antibacterial Activity and Anti-Fungal Activity

The methanol extract of F. carica (MICs, 0.156 to 5 mg/mL; MBCs, 0.313 to 5 mg/mL) showed a strong antibacterial activity against oral bacteria. The combination effects of methanol extract with ampicillin or gentamicin were synergistic against oral bacteria that showed that figs could act as a natural antibacterial agent. Hexane, chloroform, ethyl acetate, and methanol extracts of F. carica latex were investigated for their antimicrobial proprieties in vitro against five bacterial species and seven strains of fungi using disc-diffusion method. The minimal inhibition concentration (MIC) of the methanol fraction showed a total inhibition against Candida albicans (100%) at a concentration of 500 μg/mL and a negative effect against Cryptococcus neoforman; methanolic extract (75%) strongly inhibited Microsporum canis and ethyl acetate extract at a concentration of 750 μg/mL.[29,30]

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.[31]

Anthelmintic

The anthelmintic activity of the latex of F. carica was investigated in NIH mice naturally infected with Syphacia obvelata, Aspiculuris tetraptera, and Vampirolepis nana. The latex was administered in doses of 3 mL/kg/day during three successive days, was effective in the removal of S. obvelata (41.7%), and did not produce significant elimination of A. tetraptera (2.6%) andV. nana (8.3%). High acute toxicity with hemorrhagic enteritis was observed; additional to a weak anthelmintic efficacy, was not recommended the use of this lattice in traditional medicine.[32] The methanolic extract of the Fig was screened to evaluate the nematicidal activity against Bursaphelenchus xylophilus, Panagrellus redivivus, and Caenorhabditis elegans nematodes. Outcome of the study confirmed that leaf extract has the strongest nematicidal activity causing 74.3%, 96.2%, and 98.4% mortality, respectively.[33]

Antispasmodic and Antiplatelet Activity

The aqueousethanolic extract of F. carica was investigated for antispasmodic effect on rabbit and antiplatelet effect using ex-vivo model of human platelets. F. carica was tested positive for alkaloids, flavonoids, coumarins, saponins, sterols, and terpenes, and when it was tested in isolated rabbit jejunum F. carica (0.1–3.0 mg/mL) produced relaxation of impulsive and low K+-(25 mM) induced contraction with insignificant effect on high K+ (80 mM) similar to that caused by cromakalim. Pretreatment of the tissue with glibenclamide caused rightward shift in the curves of low K+ but did not cause high potassium ion, while verapamil equally repressed the concentration of potassium ion at both concentrations. F. carica (0.6 and 0.12 mg/mL) repressed the adenosine-5-diphosphate and adrenaline-induced human platelet aggregation. That study exhibited spasmolytic activity in the ripe dried fruit of F. carica probably mediated through the activation of potassium ion ATP channels along with antiplatelet activity that provided sound pharmacological basis for its

medicinal use in the gut motility and inflammatory disorders.[34]

Irritant Potential

Isolated triterpenoids extracted from the leaves of fig were tested for irritant activity. The in vivo studies showed that the compounds calotropenylacetate, methylmaslinate, and lupeol acetate are the most potent and most persistent irritant. which were less than those of euphorbium and close to psoralen (Morton, 1987).[35,36]

CONCLUSION

Fig (Ficus carica) has been widely used as traditional medicine in numerous countries. All parts of this plant have been used in the therapy and prevention of several complications. Flavonoids are the primary bioactive compounds in this plant and different extracts have been found to possess biological activity. Less toxicity of this plant symbolize the possible uses as therapeutic remedy for a number of ailments. The leaves of fig contain polyphenols with antioxidant and radical scavenging properties which are potentially really useful for human health. Fig leaves have been traditionally used to deal with diabetes and liver disorder. The majority of the pharmacological research which have been carried out on F. carica have been performed with uncharacterized crude extracts; it is challenging to produce the grades of these studies and identify the bioactive metabolites. However the good sized ordinary uses and installed pharmacological things to do of F. carica point out that an considerable scope nonetheless exists for its phytochemical exploration the usage of bioassay-guided isolation. The end result of future research in the above referred to areas will have enough money a persuasive assist for the future scientific makes use of of F. carica in contemporary remedy.

REFERENCE

1. Vora DJ, Vora D, Pednekar RS, Patwardhan UA, Shaikh S, Biochemical, Organoleptic Assessment of Fig (ficus carica), IOSR-JBB, 2017; 3(2): 95-104.
2. Badgujar SB, Patel VV, Bandivdekar AH, Mahajan RT, Traditional uses phytochemistry and pharmacology of Ficus carica: A review. Pharm Bio, 2014; 52(11): 1487-503.
3. Alarcón, R., Pardo-de-Santayana, M., Priestley, C., Morales, R., Heinrich, M. Medicinal and Local Food Plants in The South of Alava (Basque Country, Spain). Journal of Ethnopharmacology, 2015; 176(18): 207- 224.
4. FAO. Agricultural data. FAOSTAT, faostat.fao.org/fa ostat, 2006.
5. Patil, V.V., Bhangale, S.C., Patil, V.R. Evaluation of AntiPyretic Potential of Ficus Carica Leaves. International Journal of Pharmaceutical Sciences Review and Research, 2010; 2(2): 48-50.
6. Bisi, R.B., Locatelli, G., Barbosa, C.M.D.A., Pio, R., Balbi, R.V. Rooting of Stem Segments from Fig Tree Cultivars. Acta Scientiarum. Agronomy, 2016; 38(3): 379-385.
7. Chawla A, Kaur R, Sharma AK, Ficus carica Linn. A review on its pharmacognostic, phytochemical and pharmacological aspects, Int J Pharm Phytopharmacol Res, 2012; 1(4): 215-32.
8. Badgujar SB, Patel VV, Bandivdekar AH, Mahajan RT, Traditional uses phytochemistry and pharmacology of Ficus carica: A review. Pharm Bio, 2014; 52(11): 1487-503.
9. D. H. Janzen. How to be a fig. Ann Rev Ecol Syst, 1979; 10: 13-51.
10. A. P. Oliveira, P. Valentao, J. A. Pereira, B. M. Silva, F. Tavares, and P. B. Andrade, "Ficus carica L.: metabolic and biological screening," Food and Chemical Toxicology, 2009; 47(11): 2841–2846.
11. M. Gibernau, H. R. Buser, J. E. Frey, and M. Hossaert-McKey, "Volatile compounds from extracts of figs of Ficus carica," Phytochemistry, 1997; 46(2): 241–244.
12. Ahmad S, Bhatti RF, Khaliq HF, Irshad S, Madni A, A review on the prosperous phytochemical and pharmacological effects of Ficus carica, Int J Bioassays, 2013; 2(5): 843-9.
13. Lydia DE. Wonders of Figs In: Summaries and Short Reviews; Available at = http://www.shvoong.co m/medicine-and-health/nutrition/ 1866223-wonders-figs/ Accessed, 2009; 10.
14. 6] F. Liu, Z. Yang, X. M. Zheng, S. Luo, K. Zhang, and G. Li, "Nematicidal coumarin from F. carica L," Journal of Asia-Pacific Entomology, 2011; 14(1): 79–81.
15. Patil VV, Bhangale SC, Patil VR, Evaluation of antipyretic potential of Ficus carica leaves, Int J Pharm Sci Rev Res, 2010; 2: 48-50.
16. S. D. Yancheva, S. Golubowicz, Z. Yablowicz, A. Perl, and M. A. Flaishman, "Efficient agrobacterium-mediated transformation and recovery of transgenic fig (Ficus carica L.) plants," Plant Science, 2005; 168(6): 1433–1441.
17. S. Rubnov, Y. Kashman, R. Rabinowitz, M. Schlesinger, and R. Mechoulam, "Suppressors of cancer cell proliferation from fig (Ficus carica) resin: isolation and structure elucidation," Journal of Natural Products, 2001; 64(7): 993–996.
18. Rahmani AH, Adelbasi YH, Ficus carica and its constituents role in management of diseases,Asian J Pharm Clin Res, 2017; 10: 49-53.
19. Shai R, Kashman Y, Rabinowitz R, Schlesinger M, Mechoulam R. J Nat. Prod., 2001; 64: 993.
20. 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, 2011; 23(1): 1-10.
21. Sibel K, Saglam H, Kivcak B. Pharmaceut. Biol., 2005; 43: 683.
22. Morsli A, Bellal M, Arnmouche A. Annales de L'Inst. Nat Agr onomique, 1985; 9: 63-64
23. Gilani H, Mehmood MH, Janbaz KH, Khan A, Saeed SA, J Ethnopharmacol., 2008, 119: 1.

24. Ahmad MZ, Ali M, Mir SR, Anti-diabetic activity of Ficus carica L. stem barks and isolation of two new flavonol esters from the plant by using spectroscopical techniques, Asian J Biomed Pharm Sci, 2013; 3: 22-8.
25. Perez C, Domínguez E, Ramiro JM, Romero A, Campillo JE, Torres MD, A study on the glycaemic balance in streptozotocin-diabetic rats treated with an aqueous extract of Ficus carica (fig tree) leaves, Phytother Res, 1998; 10: 82-3.
26. Guarrera PM. Traditional phytotherapy in Central Italy (Marche, Abruzzo, and Latium), Fitoterapia, 2005; 76(1): 1-25.
27. Patil VV, Bhangale SC, Patil VR, Evaluation of antipyretic potential of Ficus carica leaves, Int J Pharm Sci Rev Res, 2010; 2: 48-50.
28. Patil VV, Bhangale SC, Patil VR, Evaluation of antipyretic potential of Ficus carica leaves, Int J Pharm Sci Rev Res, 2010; 2: 48-50.
29. M.-R. Jeong, H.-Y. Kim, and J.-D. Cha, "Antimicrobial activity of methanol extract from Ficus carica leaves against oral bacteria," Journal of Bacteriology and Virology, 2009; 39(2): 97–102.
30. H. L. Aref, K. B. H. Salah, J. P. Chaumont, A. Fekih, M. Aouni, and K. Said, "In vitro antimicrobial activity of four Ficus carica latex fractions against resistant human pathogens (antimicrobial activity of Ficus carica latex)," Pakistan Journal of Pharmaceutical Sciences, 2010; 23(1): 53–58.
31. Bouyahya A, Bensaid M, Bakri Y, Dakka N, Phytochemistry and Ethnopharmacology of Ficus carica, IJBCRR, 2016; 14(1): 1-12.
32. A. De Amorin, H. R. Borba, J. P. P. Carauta, D. Lopes, and M. A. Kaplan, "Anthelmintic activity of the latex of Ficus species," Journal of Ethnopharmacology, 1999; 64(3): 255–258.
33. Liu F, Yang Z, Zheng XM, Luo S, Zhang K, Li G, Nematicidal coumarin from F. carica L, J Asia Pac Entomol, 2011; 14: 79-81.
34. S. Mohamad, N. M. Zin, H. A. Wahab et al., "Antituberculosis potential of some ethnobotanically selected Malaysian plants," Journal of Ethnopharmacology, 2011; 133(3): 1021–1026.
35. Gani G, Fatima T, Qadri T, Beenish, Jan N, Bashir O, Phytochemistry and pharmacological activities of fig (Ficus carica): A review, IJRPPS, 2018; 3(2): 80-82.
36. Morton J. Fig. In: Fruits of warm climates. Julia F. Morton, Miami, FL, 1987; 47-50.