EVALUATION OF ANTIOXIDANT AND CYTOTOXIC ACTIVITY OF EXTRACT AND VARIOUS FRACTIONS OF *FICUS CARICA* L. LEAVES

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ABSTRACT

Ficus carica commonly referred as fig is native to south west Asia. It is known for its pharmacological properties. The present study was designed to evaluate the antioxidant and cytotoxic activity of methanolic extract of *F.carica* leaves and its derived fraction(s). *F.carica* methanolic extract (FCM) was fractionated into *n.*hexane (FCH), chloroform (FCC), ethyl acetate (FCE) and aqueous fraction (FCA). Colorimetric method was used to determine total phenolic and flavonoid content. *In vitro* antioxidant activity was evaluated by DPPH, Hydrogen peroxide, ABTS, hydroxyl scavenging and ferric reducing power assay. The cytotoxic effect of extract and fractions against HepG2 cell line was determined by using MTT cytotoxicity assay.

Ethyl acetate fraction and crude methanolic extract exhibited higher total phenolic content (125.4 ± 3.03, 98 ± 1.89 mg GAE/g dw) and flavonoid content (31.4 ± 1.6 mg, 19.2 ± 0.31 mg QE/g dw). Among all extract / fractions ethyl acetate exhibited highest antioxidant potential against DPPH, Hydrogen peroxide, ABTS and Hydroxyl radical. *F.carica* leaves extract/fractions showed cytotoxic potential with IC_{50} value ranging from (25 to 240 µg/ml). Methanolic extract exhibited lowest IC_{50} (25 µg/ml) which indicated its higher cytotoxic potential against MCF-7 cancer cells.The results scientifically support the antioxidant and cytotoxic potential of *Ficus carica* leaves. More investigations are required for antioxidant and anticancer compounds isolation and characterization.

Keywords: *Ficus carica*, extract, solvent fractions, antioxidant, MTT assay, cytotoxic

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INTRODUCTION

Plants now become the major health care resource because of their preventive role against various human diseases. WHO reported than more than 80% of world population is now relying on medicinal plants because they have no side effects (Kumar et al., 2011). About one-fourth of recommended drugs are phytochemicals origin which is evident of immense potential of phytochemicals in pharmaceutical industry (Paz-Elizur et al., 2008).Various metabolic reactions in human body produce free radicals as a byproduct. Over production of these free radicals produce oxidative stress which develop pathogenesis such as cancer, diabetes, aging and Alzheimer's (Verma et al., 2009).The natural antioxidant defense system present in body is sometime insufficient to cope with oxidative stress as a result of which loss of function of tissue, organ or organ system take place (Guyton &Kensler, 1993).Cancer development mostly take place due to oxidative damage to DNA (Volka et al., 2006). Antioxidants overcome oxidative stress by various mechanisms such as scavenging of radical, chain initiation prevention, peroxidases decomposition and chelation of metal ion catalyst (Moure et al., 2001). Because of therapeutic values, natural antioxidants obtained from plant sources gaining attention in the present era (Hazra et al., 2008).Many studies are reported on antioxidant and cytotoxic activity of plants (Ogbole et al., 2015). Secondary metabolites such as phenols and flavonoids are present in medicinal plants which have strong potential to cope with oxidative stress related disease (Ashidi et al., 2010). Among all phytochemicals, polyphenols gain special attention due to their high antioxidant potential. Literature verified that intake of fruit and vegetable reduces the chance of oxidative stress related disorders (Santos et al., 2017; Mitra et al., 2000).

Ficus carica is considered as first plant cultivated by mankind on earth. It belongs to family *Moraeceae*. It grows well in tropical and subtropical regions. Various part of this plant such as

fruit, leaves, bark, latex and roots have been used since centuries for management of various ailments. Leaves of *Ficus carica* have been used for treatment of hyperglycemia, constipation, gout, asthma and cough (Perez et al., 1999; Williamson et al., 1996). Various phytochemicals have been reported from leaves of *Ficus carica* such aspsoralen, bergapten and lupeol acetate (Kim et al., 2012). Based on pharmacological properties of Fig, the present study was proposed to assess the *in vitro* antioxidant potential and cytotoxic activity of *Ficus carica* leaves. Methanolic extract was prepared which was further separated in four fractions by using solvents of different polarity.

MATERIAL AND METHODS

Plant collection

Leaves of *Ficus carica* plant was collected in the month of July 2017 from Islamabad, (Pakistan). They were authenticated by expert taxonomist, Dr. Rehmatullah Qureshi of Botany Department of PMAS-AAUR, Rawalpindi. The specimen was kept in the university herbarium as a voucher no 2396.

Preparation of plant extract and fraction(s)

Ficus carica leaves were dried in shade and ground into fine powder. Extract was prepared by maceration of 6 kg Leaf powder into 95% methanol (5L) thrice and kept on shaking 72 hours. After filtration supernatants were mixed and absorbed by rotary evaporator (Heidolph, 36001270 Hei-vap, and Schwabach, Germany) at 40^{o}C. The methanolic extract was further suspended into 50 ml of distilled water and fractioned into separatory funnel by adding solvents of different polarity (*n*-hexane, chloroform, ethyl acetate and aqueous). Organic solvents were dried with rotary except aqueous fraction which was freezed. For further use extract/ fraction(s) were stored at 4^{o}C.

Estimation of total phenolic content (TPC)

Determination of TPC was carried out by spectrophotometric method (Kim et al., 2012). Briefly Folin reagent (1.5ml) was added into 200 µl of sample (1mg/ml) in each test tube. Followed by 5 minutes of incubation then Na_2CO_3 (1.5ml) was inserted to the mixture. After incubation of 90 minutes, absorbance was determined at 725 nm by using spectrophotometer (Shimadzu, Japan 1900 UV/Vis). Gallic acid standard was used and TPC was determined as milligrams of gallic acid equivalent (GAE) per gram of dried sample.

Estimation of total flavonoid content (TFC)

By using colorimetric method, TFC was determined (Marinova et al., 2005). In the test tubes 1.5 ml of methanol, 0.3ml of sodium bicarbonate (5%) was added in 0.5 ml of plant sample (1mg/ml). After the time period of 5 min 0.3ml of Aluminum chloride (10%) and 10% NaOH was added. Absorbance was evaluated at 510nm. Quercetin standard was used and values were observed as milligram of Quercetin Equivalent per gram (mg QE/g) of the dry sample. The test was finished in triplicates.

Antioxidant activity assessment

DPPH radical scavenging assay

Diphenyl-1-picrylhydrazyl (DPPH) method was used to determine antioxidant effect of extract/fractions (Bursal et al., 2011). Total 2.4mg of DPPH was added in 100ml of methanol to prepare stock solution. In each test tube 200 µL of plant sample at varying concentration (25-250 µL) and 1ml of DPPH solution was added. Ascorbic acid standard was used, while absorbance was taken after 30 minutes incubation at 517nm on Spectrophotometer (Shimadzu Japan 1900 UV/Vis).

Inhibition of free radical (DPPH) in solution was calculated by using following equation

$$\text{Percentage Scavenging}(\%) = \frac{\text{Absorbance of control} - \text{Absorbanceof sample}}{\text{Absorbance of control}} \times 100$$

With the help of plot of inhibition, IC_{50} value was calculated.

Hydrogen peroxide scavenging assay

Method of Jayaprakasha (2004),was used to evaluate the H_2O_2 scavenging of extract/fractions. Solution of Hydrogen peroxide (50µM) was prepared in phosphate buffer saline (PH 7.4). In each test tube, 1ml of plant extract/fraction(s) of varying concentration (25-50 µL) and 2ml of hydrogen peroxide solution was added. After 10 minutes incubation, absorbance was measured at 230nm. Percentage scavenging was calculated using formula

$$\text{Percentage scavenging } (\%) = \frac{1 - \text{Absorbanceof sample}}{\text{Absorbance of control}} \times 100$$

$ABTS^+$ radical scavenging assay

About 7 mmoL- of ABTS solution was poured into 3mmolL- solution of potassium per sulfate and kept in dark for 12 h at room temperature. The solution absorbance was adjusted at 0.70 ± 0.05 by adding methanol. To prepare reaction mixture 200µl of sample of varying concentration (25-250µg/ml) was mixed with 2ml of ABTS solution. Absorbance was measured at 734nm after the incubation of 10 minutes. Standard curve was obtained by reducing ABTS absorbance solution against Ascorbic acid at different concentration (Re et al., 1999).

Percentage scavenging was determined by using the following formula

$$\text{Percentage Scavenging}(\%) = \frac{\text{Absorbance of control} - \text{Absorbanceof sample}}{\text{Absorbance of control}} \times 100$$

IC_{50} value was calculated by using regression linear analysis.

Hydroxyl radical scavenging assay

The hydroxyl radical quenching ability of plant extract/ fractions was determined by deoxyribose method described earlier (Yildrim et al., 2006). To the Reaction mixture, 2.8 mM of 2-deoxyribose, 100mMof EDTA and 20mM of ferrous ammonium Sulphate solution prepared in 1 ml of phosphate buffer (0.2M, PH 7.4) was added. Plant sample at varying concentration (25-250µg/ml) were mixed with the reaction mixture. Initiation of reaction was carried out by adding 100ml of H_2O_2 (20mM)and 100ml of ascorbic acid (2mM).After 15 minutes of incubation 1ml of TBA(1%, w/v) and 1ml of TCA (2% v/v) were added. Boiled for 15 minute, after cooling absorbance was recorded at 532 nm.

Scavenging percentage was determined by using the following formula

$$\text{Percentage scavenging } (\%) = \frac{1 - \text{Absorbanceof sample}}{\text{Absorbance of control}} \times 100$$

Reducing power assessment

By using Potassium ferricyanide method, reducing power of plant extract and its fraction was assessed (Gutteridge et al., 2000). About 1ml of plant sample (concentration, 25-250µg/ml) was added to each test tube with 2.5ml of 0.2M phosphate buffer (PH 6.6) and Potassium ferricyanide (2.5ml). After 20 minutes of incubation at 50^{o}C to stop the reaction 2.5ml of TCA was added. After centrifugation of 30 minutes, 2.0 ml of supernatant was collected and mixed with

distilled water (2.5ml). At the end ferric chloride (0.5ml) was added. Ascorbic acid standard was used and absorbance was estimated at 700nm.

***In vitro* cytotoxic activity**

Cell culture

The human Breast cancerMCF-7 cell line was cultured in minimal essential media with 10% FBS and 1% Pencillin/ Streptomycin for 37ºC with 5% CO_2 to provide humidified atmosphere for 24 hours.

Cytotoxicity assay

About 10,000 cells were seeded per well in 96 - well microtitre plate. The cells were allowed to attach with plate overnight. By using MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltratrazolium bromide(Sigma-Aldrich Chemical Co)assay, cytotoxicity of extract/fractions was determined (Mosmann, 1983). After 24 hours cell were exposed with plant extract/ fractions of varying concentration prepared in DMSO. Finally 5 mg/ml of MTT (10 µL) was added to each well. To dissolve fromazan crystals, DMSO was added after 4 hours. Absorbance of colored solution was measured at 570nm on Thermo Scientific Varioskan Flash Multimode Reader. By using the following formula cell viability was calculated

Percent of viable cells = [(Abs of treated cells)/ (Abs of control cells)] x 100

Untreated cells viability was assumed as 100 percent. IC_{50} value was calculated through linear regression equation.

STATISTICAL ANALYSIS

Values were expressed as mean ± standard deviation. All experiments were carried out in triplicate. IC_{50} value was calculated by using Microsoft excel. One-way analysis of variance followed by Tukey's test was used to find out the IC_{50} value differences among extract/fractions by using computer software graph pad prism5.0. $P<0.05$ was considered as significant.

RESULTS

Extraction yield

Yield of crude methanolic extract was 13.1% of the dry powder, while *n.* hexane (FCH), chloroform fraction (FCC), ethyl acetate fraction (FCE) and aqueous fraction (FCA) yielded 3.4, 7.8, 5.2 and 9.8 % respectively. The difference in yield of extract and fraction depends upon the nature of solvent as shown in Table 1.

Total Phenolic and total flavonoid content

TPC was expressed in milligram of gallic acid equivalent per gram of dry weight (mg GAE/g dw). The highest amount of total phenolic was observed in ethyl acetate fraction 125.4 ± 2.03 mg GAE/g dw which was followed by methanolic extract 98 ± 1.89 mg GAE/g dw, chloroform fraction 92.4 ± 4.76 mg GAE/g dw, aqueous fraction 66.1 ± 0.82 mg GAE/g dw respectively. Least content was observed in *n.*hexane fraction 64.4 ± 0.21 mg GAE/g dw. The value of flavonoid was indicated as milligram quercetin equivalent (QE)/g dw. Ethyl acetate fraction possessed high flavonoid content 31.4 ± 1.6 mg QE/g dw followed *n.*hexane fraction11.6 ± 0.89 mg QE/g dw , chloroform fraction 9.13 ± 1.42 mg QE/g dw and aqueous fraction 2.41 ± 0.68 mg QE/g dw respectively whereas methanolic extract exhibited 19.2 ± 0.31 mg QE/g dw of total flavonoid content shown in Table1. So the study suggested that ethyl acetate is best solvent to extract phenolic and flavonoid constituent fromFigleaves.

Table 1 Estimation of extraction yield, total phenolic and flavonoid content of *F.Carica*

Extract/fraction	Yield (%)	TPC (mg GAE/g dw)	TFC (mg QE/g dw)
FCM	13.1[a]	98± 1.89[b]	19.2±0.31[b]
FCN	3.4[e]	64.4±0.21[e]	11.6±0.89[c]
FCC	7.8[c]	92.4±4.76[c]	9.13 ±1.42[e]
FCE	5.2[d]	125.4 ± 2.03 [a]	31.4 ±1.6[a]
FCA	9.8[b]	66.1±0.82[d]	2.41± 0.68[d]

Values are expressed in mean ± S.D. Letter in lower case showed significant difference ($P<0.05$)

***In vitro* antioxidant assays**

DPPH radical scavenging activity

As shown in (Figure 1A) extract and fractions of *F.Carica* inhibit DPPH radical in dose dependent manner. IC_{50} values for DPPH scavenging activity of extract/fractions are shown in Table 2. Significant ($P<0.05$) antioxidant potential was shown by extract (8.87± 1.62 µg/ml). Among all fractions the maximum DPPH scavenging activity was shown by ethyl acetate fraction which have IC_{50} value (3.6 ± 2.14 µg/ml) comparable to IC_{50} value of standard, ascorbic acid (1.45 ± 2.85 µg/ml). Chloroform fraction (FCC) showed IC_{50} value of (25.30 ± 1.8 µg/ml) followed by aqueous fraction (43.40±1.96 µg/ml) and then *n*-hexane fraction (65 ± 3.23 µg/ml) respectively.

Hydrogen peroxide scavenging assay

Figure 1B shows Hydrogen peroxide scavenging of plant extract/fractions. Ethyl acetate was found as best fraction for quenching hydrogen peroxide radical with IC_{50} of 3.11 ± 2.94 µg/ml followed by methanolic extract 16.3 ± 2.13 µg/ml, chloroform fraction 46.1 ±2.73 µg/ml, *n*-hexane fraction

68.6 ± 3.22 µg/ml and aqueous fraction 119.8 ± 1.94µg/ml respectively as shown in Table 2. IC_{50} value of all extract/ fractions was less than ascorbic acid (1.16±2.84 µg/ml.

$ABTS^+$ radical scavenging assay

ABTS radical scavenging activity of extract and its derived fractions are shown in (Figure 1C). Maximum scavenging of ABTS was exhibited by ethyl acetate fraction and methanolic extract with IC_{50} 6.39 ± 1.85 µg/ml and 19.7 ± 3.19 µg/ml. Least activity was exhibited by *n*.hexane fraction with IC_{50} 99.8 ± 2.13µg/ml as shown in Table 2.

Hydroxyl radical scavenging assay

F.carica extract and itsfractions scavenged hydroxyl radical which generated during reaction of H_2O_2 and Fe^+ (Figure 1D). Highest scavenging activity was exhibited by ethyl acetate fraction (4.92± 1.60µg/ml). Methanolic extract also highly scavenged H_2O_2 with lowest IC_{50} (9.38± 074 µg/ml) which is comparable to standard gallic acid (8.93± 0.66 µg/ml).Chloroform fraction also scavenged hydrogen peroxide with IC_{50} (70.7± 1.42 µg/ml) followed by aqueousfraction (132.9 ± 1.89 µg/ml) and *n*.hexane fraction (154.8 ±2.9 µg/ml) respectively.

Table 2 IC_{50} values obtained in the antioxidant assays

Plant extract/fractions	IC_{50} values µg/ml			
	DPPH	**H_2O_2**	**ABTS**	**OH**
FCM	8.87± 1.62^c	16.3±2.13^c	19.7±3.19^b	9.38±0.74^b

FCH	65± 3.23[f]	68.6±3.22[e]	99.8±2.13[d]	154.8±2.90[e]
FCC	25.3±1.84[d]	46.1±2.73[d]	76.1±3.46[c]	70.7±1.42[c]
FCE	3.60±2.14[b]	3.11±2.94[b]	6.39±1.85[a]	4.92±1.60[a]
FCA	43.4±1.96[e]	119.8±1.94[f]	79.5±2.93[c]	132.9±1.89[d]
Ascorbic acid	1.45±2.85[a]	1.16±2.8[a]	4.29±1.97[a]	_
Gallic acid	_	_	_	8.93±0.66[b]

Values are expressed in mean ± S.D. Letter in lower case showed significant difference (P<0.05).

Reducing Power Capacity Assessment

Figure 2 shows reducing power capacity of *F.Carica* extract and fractions. Highest reducing power was exhibited by ethyl acetate fraction of *F.carica* (128 ± 4.7 mg AAE/g) at highest concentration 250 µg/ml followed by methanolic extract (97.6±3.78 mg AAE/g), aqueous fraction (67.8±5.8 mg AAE/g), chloroform fraction (65±4.2 mg AAE/g), and *n*.hexane fraction(58.5±3.3 mg AAE/g).

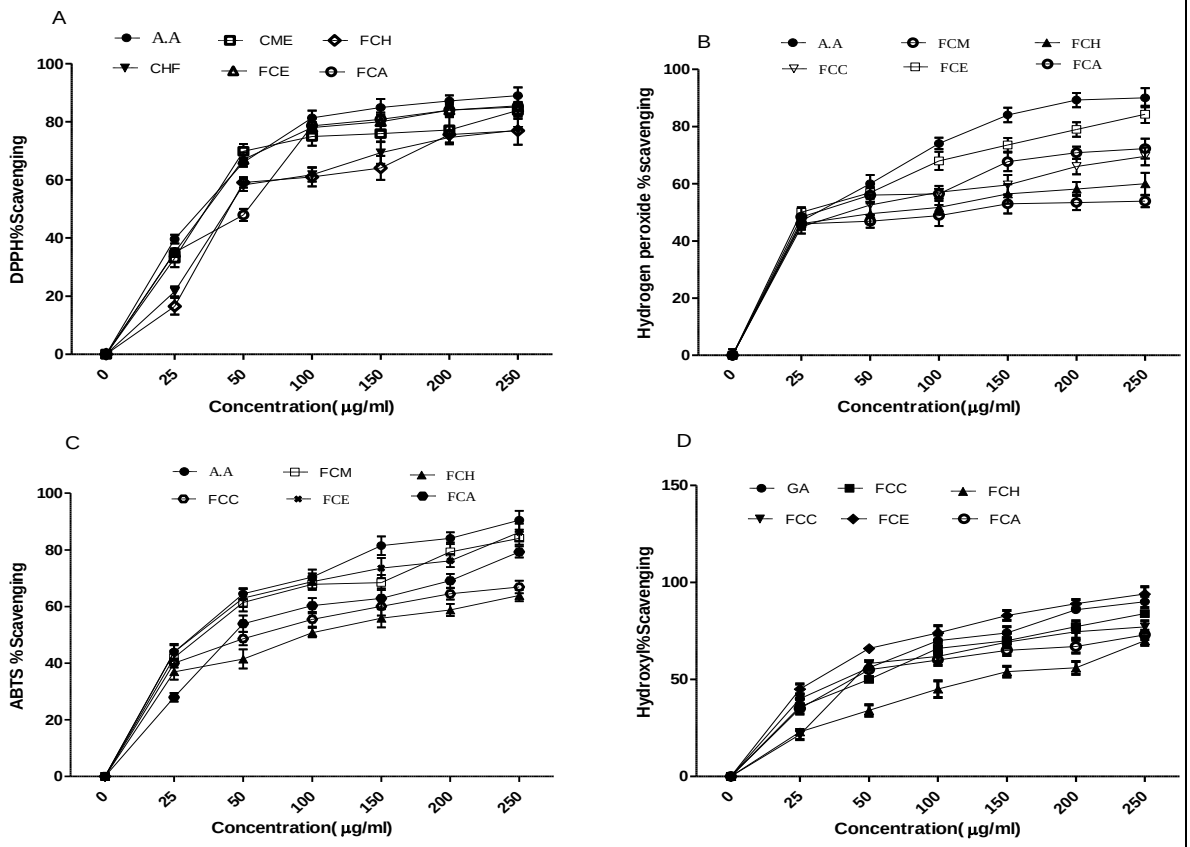

Figure 1 Antioxidant activities of *Ficus carica* leaves extract/fractions effect at various concentrations A. DPPH scavenging assay, **B**. Hydrogen peroxide scavenging assay, **C** ABTS scavenging assay, **D** Hydroxyl radical scavenging assay. Cumulative values are reported as mean ± SD (n=3).

Correlation of IC_{50}values of antioxidant activities with TPC and TFC

Significant correlation was observed between total phenolic content (R^2 = 0.7633, R^2 = 0.7933, R^2 = 0.8180, R^2 = 0.8332, R^2 = 0.8603) and IC_{50} values of H_2O_2, ABTS, Ferric reducing, DPPH and OH assays. However H_2O_2 andFerric reducing assays only showed significant correlation with total flavonoid content as shown in Table 3.

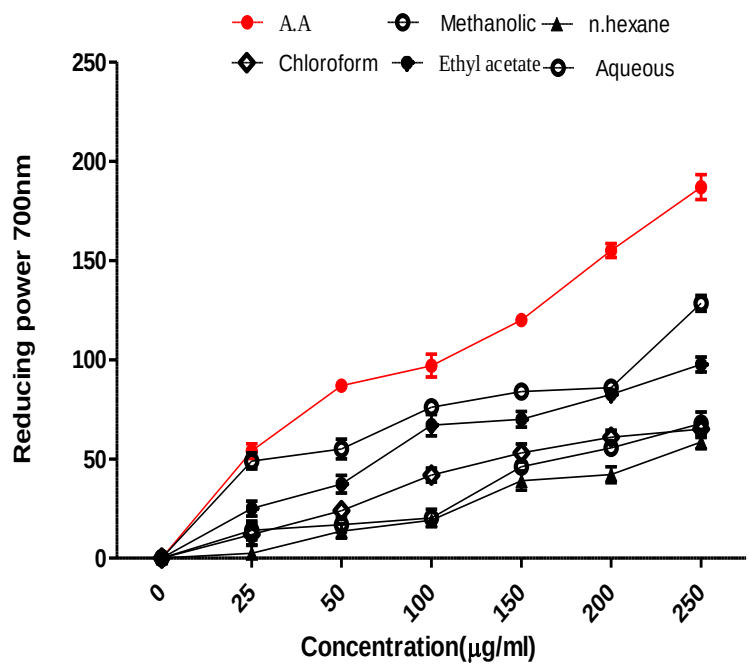

Figure 2Reducing power assay of extract and different fractions of *Ficus carica* leaves at different concentrations.Each value represents a mean ± SD (n = 3)

Table 3 IC$_{50}$values of activities with Correlation of antioxidant TPC and TFC

Antioxidant activity	Correlation R^2	
	TPC	**TFC**
DPPH Scavenging activity	0.8332*	0.4858$^{n.s}$
H_2O_2 Scavenging activity	0.7633*	0.7951*
ABTS Scavenging activity	0.7933 *	0.7154$^{n.s}$
OH Scavenging activity	0.8603*	0.6189$^{n.s}$
Ferric reducing assay	0.8180*	0.8364*

Values are expressed in mean ±S.D (n=3).* indicates significance at P<0.05

Cytotoxicity assay

MTT is quantitative, colorometric assay based on conversion of tetrazolium salt into blue formazon product by metabolically active cells (Khanavi et al., 2010). As shown in (Figure 3) cell viability was significantly decreased by Extract/ fraction in dose-dependent manner. Methanolic extract of *Ficus carica* and its fraction found potent against MCF-7 cell line. Methanolic extract and ethyl acetate fraction significantly reduced the viabilityof cells at higher concentration (100 µg/ml) as shown in Figure. IC_{50} value of extract and fraction(s) ranged from 21 µg/ml to 348 µg/ml presented in Table 4. Methanolic extract significantly (P<0.05) enhanced cell mortality with lowest IC_{50} value 25 µg/ml. However aqueous fraction was found less potent.

Table 4 Cytotoxicity of *F.carica* against MCF-7 cell line

Plant extract/fraction	IC_{50} values µg/ml
FCM	21 ± 2.36^{a}
FCH	56.7 ± 3.63^{c}
FCC	116.4 ± 2.45^{d}
FCE	38.4 ± 1.67^{b}
FCA	348 ± 3.15^{e}

Values are expressed in mean ± S.D.Letter in lower case showed significant difference (P<0.05).

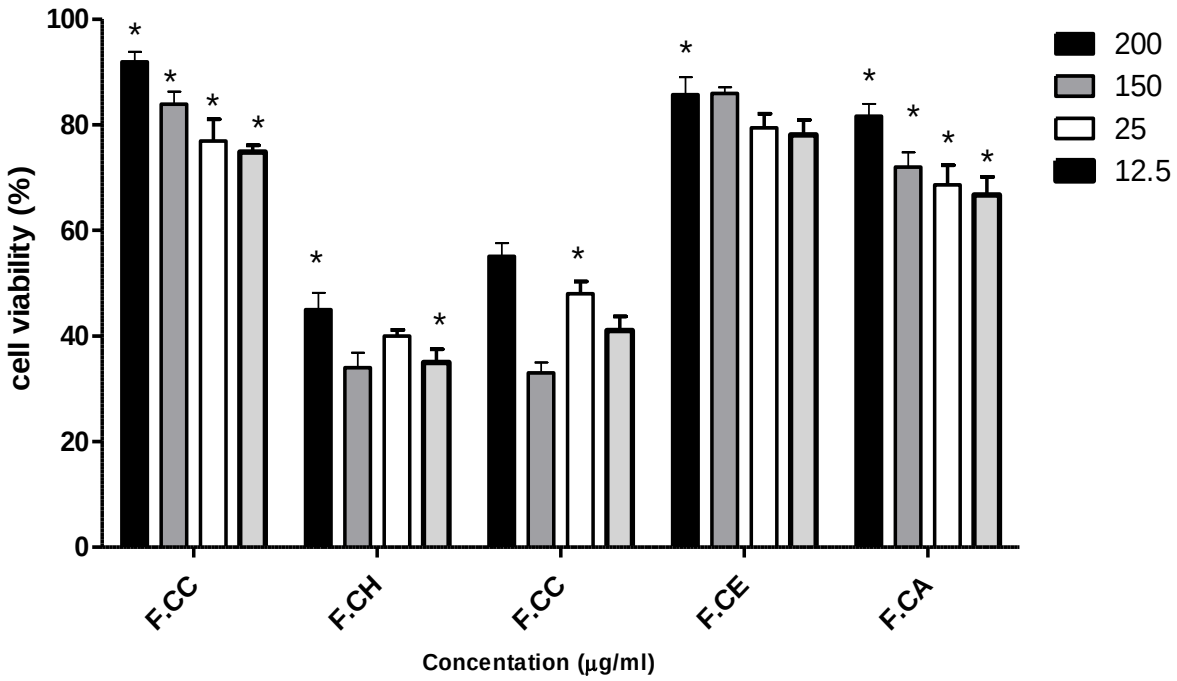

Figure 3. Effect of *F.carica* extract and fractions on MCF-7 cell line Cells were treated extract/fractions at different concentrations (12.5, 25, 150, 200 µg/mL). After treatment for 24 h, cell viability was measured with the MTT assay. Values are the mean ± SD; different marks within treatments indicate significant differences at *p < 0.05.

DISCUSSION

Crude methanolic extract of *F.carica* was fractionated by using polar and non-polar solvents to acquire secondary metabolites rich fractions. Selection of appropriate method for extraction of phytochemical constituents is crucial step because it affects their characterization (Zhang etal., 2009). Extraction yield, TPC and TFC of extract and its derived fractions. Secondary metabolites present in plants are of great importance due to their medicinal values. Many researchers believed that phenolic act as protective agent against various diseases such as diabetes and inflammatory disorders (Hoensch et al., 2015). Phenolic compounds attain special attention due to their scavenging activity which is due to their ideal structure by which they donate electron to free radical and prevent oxidation. Phenolics are known for their antioxidant activity in humans.

Flavonoid belongs from polyphenol and in most of plants the highest concentration of flavonoid is present in peel of fruit, flowers and leaves. Flavonoids perform their function by inhibiting various enzymes; also prevent cell proliferation and apoptosis (Dudonne et al., 2009).

In vitro antioxidant activity was determined using DPPH, Hydrogen peroxide, ABTS , hydroxyl radical scavenging and ferric reducing assays because we could not rely only on single method to justify the antioxidant potential of the plant because different plants had different phytochemicals and they reacted differently in each method (Chanda et al., 2009).

DPPH assay was to use to determine the scavenging capability of *F.carica* extract/ fractions. DPPH is a purple colored stable molecule, which on reduction diminishes into yellow color.(The intensity of discoloration depends upon the scavenging activity(Alam et al., 2013). Maximum activity was exhibited by ethyl acetate fraction, because polar solvents can extract more phenols and flavonoids as compared to non-polar solvents as reported earlier (Schubert et al., 2007). According to many researchers, correlation between antioxidant activity, TFC and TPC of different plants is very strong (Tung et al., 2009). As the phenolic compounds have specialized structure which have capability to quench free radicals, the phenol ring present in them reduce the free radical and reduce the oxidative stress so they are responsible for antioxidant activity.

Hydrogen peroxide generated as the byproduct of biological reactions. It decomposed into hydrogen and water, which converted into hydroxyl radical, penetrates into membrane and cause lipid peroxidation (Bouaziz et al., 2015).The results suggested ethyl acetate fraction and methanolic extract of *F.carica* as efficient scavenger of hydrogen peroxide due to presence of phenols and other bioactive compounds which reduce hydroxyl radical by donating proton.

Protective effect of phenols against hydrogen peroxide has been already reported (Nakayama et al., 1994)

In ABTS assay there is formation of blue green colored ABTS radical cation due to reaction between ABTS and $K_2S_2O_8$. The presence of antioxidant compounds converts the blue / green chromophores into colorless solution by donating hydrogen to the free radical (Ksouri et al., 2009). The results obtained suggested that *F.carica* extract /fractions scavenge the free radical in dose dependent manner.

Hydroxyl is highly reactive and short lived radical, which lost the structural integrity of cell by damaging its DNA, protein and lipids resulting in cellular pathogenesis (Sahreen et al., 2010). *F.carica* extract and its derived fractions significantly reduced the concentration of hydroxyl radical might be due to presence of phytoconstituents which scavenge hydroxyl by addition of proton. Lowest IC_{50} was observed by ethyl acetate fraction as compared to other fractions.

In reducing power assay the ferricyanide complex reduced to ferrous by the reluctant present in solution which donates hydrogen (Rice-Evans et al., 1999). As the concentration increases, reducing power of *F.carica* extract and fractions also increases. The maximum reducing capacity was shown at highest concentration 250 µg/ml. The reducing power of extract/ fractions are in following order FCA>FCM>FCA>FCC>FCN.

Generation of free radicals caused cell damage which results into many diseases, especially cancer. The purpose of cytotoxicity assessment of plant extract is to find out there anticancer property. Organic extract and fraction(s) found to be most potent against MCF-7 cell lines as compared to non-organic *n*.hexane fraction.Aqueous fraction showed less anticancer property which might be due to lyophilicity, difference in size or polarity. Highly polar molecules are larger in size so they

are less permeable and might show low efficacy as compared to mild polar which can easily diffuse. Antioxidant compounds, particularly phenols may be responsible for cytotoxic activity of *F.carica.* Various studies have shown the protective effect of phenols as anticancer agent (Tannoury et al., 2016).

CONCLUSION

Ficus carica methanolic extract and its derived fractions exhibited strong antioxidant potential. Ethyl acetate fraction showed highest activity for different antioxidant assays may be due to presence of high phenolic and flavonoid content. Methanolic extract exhibited potent anticancer effect against MCF-7 cell line which may be due to presence of antioxidant compounds. Further investigations are required for isolation of antioxidant compounds from ethyl acetate fraction of *Ficus carica* methanolic extract.

Acknowledgements

I would like to thanks to Department of Biochemistry, PMAS Arid Agriculture University, Rawalpindi for providing facilities.

Conflict of Interest

The authors havedeclared that they have no conflict of interest.

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