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"Estimation of nutritional, phytochemical, antioxidant and antibacterial activity of dried fig (*Ficus carica*)"

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Abstract
The present investigation deals with the nutritional, phytochemical, antioxidant and antibacterial activity of dried fruit of fig (*Ficus carica*) commonly known as "Anjir" in India. The nutritional profiling of the dried fig fruit indicates that it is a good source of carbohydrates and minerals like strontium, calcium, magnesium, phosphorus and iron. It has average protein and dietary fiber content with very low amount of fat. Phytochemistry of the fruit revealed the presence of total phenolics, flavonoids, alkaloids and saponins and other secondary metabolites that contribute to its high antioxidant activity which was evident from ABTS and FRAP assays. Volatile components of fig fruit were identified through GC-MS and showed the presence of vitamin E, β-amyrin, stigmasterol, campesterol, oleic acid, isoamyl laurate and ϒ tocopherols majorly. The extract was also screened for antibacterial activity and showed zone of inhibition against *Proteus mirabilis and Bacillus subtilis*. This study explains that *F. carica* with its high antioxidant potential may be utilized as nutraceutical food with high nutrition and therapeutic benefits.

Keywords: Dried fig, Nutritional Analysis, Phytochemical Analysis, Antioxidant Activity, Antibacterial Activity

1. Introduction
Fruits are truly among nature's great gifts because they provide many nutrients that are essential for the health and maintenance of our bodies. They are commonly consumed fresh, but can also be eaten in a dried state. Almost all dried fruits provide essential nutrients and an array of health protective bioactive ingredients that help to reduce its risk of illness by preventing chronic diseases. Natural products have the potential to be used as therapeutic drugs for humans and live stock species. Such compounds, along with their analogues, can also act as intermediates to produce useful drugs [1].

Ficus is one of the largest genera of angiosperms from the mulberry family with more than 800 species of trees, shrubs, hemi epiphytes, climbers and creepers in the tropical and subtropical region all over the world [2]. The most significant species of *Ficus* found in India, are *F. bengalensis, F. carica, F. racemosa and F. elastica*. *Ficus carica* belongs to *Moraceae* family and is commonly known as "Fig" (Anjir in hindi) in India. Different plant parts like fruits, seeds, leaves, tender, bark, shoots and latex have numerous medicinal applications [3]. Major producers of figs are Turkey, Egypt, Morocco, Spain, Greece, California, Italy, Brazil, and other countries with hot dry summers and mild winters [4]. So figs are an important harvest throughout the world and consumed both in dried and in a fresh state. Figs are generally marketed after drying because fresh fig fruit is available only during the season so dried fig fruit is commonly found in the market. Juice from fig fruit when mixed with honey can be used for haemorrhages. Figs can also be used as a mild laxative, an expectorant and as diuretic [5]. The dried figs are used as a food supplement by diabetics and because of the high amount of sugars in it; it is consumed as a sweet [6]. Dried figs are reported to be a good source of carbohydrates, sugars, minerals, vitamins, organic acids and phenolic compounds [6-8]. Both fresh and dried figs have high amounts of fiber and polyphenols [9, 10]. Figs are found to be a rich source of amino acids. They are also free of fat and cholesterol [5, 6, 8, 11]. As per USDA data for the Mission variety of figs, dried figs are an excellent source of fiber, Vitamin K and minerals like copper, manganese, magnesium, potassium, calcium relative to human needs [10]. The phytochemistry of *F. carica* shows that it is a potent source of flavonoids and polyphenols and various other compounds like arabinose, b-amyrins, b- carotines, glycosides, b-setosterols and xanthotoxol [12-14]. Alkaloids, flavonoids, coumarins, saponins and terpenes have also been reported in aqueous extract of the ripe dried fruit of *Ficus carica* [13].

Various plant parts like fruit, root, and leaves of figs have numerous therapeutic benefits and are used in traditional medicines to treat different disorders like gastrointestinal disorders (colic, indigestion, loss of appetite and diarrhoea), respiratory disorder (sore throats, coughs and bronchial problems), and cardiovascular disorders and also used as anti-inflammatory and antispasmodic remedy [15, 16]. *Ficus carica* has also been found to have anti-diabetic, hypolipidemic [17], hepatoprotective [18], antispasmodic [13], antipyretic [19], antibacterial [20], antifungal [21], scavenging activity and immune response [22].

2. Materials and methods

2.1 Collection of plant material

Dried fig fruit was collected from a local market in Panipat, Haryana, India. The fruits (*F. carica*) were further dried in an oven at 40 ^{0}C. Sample was coarsely powdered using a mixer grinder and stored in an air-tight container.

2.2 Chemicals and reagents

All analytical grade chemicals, acids and solvents, media and other chemicals used in the present study were purchased from different sources. Aluminium Chloride (Fisher), Ascorbic Acid (SRL), Acetone, Ethanol, Ethyl acetate, ICP Multielement Standard (Qualigens), Folin-Ciocalteu's Phenol reagent (SRL), Gallic acid (HiMedia), Dimethyl Sulfoxide (SRL),Sodium Hydroxide(SRL), Dichloromethane (Fisher), Methanol (Thomas Baker), 2,2'-Azino-bis (3- ethylbenzthiazoline-6-sulphonic acid) (Sigma), Trolox (Aldrich), TPTZ (Fluka), Ammonia Solution (SRL), Ferrozine (SRL), Ferrous Chloride (Thomas Baker), Petroleum Ether (LobaChemie).

2.3 Extract preparation

Solvent extraction with four mixed solvents was performed using Acetone, Dichloromethane, Ethyl acetate and Methanol. 50g of powdered sample of dried fruit of fig was weighed and soaked in 35 ml of each of 4 solvents. Then the mixture was incubated in the incubator shaker at 40 °C with 140 rpm for 48 hours. The mixture was filtered through a whatman filter paper 1 and the filtrates obtained were evaporated, concentrated at room temperature and stored at 4 ^{0}C. The extract obtained after double extraction with solvents was dark yellow brown in color and extract yield of dried fig fruit powder was calculated to be 11.47%.

2.4 Nutritional profiling

Moisture and total ash content were determined by gravimetrical method at 105 ^{0}C [23] and at ≤ 525 ^{0}C by AOAC method Ref. 942.05 respectively. The total nitrogen content was determined using the Kjeldahl method Ref. 976.05 (AOAC, 1990). A gravimetric method was used for determination of total dietary fiber after the enzymatic digestion of starch and protein in fat and moisture free sample. Crude fat content was determined by extracting the sample in petroleum ether and total carbohydrate content was also measured [24].

Minerals, trace elements and heavy metals in the examined material were determined by using Optima 2100 DV ICP-OES (Perkin-Elmer, USA), after prior mineralization in an Anton Paar Multiwave microwave digester (Anton Paar Ltd., Hertford, UK) as per Ref 956.52 (AOAC, 2005). As a standard, the certified multi-element standard solution ''ICP Multi-element Standard IV" (Merck, Darmstadt, Germany) was used for the instrument's response. The correlation coefficients for the calibration curves obtained were more than 0.99.

2.5 Phytochemical analysis

2.5.1 Total phenolic content (TPC)

Total phenolic content was determined using Folin Ciocalteu reagent [25]. An aliquot (100µl) of extract was mixed with 250 µl of Folin Ciocalteu's reagent and allowed to stand at room temperature for 5 min. 1.5 ml of 20% sodium bicarbonate was added to this mixture and incubated at room temperature for 2 h. Absorbance was measured at 765nm using a spectrophotometer. The results were expressed in terms of µg Gallic acid equivalents (GAE)/mg of dry extract.

2.5.2 Total flavonoids content

Total flavonoids content was measured by using aluminium chloride colorimetric method [26] and expressed in terms of mg catechin equivalents (CE)/g of dry extract. Total flavonoids were determined using Catechin as standard. The sample extract (250 µl) was added to 4.5 ml distilled water, followed by 5% $NaNO_2$ (0.03 ml). After 5 min at 25 °C, $AlCl_3$ (0.03 ml, 10%) was added. After another 5 min, the reaction mixture was treated with 2 ml of 1M NaOH. Finally the reaction mixture was diluted to 10 ml with distilled water and absorbance was measured at 510 nm. The results were expressed as catechin equivalents (CE) in µg/ mg of dried extract.

2.5.3 Crude alkaloids determination

Crude alkaloid was determined gravimetrically for phytochemical analysis [27]. 2.5 g of the sample was weighed and 100 ml of 10% acetic acid in ethanol was added. It was incubated for 4 h at RT. Then this solution was filtered and concentrated up to one-fourth of the original volume using a water bath. Concentrated ammonium hydroxide was added dropwise to the extract until the precipitation was completed. The whole solution was allowed to settle and the precipitates were collected and washed with dilute ammonium hydroxide and then filtered. Crude alkaloid was dried and weighed.

2.5.4 Saponins determination

The saponins content was calculated as per method described by Obadoni & Ochuko [28]. 5 g of sample powder was mixed with 50 ml of 20%aqueous ethanol. The sample was heated with continuous stirring over a hot water bath for 4 h at about 55 °C. The mixture was filtered and the residue re extracted with another 50 ml of 20% ethanol. The combined extracts were reduced to 10 ml over water bath at 90 °C. The concentrate was transferred into a separating funnel and 20 ml of diethyl ether was added and shaken vigorously. The aqueous layer was recovered while the ether layer was discarded. The purification process was repeated. 15 ml of n-butanol was added and the combined n-butanol extracts were washed twice with 10 ml of 5% aqueous sodium chloride. The remaining solution was heated over water bath. The samples were dried in the oven to a constant weight and the saponin content was calculated as percentage.

2.6 Determination of other secondary metabolites

An Agilent 5975B mass spectrometric detector (MSD) was used in the scan mode (m/z 35-1050) for the sample. Screening of volatiles and semi volatiles were performed using the automatic RTL screener software in combination with the Agilent NIST'05 library.

2.7 Determination of antioxidant activity

The antioxidant potential of phenolic compounds was measured by assessing their radical scavenging potential using $ABTS^{+}$ radical cation scavenging assay or their ability to reduce compounds by donating electrons using the FRAP assay.

2.7.1 ABTS radical scavenging assay
The antioxidant capacity of the extracts was determined as ABTS radical scavenging activity [29]. The ABTS [2,2-azinobis-3-ethylbenzothiazoline-6-sulfonic acid] radicals were generated through an oxidation reaction with potassium persulfate. The $ABTS^{+}$ radical cation was produced by mixing ABTS with potassium persulfate and the mixture was kept for 16 h in the dark at room temperature before use. For the analysis, the reagent was diluted in ethanol until the absorption at 734 nm was 0.7± 0.02. A 10 µl of extract was mixed with 990 µl of ABTS reagent. The absorption was measured after 6 min of addition using Hewlett-Packard spectrophotometer. The ABTS radical scavenging activity percentage of the extract compared to ascorbic acid which was used as standard was calculated.

2.7.2 Ferric reducing antioxidant power (FRAP)
The assay was based upon the methodology of Benzie and Strain [30]. The FRAP reagent consisted of 10 mM TPTZ in 40 mM HCl, 20 mM FeCl3 and 250 mM sodium acetate buffer (pH 3.6). FRAP reagent was freshly prepared by mixing TPTZ solution, FeCl3 solution and acetate buffer in a ratio 1:1:10. A 100 µl of extract solution was mixed with 900 µl of FRAP reagent. After the mixture stood at 37 °C for 4 min, the absorbance at 593 nm was determined against the blank. BHT was used as standard. The results were expressed as µg BHT equivalent/mg sample.

2.8 Determination of antibacterial activity
Antibacterial activity is determined by antimicrobial susceptibility using the well diffusion method given by Kirby bauer. The Nutrient Agar (NA) plates were prepared for analysis and incubated at 37 °C for 24 h. The nutrient broth was inoculated with 4 different bacteria which were *S. epidermidis*, *B. subtilis*, *P. mirabilis* and *S. aureus*. 100 µl of respective culture was pipetted on respective plates and spread over the NA plates using a sterilized spreader. 100 µl of samples were introduced into the same plates after creating wells under strict aseptic conditions and all the plates were incubated at 37 °C for 24 hours. Microbial growth was determined by measuring the diameter of the zone of inhibition and the mean values were calculated.

3. Results and discussion
3.1 Nutritional Analysis
The nutritional profile of dried fig fruit has shown its potential health benefits (Table 1). It has revealed that dried fruit of fig has carbohydrates as a major component (73.50%) that corresponds to its high energy value (317.78 kcal). Dried fig fruit has a very low amount of fat (0.56%) so it can be helpful for weight loss. Moderate amount of protein (4.67%) was found in the dried fruit while dietary fiber content (3.68%) was good. Figs contain both soluble and insoluble dietary fiber that has a number of health benefits. Dried figs were found to contain moisture (16.63%) and high ash content (4.65%). Moisture content affects the texture, taste, appearance and stability of foods so it is related to storage attributes of the dried fruit. The ash content is a measure of the total amount of minerals present within a food. Mineral content was also analyzed using ICP-OES.

Table 1: Nutritional profile of dried Fig fruit

Sample	Energy (Kcal/100g)	Total Carbohydrate	Fat	Protein	Dietary fiber	Moisture	Ash
Dried fig fruit	317.78	73.50	0.56	4.67	3.68	16.63	4.65

Dried fig was found to be a very good source of minerals like Sr, Ca, Mg, P and Fe (Table 2). Relatively high amount of Strontium was found in fig. Strontium has been found to contribute towards good bone health. A patented form of strontium called strontium ranelate is used for treatment of postmenopausal osteoporosis that reduces the risk of vertebral and hip fractures. It is the first antiosteoporotic agent that appears to simultaneously increase bone formation and decrease bone resorption, thus resulting in the creation of new bone [31]. Calcium is crucial for bones; maintain overall health, important for strong bones and teeth. Many studies show that calcium is beneficial to the prevention of osteoporosis and related fractures [32]. Magnesium is needed for enzyme action, strong bones and teeth, balanced hormones, a healthy nervous and cardiovascular system. Recent studies confirm that magnesium plays a strong role in the prevention of cardiovascular diseases [33, 34]. Phosphorous is responsible for growth and repair of body cells and tissues. Iron is needed for the production of red blood cell and enzymes.

3.2 Phytochemical Analysis
Phytochemical analysis of dried fig fruit (*F. carica*) included a screening of total phenolics, total flavonoids, alkaloids, saponins and other secondary metabolites. Values of total phenolics, flavonoids, alkaloid and saponins were calculated (Table 3). Naturally-occurring secondary metabolites present in fruits and vegetables have received widespread attention due to their purported health-promoting properties. Polyphenols have the ability to stabilize the unpaired electron and have an ideal structure to prevent harmful oxidation through free radical-scavenging. They have been shown to be more effective antioxidants than vitamins E and C [35]. Flavonoids contribute towards inhibition of cell-proliferation, induction of apoptosis and inhibition of enzymes and also have antibacterial and antioxidant effects [36-38]. Phenolic acids and flavonoids of northernmost fig fruits were also investigated and gallic acid, chlorogenic acid, syringic acid, catechin, epicatechin and rutin were identified [6]. Therefore, total phenolics and flavonoids content of fig extract were estimated and were found to be in moderate amounts. Alkaloids are the active components of many anesthetics, sedatives, stimulants, relaxants, and tranquilizers. Saponins help to lower the cholesterol level and reduce risk of heart disease, but they are considered toxic antinutreints. The crude alkaloids and saponins were calculated on dry weight basis (g/100 g). High amount of alkaloids was found to be present in fig extract while saponins were present in very low amount.

Table 2: Mineral content in dried Fig fruit

Analyte	Concentration (ppm)
Sr	Saturated
Ca	1545.46
Mg	679.04
P	365.75
Fe	29.49
Zn	9.87
Cu	5.02
Mn	4.75
Sb	0.298
As	1.669
Be	N.D.
Cd	0.0034
Cr	1.47
Co	0.032
Pb	0.680
Li	0.245
Mo	0.026
Ni	1.178
Se	0.790
Tl	1.5686
Ti	0.3727
Sn	1.329

Table 3: Major secondary metabolites in *F. carica*

Analyte	Content
Total Phenolics	10.90 µg GAE/mg sample.
Total Flavonoids	2.75 µg CE/ mg sample.
Crude Alkaloid (g/100g DM)	9.6%
Saponins (g/100g DM)	0.59%

3.3 GC-MS Analysis for other secondary metabolites

Some other secondary metabolites were detected (Figure 1) in dried fig fruit. A total of 68 compounds were identified in fig through GC-MS (Table 4). The major compounds found by GC-MS in the extract of fig fruit were Beta-Amyrin, Stigmasterol, campesterol, gamma sitosterol, oleic acid, Isoamyl laurate, α and ϒ tocopherols, β-amyrins are found to be very significant as glycyrrhizin is most likely derived from the triterpene β-amyrin, used as an natural sweetener [39]. β-amyrins are also found in dandelion coffee. Stigmasterol is used as a precursor in the manufacture of semi synthetic progesterone hormone. Research has indicated that stigmasterol may be useful in prevention of certain kind of cancers, including ovarian, prostate, breast and colon cancers and it is also found in herbal tea. It also possesses potent antioxidant, hypoglycemic and thyroid inhibiting properties. Campesterol is also found in dandelion coffee (herbal tea) and have anti-inflammatory effects. Gamma sitosterol is found to lower the serum cholesterol. Campesterol has many medical, cosmetic, and functional food applications and may contribute towards the antimicrobial and antioxidant activities of the fruit. It has saturated fat reducing and cholesterol lowering activity and thus, may reduce the risk of heart diseases [40]. Oleic acid was also detected in the dried fig extract that is used as an emollient. Isoamyl laurate detected is also used as conditioner for hair. Both α and ϒ tocopherols were identified by the analysis. The alpha tocopherols form of vitamin E has long been valued as a potent antioxidant that slows ageing. Vitamin E enhances immune system and metabolism, reduces the risk of cancer and cardiovascular diseases and prevents cataracts. Gamma tocopherols have been found to reduce inflammation and regulate factors that guard against certain cancers. Volatile constituents of oil of leaves and fruits of *Ficus carica* were analyzed through GC-MS and the major components detected in the volatile oil of the leaves were psoralen (10.12%), β-damascenone (10.17%), benzyl alcohol (4.56%), behenic acid (4.79%), and bergapten (1.99%), etc. The major components detected in volatile oil of the fruits were furfural (10.55%), 5-methyl-2-furaldehyde (10.1%), and benzeneacetaldehyde (6.59%) [41].

Table 4: GC-MS analysis of dried fig fruit extract

S. No.	Compound Detected	CAS No.	Retention Time	% Area
1	Dimethyl Sulfoxide	000067-68-5	4.489	3.73
2	1,2-diethyl- Cyclooctane	023609-46-3	10.624	0.11
3	5-(hydroxymethyl)- 2-Furancarboxaldehyde	000067-47-0	11.263	0.27
4	(1-methylethyl)- Cyclohexane	000696-29-7	11.442	0.08
5	1-Dodecene	000112-41-4	13.719	0.32
6	Tetradecane	000629-59-4	13.820	0.12
7	octyl-Cyclohexane	001795-15-9	14.515	0.08
8	1-Nonadecene	018435-45-5	16.310	0.66
9	Hexadecane	000544-76-3	16.388	0.10
10	Ethyl N-(2-methylphenyl)carbamate	005255-71-0	16.523	0.48
11	N-[9-borabicyclo[3.3. 1]non-9-yl]- Propylamine	1000160-82-3	17.140	1.10
12	8-Pentadecanone	000818-23-5	17.263	0.19
13	3-(m-aminobenzoyl) -2-methyl-Propionic acid	034270-86-5	18.014	0.23
14	1-Nonadecene	018435-45-5	18.564	0.79
15	1-Octadecene	000112-88-9	18.642	0.13
16	Fluoroatropine	246137-07-5	18.676	0.17
17	Isopropyl Myristate	000110-27-0	18.912	0.14
18	6,10,14-trimethyl 2-Pentadecanone	000502-69-2	19.136	0.16
19	1,1'-(1,4-butanediyl)bis-Cyclohexane	006165-44-2	19.349	0.13
20	8-Octadecanone	079246-41-6	19.439	0.39
21	Ethyl ester Pentadecanoic acid	041114-00-5	19.618	0.24
22	Hexadecyl-Oxirane	007390-81-0	19.887	0.12
23	Methyl ester Hexadecanoic acid	000112-39-0	19.943	0.98
24	Dibutyl phthalate	000084-74-2	20.381	4.13
25	(E)- 5-Eicosene	074685-30-6	20.549	0.17
26	Ethyl ester Hexadecanoic acid	000628-97-7	20.639	4.57
27	Methyl ester Hexadecanoic acid	001731-92-6	20.924	0.18
28	n-Hexadecanoic acid	000057-10-3	21.249	0.13
29	Ethyl Cyclooctadecane	1000151-22-5	21.339	0.12
30	10-Nonadecanone	000504-57-4	21.395	0.13
31	Cyclohexadecane	000295-65-8	21.462	0.11
32	Methyl ester 10,13-Octadecadienoic acid	056554-62-2	21.597	0.56
33	(Z,Z,Z)- methyl ester -9,12,15-Octadecatrienoic acid	000301-00-8	21.653	1.38
34	Methyl ester Octadecanoic acid	000112-61-8	21.855	0.08
35	Oleic Acid	000112-80-1	22.090	5.28
36	Linoleic acid ethyl ester	000544-35-4	22.225	2.71
37	(Z,Z,Z)-ethyl ester 9,12,15-Octadecatrienoic acid	001191-41-9	22.303	6.35
38	(E)- 5-Eicosene	074685-30-6	22.460	0.84
39	Isoamyl laurate	006309-51-9	22.909	0.10
40	Heptadecane	000629-78-7	23.414	0.22
41	Oleic Acid	000112-80-1	23.896	0.08
42	16-Diepoxyhexadecane1,2-15	1000192-65-0	24.423	0.11
43	(Z)- 9-Octadecenal	002423-10-1	24.849	0.83
44	Z-5-Nonadecene	1000131-11-8	25.029	0.16
45	2-hydroxy-1-(hydroxymethyl)ethyl ester Hexadecanoic acid	023470-00-0	25.107	0.39
46	Diis ooctyl ester1,2-Benzenedicarboxylic acid	027554-26-3	25.444	1.69
47	Ethyl ester, Nonadecanoic acid	018281-04-4	25.724	0.27
48	2,3-dihydroxypropyl ester-9-Octadecenoic acid (Z)-	000111-03-5	26.532	1.13
49	9,12-Octadecadienoic acid (Z,Z)-	000060-33-3	26.588	0.38
50	2,6,10,15,19,23-hexamethyl-2,6,10,14,18,22-Tetracosahexaene	000111-02-4	27.732	0.35

51	Eicosane	000112-95-8	28.371	0.16
52	Gamma.-Tocopherol	007616-22-0	30.547	3.25
53	9-Nonadecene	031035-07-1	30.704	0.37
54	Octacosane	000630-02-4	31.018	0.13
55	Vitamin E	000059-02-9	31.814	0.20
56	Campesterol	000474-62-4	33.664	0.25
57	Stigmasterol	000083-48-7	34.337	0.44
58	Oxime, N-(2-trifluoromethylphenyl)- Pyridine-3-carboxamide	288246-53-7	34.539	0.38
59	Gamma.-Sitosterol	000083-47-6	35.751	4.68
60	24(28)-dien-3-ol, (3.beta.,24Z)- Stigmasta-5	000481-14-1	36.132	1.34
61	Beta.-Amyrin	000559-70-6	36.536	0.54
62	Naphthalene ,1,2,3,5,6,7,8,8a-octa hydro-1,8a-dimethyl-7-(1-methyleth enyl)-, [1R-(1.alpha.,7.beta.,8a.alpha.)]-	004630-07-3	36.726	0.38
63	5-Bromo-4-oxo-4,5,6,7-tetrahydrobenzofurazan	300574-36-1	37.736 1.88	1.88
64	Acetate,(3.beta.)- Lanosta-8,24-dien-3-ol	002671-68-3	38.420	2.56
65	(3.alpha.)-12-Oleanen-3-yl acetate	033055-28-6	39.519	5.66
66	1a,2,3,3a,4,5,6,7b-octahydro-1,1,3a,7-tetramethyl-, [1aR-(1a.alpha.,3a.al pha.,7b.alpha.)]- 1H-Cyclopropa[a]naphthalene	000489-29-2	39.799	4.15
67	Acetate,(3.beta.)- Lanosta-9(11),24-dien-3-ol	055570-91-7	41.156	13.54
68	Acetate,(3.beta.,21.beta.)- A'-Neogammacer-22(29)-en-3-ol	002085-25-8	44.487	1.94

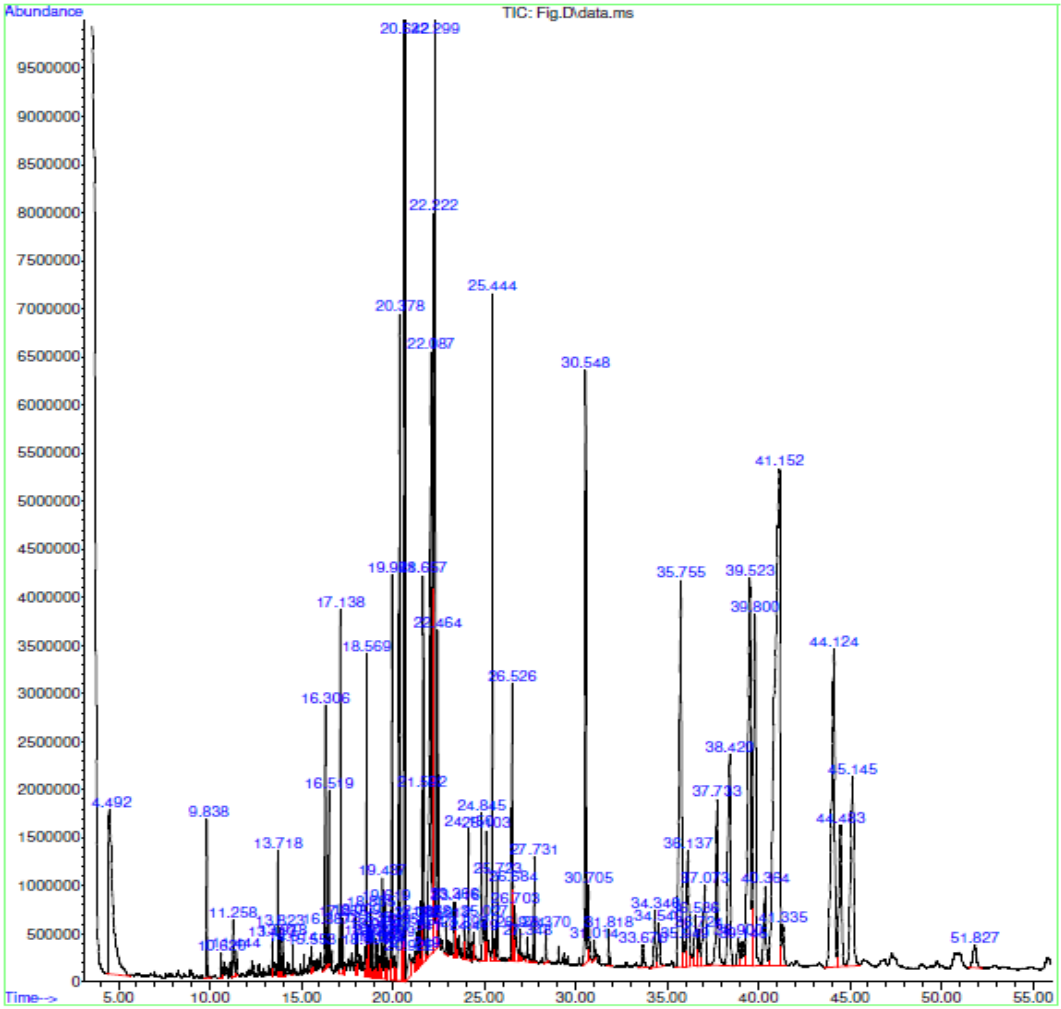

Fig 1: GCMS chromatogram of extract of Figs *(Ficus carica)*

3.4 Antioxidant activity
The antioxidant potential of fig extract was determined against ascorbic acid as percent inhibition of ABTS free radicals. The antioxidant activity (IC_{50} value) as determined by ABTS assay was found to be very good (19.8 mg/ml) in the extract.
In FRAP assay, reduction of the ferric-tripyridyltriazine to the ferrous complex forms an intense blue colour which is measured at a wavelength of 593nm. The intensity of the color is related to the amount of antioxidant reductants in the sample. FRAP activity was found to be very good (60.48) in fig extract.

3.5 Antibacterial activity
Antibacterial activity was investigated by an antimicrobial susceptibility test using the well diffusion method by measuring zone of inhibition. A gram negative bacterium *Proteus mirabilis* and three gram positive (*Staphylococcus aureus, Staphylococcus epidermidis, Bacillus subtilis*) bacteria were used to evaluate the antibacterial activity of dried fig extract. Inhibiting concentrations used for the sample was 100 mg/ml. The dried fig extract was found to inhibit two strains, namely *Bacillus subtilis and Proteus mirabilis* (Table 5). The fig extract was found to possess higher antibacterial activity against *Proteus mirabilis.*

Table 5: Antibacterial activity of dried fruit of *F. carica* (100 mg/ml)

Bacterial strains	Bacterium name	Concentration of fig extract	Diameter of zone of inhibition(mm)
Gram negative	*P. mirabilis*	100 mg/ml	18.5
Gram positive	*B. subtilis*	100 mg/ml	16

4. Conclusion
"Anjir", the common fig was analyzed for nutritional, phytochemical, antioxidant and antibacterial activity for its health benefits and its potential to be used as a functional food. Phytochemistry of *Ficus carica* reveals the presence of various bioactive compounds and it is reported that figs are used in traditional medicines for its therapeutic benefits against various disorders. Our in vitro bioactivity results of the extracts from figs also support such health-beneficial claims. Thus, there is enormous scope for further pharmacological investigation and its utilization as nutraceutical.

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