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Original Article

SCREENING OF PHYTO-CHEMICALS, TLC PROFILING, TOTAL FLAVONOID AND PHENOLICS CONTENT, ANTI-OXIDANT ACTIVITY AND ANTI-MICROBIAL ACTIVITY OF FICUS BENGHALENSIS LINN AND FICUS RELIGIOSA LINN LATEX

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ABSTRACT

Objective: Screening for the presence of phyto-chemicals present in the plant extracts by qualitative assay along with Thin Layer Chromatography (TLC) investigation followed by determining the total flavonoids and phenolics content, anti-oxidant and anti-microbial effect.

Methods: Qualitative phyto-chemical analysis of the active plant extracts, TLC profiling, evaluating the total flavonoids and phenolics content along with in-vitro antioxidant activities like free radical scavenging effect, reducing power and phospho-molybdenum assay by standard protocols and evaluation of anti-microbial effectiveness against five different bacteria and a fungi by agar-well diffusion method. The micro-broth dilution method was used to assess minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC).

Results: The solvent fractions of both the plants were examined for qualitative phytochemical analysis had shown the presence proteins, alkaloids, flavonoids, steroids, glycosides, phenolics compounds, tannins, and terpenoids, confirmed by TLC profiling. The antioxidant activity was high in methanol extract (lower Inhibitory Concentration, IC_{50} values) of both plants which were in accordance with the total phenolics and total flavonoids content showing that they were responsible for antioxidant activity. Microbial strains used in the study were exposed to various concentrations of four solvent plant extracts. The largest zone of inhibition was obtained with ethanol extract against *E. coli* (19 mm) when compared with standard antibiotic streptomycin (10 µg/ml) for bacteria and nystatin (10 µg/ml) for fungi and Dimethyl Sulfoxide-DMSO (negative control). The MIC and MBC values done in triplicates were in accordance with antimicrobial activity. The antimicrobial effect was in accordance with the presence of flavonoids which is responsible for inhibition of growth of pathogenic micro organisms.

Conclusion: The results suggested that the extract can be used as an effective and safe antioxidant source, as ethno-medicine on the commercial basis of drug development for the well being of human kind.

Keywords: Preliminary Phyto-chemical analysis, TLC investigation, Anti-oxidant activity, Anti-bacterial activity, *Ficus religiosa* latex extracts and *Ficus benghalensis* latex extracts.

INTRODUCTION

The plant kingdom represents an enormous reservoir of biologically active compounds with various chemical structures and protective/disease preventive properties (phyto-chemicals). Medicinal plants being an effective source of both traditional and modern medicines are genuinely useful for primary health care. *Ficus religiosa*. L. and *Ficus benghalensis*. L belongs to the family Moraceae, has many medicinal properties. The barks have been used for diarrhoea, dysentery, leucorrhea, menorrhagia, for vaginal and other urogential disorders. Some reported pharmacological activity of *F. religiosa* like fruit extracts exhibited antitumor activity in the potato disc bioassay [1] Aqueous extract showed high antimicrobial activity against selected pathogenic like *B. subtilis* and P. *aeruginosa* [2]. So it may have antioxidant potential. An antioxidant is a molecule that slows or prevents the oxidation of the molecules. Antioxidants terminate these chain reactions by removing free radical intermediates and inhibit other oxidation reactions by being oxidized themselves. As a result, antioxidants are often considered as reducing agents such as thiols, ascorbic acid, polyphenols [3].

The methanolic extract of figs (fruits) of *Ficus religiosa* had anticonvulsant activity [4]. Anti inflammatory and analgesic effect of aqueous and methanolic bark extract of *Ficus bengalensis* has been evaluated. The methanolic extract shows significant anti inflammatory potential as compared to the aqueous extract. [5, 6] Thus, *Ficus* species are rich source of naturally occurring antioxidants of which phenolic compounds and flavanoids play a vital role in preventing innumerable health disorders related to oxidative stress including cardiovascular diseases, neurodegenerative diseases and cancer. *Ficus* species due to their strong antioxidant and biological properties are also known to diffuse the toxic free radical and can be used as a possible food additive or in nutraceutical and biopharmaceutical industries [7]. In the preview of above literature, *Ficus* latex (milky substance) was selected in the present study, for the isolation of desired phytochemical (flavonoids) which is responsible to exert Cytotoxic activity against certain cancer cell lines and conventionally to be used as chemotherapeutic agents. The biological functions of flavonoids, apart from their antioxidant properties, include protection against allergy, inflammation, platelet aggregation, infections, ulcers, heptato toxins and tumors [8]. The present study is to investigate the phyto-chemicals present in the plant extracts along with TLC investigation followed with determining the total flavonoids and phenol content, their anti-oxidant and anti-microbial activity.

MATERIALS AND METHODS

Collection of plant material

Fresh latex of two different healthy plants viz., *Ficus benghalensis* (L.), *Ficus religiosa* (L.) were selected and collected at early hours of morning from forest area of Warangal, Telangana. The latex from the bark by making an incision on tree trunk as well by pinching leaves was collected into a same clean container and stored at 4 °C for further laboratory purposes.

Solvent extraction

The collected latex was dried in the sun for five days and this dried latex (10 gm) was extracted in different solvents, successively in a range from non-polar to polar: ethyl acetate, acetone, ethanol and methanol by incubating 1 gm of latex in 5 ml of above mentioned four solvents kept for rotatory shaker (JS Research Inc. Instruments) at 200 rpm for 36 h at 31-35 °C. The solvent extract was subjected to centrifugation (Remi instruments) at 3500 rpm for 10 min where

the supernatant was collected and concentrated by evaporation and preserved at 5 °C in eppendorf tubes. This solvent extract was further used for all the analysis mentioned below.

Phyto-chemical analysis

Phyto-chemical analyses of each solvent extract were conducted to confirm the presence of phyto-chemicals, reducing sugars, saponins, flavonoids, steroids, terpenoids, tannins, alkaloids, resins and glycosides using standard methods [9]. Experiments were repeated 3 times and the results were presented here.

Thin-layer chromatography

TLC is a method for analyzing mixtures by separating the compounds based on the distance travelled and it was performed for four different solvents of plant extract on commercially available aluminum sheets of silica gel 60 F_{254}. The plant extracts were dissolved in the respective solvents and made up to 10 mg/ml concentrations, spotted on TLC plate, kept in 5 different solvent systems until it reaches $3/4^{th}$ of the plate. Allowed to dry and spots are detected by Iodine vapours and Rf values are calculated.

Estimation of total phenolic content

The total phenolic content was determined by the spectrophotometric method [10]. The mixture was prepared according to standard protocol, after which the absorbance was read at 750 nm. The TPC was determined from extrapolation of calibration curve which was made by preparing Gallic acid solution. The estimation of the phenolic compounds was carried out in triplicate. The TPC was expressed as milligrams of gallic acid equivalents (GAE) per g of dried sample.

Estimation of total flavonoid content

Total flavonoids content was determined following a method by [11]. The standard curve for total flavonoids was made using Quercetin standard solution under the same procedure as earlier described. The total flavonoid was expressed as milligrams of quercetin equivalents per g of dried fraction.

***In vitro* studies antioxidant assays**

Each sample was dissolved in the respective solvent to make a concentration of 1 mg/ml and then diluted to prepare the series concentrations for antioxidant assays.

DPPH radical scavenging activity assay

The free radical scavenging activity of the fractions was measured *in vitro* by 2, 2'-diphenyl-1-picrylhydrazyl (DPPH) assay [12, 13]. The control and plant extract samples was assayed by above said procedure. The scavenging activity was estimated based on the percentage of DPPH radical scavenged as the following equation:

Scavenging effect (%) = (Control absorbance _ sample absorbance) × 100
(Control absorbance)

Reducing power

The reducing power was based on Fe (III) to Fe (II) transformation in the presence of the solvent fractions [14]. The Fe (II) can be monitored by measuring the formation of Perl's Prussian blue at 700 nm. Higher absorbance of the reaction mixture indicates a higher reducing power.

Phosphomolybdate assay (total antioxidant capacity)

The total antioxidant capacity of the fractions was determined by phosphomolybdate method using ascorbic acid as a standard [15]. The anti oxidant capacity was estimated using following formula:

Antioxidant effect (%) = (control absorbance-sample absorbance) × 100
(Control absorbance)

Evaluation of antibacterial activity

Microbial cultures like *Bacillus subtilis (B. subtilis)* MTCC 511, *Staphylococcus aureus* MTCC 7443, *Klebsiella pneumonia* MTCC 3384, *Salmonella typhii* MTCC 98 were obtained from *Microbial Type Culture Collection, Chandigarh* and enteroxigenic *Escherichia coli (E. coli)* isolated from diarrhoeal patients and *Candida albicans* were used for antimicrobial activity and were maintained in the respective medium at 37 °C for 24 h and the assay was carried out using the agar well diffusion method [16]. Individual solvent extracts were re-suspended in 10% (v/v) dimethyl sulfoxide (DMSO) and were used to evaluate antibacterial activity *in vitro.* DMSO and Streptomycin (10 µg/ml) for bacteria and nystatin for fungi (10 µg/ml) were used as negative and positive reference controls, respectively.

Antibacterial activity by microdilution minimum Inhibitory concentration assay methods

The minimum inhibitory concentration (MIC) was determined by comparing the various concentrations of plant extracts which have different inhibitory effect and selecting the lowest concentration of extract showing inhibition [17]. The MIC was done in petri plates which were filled with Mueller Hinton Agar (MHA) and various concentrations of plant extract [18].

To determine the Minimum Bactericidal Concentration, the treated broth culture from well which is not showing any visible growth in MIC assay was cultured on new sterile MHA plates. The least concentration (highest dilution) of the extract that inhibits colony formation on a solid agar medium after incubation at 37 °C for 24 hr was considered as MBC. [19]. The experiment was done in triplicates and mean values were expressed.

Table 1: Qualitative phyto-chemical analysis

S. No.	Phyto constituents	Acetone		Ethyl acetate		Methanol		Ethanol	
		A	B	A	B	A	B	A	B
1.	Proteins	+	+	+	+	+	+	-	+
2.	Alkaloids	+	+	+	+	+	+	+	+
3.	Flavonoids	+	+	+	+	+	+	+	+
4.	Steroids	+	+	-	+	+	+	+	+
5.	Glycosides	+	+	+	+	+	+	+	+
6.	Phenolics compounds	+	+	+	+	+	+	+	+
7.	Tannins	+	+	+	+	+	+	+	+
8.	Terpenoids	+	+	+	+	+	+	+	+
9.	Quinones	-	+	+	+	-	-	-	-
10.	Coumerins	+	+	+	+	-	-	-	-
11.	Resins	+	+	+	+	+	+	-	-
12.	Reducing Sugars	-	-	-	-	-	-	-	-
13.	Phlobatannins	-	-	-	-	-	-	-	-
14.	Gums	-	-	-	-	-	-	-	-
15.	Anthraquinones	-	-	-	-	-	-	-	-
16.	Saponins	-	-	-	-	-	-	-	-
17.	Anthrocyanides	-	-	-	+	-	+	-	-

= Absence of phytochemical; += Presence of phytochemical, A = *Ficus benghalensis*; B = *Ficus religiosa*

Statistical analysis

All assays were carried out in triplicates, and results are expressed as mean±SD. ANOVA test was used to analyze the difference among IC50 values of various fractions for different antioxidant assays, with least significance difference (LSD) P<0.01 as a level of significance.

RESULTS AND DISCUSSION

Phyto-chemical screening

The leaf and bark (mixed) latex solvent extracts of selected *Ficus* plants were subjected to qualitative phyto-chemical for screening. The results revealed all most all the four solvent extracts of both the plants have proteins, alkaloids, flavonoids, steroids, glycosides, phenolics compounds, tannins, terpenoids, quinones, coumerins, resins, anthracyanides with few extracts exception. The latex from bark and leaves of both the plants shows the presence of few phytochemicals variable when compared among both the plants (table 1).

TLC Profiling

Results obtained on distances travelled by solvent front and extracts on performing the thin layer chromatography were analyzed and the Rf values were noted. The larger the Rf value, the lower the polarity of natural products or phytochemical. The number of spots and the Rf values clearly indicate that each latex solvent extract with different solvent systems has many phyto constituents present in them except than S3 (Formic acid: Toluene = 5:5) which has mostly given only single spot with methanol and ethanol extract in *F. religiosa* and acetone extract in *F. benghalensis*. Table 2 gives a complete data about the TLC profiling of both the plants bark and leaves solvent extracts.

Table 2: Result of TLC fingerprinting of *Ficus benghalensis* and *Ficus religiosa*

Name of the extract/Solvent Systems (S)	Methanol		Ethanol		Acetone		Ethyl acetate	
	Fb	*Fr*	*Fb*	*Fr*	*Fb*	*Fr*	*Fb*	*Fr*
S1 = B: C (7:3)	0.15, 0.43, 0.64	0.209 0.65	0.20, 0.49, 0.66	0.279 0.697	0.20, 0.50, 0.66	0.27 0.69 0.83 0.906	0.20, 0.52, 0.56	0.604 0.720 0.860
S2 = B: C: EA (4:2:1)	0.56, 0.756	0.65 0.93	0.18, 0.62, 0.88	0.639 0.75 0.81	0.60, 0.88	0.627 0.767 0.90 0.95	0.62, 0.88, 0.95	0.60 0.93
S3 = FA: T (5:5)	0.56, 0.756	0.756	0.60, 0.78, 0.95	0.768	0.78	0.756 0.90 0.95	0.70, 0.79, 0.92	0.78 0.90
S4 = FA: T: M (2.5:2.5:1)	0.68, 0.75, 0.95	0.708 0.958	0.70, 0.91	0.708 0.937	0.68, 0.89	0.687 0.79 0.937	0.68, 0.89	0.687 0.937
S5 = T: B (5:5)	0.2, 0.5, 0.65	00.16 0.625	0.27, 0.37, 0.55, 0.67, 0.95	0.2 0.65 0.825 0.925	0.22, 0.57, 0.7	0.2 0.425 0.675 0.85 0.925	0.55, 0.62, 0.7, 0.85, 0.95	0.65 0.825

B: Benzene; C: Chlorofom; EA: Ethyl Acetate; FA: Formic acid; T: Toluene; M: Methanol; Fb = *Ficus benghalensis*; Fr = *Ficus religiosa*

Total phenolics and flavonoids contents

Table 3 shows the presence of phenolics and flavonoids contents in all the plant latex solvent extracts. The methanol and acetone extract of *F. religiosa* possessed the highest phenolics content (19.95±0.9 and 19.86±1.4) mg GAE/gm while methanol extract of *F. benghalensis* comprised of high amount of phenolics (11.47±6.7) mg GAE/gm.

The lowest phenolics contents was noticed in ethyl acetate extract of *F. benghalensis* and *F. religiosa* (5.9±0.97 and 14.4±0.5 respectively) mg GAE/gm. Maximum flavonoids content were recorded in methanol extract of *F. benghalensis* and *F. religiosa* (8.6±3.1 and 14.2±0.7 respectively) mg QE/gm dry weight. The highest phenolic content was in co-ordinance with highest flavonoids content which was observed in methanolic latex solvent extract of both the plants.

Table 3: The total phenolics and flavonoids content of *Ficus* extracts

Plant Extract/ methods	*F. religiosa*				*F. benghalensis*			
	M	E	A	EA	M	E	A	EA
TPC (mg GAE/gm)	11.47±6.7	10.64±2.4	8.93±5.6	5.9±0.97	19.95±0.9	18.64±1.5	19.86±1.4	14.4±0.5
TFC (mg QE/gm)	8.6±3.1	7.3±1.8	4.7±1.1	2.66±0.39	14.2±0.7	8.21±1.3	10.3±1.9	8.5±3.0

* M = methanol, E = ethanol, A = acetone, EA = ethyl acetate. GAE = Gallic Acid Equivalent, QE = Quercetin Equivalent. Each value is the average of three analyses±standard deviation.

***In vitro* antioxidant activity**

DPPH radical scavenging activity

The scavenging activities of *Ficus* extracts were determined using free radicals of 2, 2–diphenyl 1–picrylhydrazyl (DPPH) (table 4).

According to Oszmianski *et al.* [20], the antioxidant activities against DPPH were correlated to the concentration, chemical structures, and polymerization degrees of antioxidants. Results has shown that methanol extract of *F. benghalensis* (IC50 21.75±0.12 µg/ml) and methanol extract of *F. religiosa* (IC50 28.63±0.16 µg/ml) possessed highest antioxidant activity as compared to other fractions while

lowest was observed in ethyl acetate fraction when compared with standard ascorbic acid (IC50 25.62±0.2 µg/ml).

Phosphomolybdenum assay

The principle underlying this assay is the reduction of Mo (VI) to Mo (V) by the plant extracts possessing antioxidant compounds. In the present study, methanol extract (IC50 32.5±1.2 µg/ml and 31.67±5.6 µg/ml) was more effective while the lowest were shown by ethyl acetate extract of both the plants when compared to reference chemical ascorbic acid (IC50 32.77 µg/ml) (table 4) which suggested the presence of effective antioxidants.

Reducing power assay

The reducing power of solvent extracts to reduce iron ion Fe (III) into Fe (II) was shown in table 4. The effective extract which has more antioxidant activity will have less IC50 value. The methanol extract of *F. benghalensis* and *F. religiosa* (IC50 value 43.5±1.2 and 41±1.9 µg/ml) respectively and the least is to ethyl acetate extract of *F. benghalensis* (IC50 73.4±2.4 µg/ml) as against the standard BHT (IC50 45.0±2.1 µg/ml).

Antibacterial activity

Results obtained in the present study revealed that the bark and leaves latex extracts of both the plants possess potential antibacterial activity against *B. subtilis,* enteroxigenic *E. coli, K. pneumonia, S. typhii and S. aureus*.

When tested by agar well diffusion method, the antibacterial activity against *E. coli* has maximum zone of inhibition of 19 mm in *F. benghalensis* ethanol extract. The anti–fungal activity against *C. albicans* was maximum (17 mm) with acetone and ethanol extracts of both plant solvent extracts.

The positive control (Streptomycin) used for the antibacterial activity measured 13 mm diameter, Nystatin in case of anti–fungal which has given 11 mm diameter and the negative control (DMSO) has shown no inhibition against all the six test pathogens (table 5).

Our findings confirm that the traditional therapeutic claims of this plant, in near future surely be able to replace the conventional anti-microbial agents.

Table 4: IC50 (µg/ml) values of *Ficus* extracts for various antioxidant systems

Plant extracts	*F. religiosa*				*F. benghalensis*				Standard
	M	E	A	EA	M	E	A	EA	
DPPH	21.75±0.12^{a}	35±0.18^{b}	42±0.58^{c}	60±0.37^{d}	28.63±0.16^{a}	32±0.51^{b}	52±0.12^{c}	76±0.34^{d}	25.62±0.2^{a}
Phospho molybdenum assay	32.5±1.2^{a}	42.4±3.4^{b}	45.9±2.2^{b}	76.1±0.9^{c}	31.67±5.6^{a}	42.7±1.4^{b}	60.8±2.9^{c}	192.6±0.5^{d}	32.77±1.7^{a}
Reducing Power	43.5±1.2^{a}	58±0.9^{b}	62.4±3.5^{c}	73.4±2.4^{d}	41±1.9^{a}	46.8±3.2^{a}	52.1±0.6^{b}	59.5±3.5^{c}	45.0±2.1^{a}

* M = methanol; E = ethanol; A = acetone; EA = ethyl acetate. Each value is the average of three analyses±standard deviation. Means not sharing the same letter are significantly different (LSD) at P<0.01 probability level in each row.

Table 5: Antimicrobial activity of *Ficus* solvent extracts against test organisms

Solvent	Conc. (mg/ml)	*E. coli*		*B. subtilis*		*K. pneumonia*		*S. aureus*		*S. typhoid*		*C. albicans*	
		Diameter of zone of inhibition in mm											
		Fb	Fr	Fb	Fr	Fb	Fr	Fb	Fr	Fb	Fr	Fr	Fb
Acetone	100	15± 0.8	15± 0.9	10± 0.5	16± 0.3	09± 0.8	10± 0.2	10± 0.5	10± 0.6	09± 0.8	10± 0.9	16± 0.8	17± 0.8
	50	14± 0.4	14± 0.0	10± 0.9	12± 0.4	09± 0.3	10± 0.6	10± 0.1	10± 0.8	09± 0.0	07± 0.1	13± 1.2	14± 0.9
	10	12± 0.9	12± 0.7	10± 0.3	10± 0.9	07± 0.8	07± 0.1	09± 0.2	10± 0.4	07± 0.8	07± 0.7	10± 0.6	12± 0.9
	0.1	10± 0.2	08± 0.1	10± 0.9	10± 1.2	07± 0.5	07± 0.7	08± 0.9	10± 0.5	07± 0.9	07± 1.2	09± 0.8	10± 0.9
Ethyl acetate	100	15± 0.9	15± 0.3	10± 0.1	09± 0.4	07± 0.1	08± 1.2	14± 0.3	10± 0.6	09± 0.1	12± 0.2	13± 0.5	14± 0.7
	50	14± 0.6	12± 0.4	08± 0.2	09± 0.8	07± 0.4	08± 0.5	11± 0.8	07± 0.7	09± 0.8	10± 0.7	10± 0.8	11± 0.9
	10	11± 1.2	12± 0.3	08± 0.1	05± 0.3	06± 0.2	07± 0.4	08± 0.1	07± 0.5	09± 0.2	07± 0.4	08± 0.7	10± 0.8
	0.1	09± 0.0	09± 0.6	08± 0.5	05± 0.5	05± 0.9	07± 0.4	08± 1.2	06± 0.4	08± 1.2	07± 0.0	07± 0.6	07± 0.9
Methanol	100	14± 0.8	14± 0.2	14± 0.6	14± 0.4	10± 0.4	09± 0.5	14± 0.7	09± 0.2	07± 0.9	10± 0.2	17± 0.8	16± 0.6
	50	14± 0.4	13± 0.9	14± 0.1	14± 0.2	08± 0.9	09± 0.3	11± 0.4	07± 0.7	09± 0.5	07± 0.9	14± 0.9	14± 0.7
	10	13± 0.7	10± 0.0	10± 0.9	11± 0.5	07± 0.6	07± 0.9	08± 0.1	07± 0.2	08± 0.1	07± 0.8	11± 0.6	11± 0.9
	0.1	13± 0.0	09± 0.1	08± 0.5	11± 0.8	07± 0.8	07± 0.1	07± 0.3	06± 0.5	07± 0.0	07± 0.3	08± 0.7	09± 0.8
Ethanol	100	19± 1.2	14± 0.1	15± 0.3	16± 0.0	10± 0.3	10± 0.9	12± 0.6	10± 0.3	11± 0.4	13± 0.6	15± 0.8	17± 0.9
	50	17± 0.8	13± 1.2	15± 0.6	12± 0.9	10± 0.7	10± 0.2	08± 0.3	10± 0.9	09± 0.2	10± 0.5	12± 0.8	13± 0.5
	10	15± 0.9	11± 0.4	12± 1.2	10± 0.3	08± 0.9	07± 0.6	07± 0.4	13± 0.8	07± 0.3	07± 0.8	10± 0.6	11± 0.9
	0.1	13± 0.2	09± 0.7	10± 0.0	10± 1.2	07± 0.2	07± 0.8	07± 0.9	07± 0.3	07± 0.4	07± 0.3	07± 0.8	09± 0.9
Strepto-Mycin	10 µg/ml	11±0.3		13±0.2		12±0.4		12±0.2		12±0.0		NA	
Nystatin	10 µg/ml	NA		NA		NA		NA		NA		11±0.4	
DMSO	10% (v/v)	------		------		------		------		------		------	

Fb = *Ficus benghalensis;* Fr = *Ficus religiosa;* Conc. = concentration; NA = not applicable; DMSO = dimethyl sulfoxide.

Minimum Inhibitory concentration and minimum bactericidal concentration values

Ethanol and Acetone latex extracts of both the plants were carried through this experiment in triplicates because they had the highest antimicrobial activities. Table 6 presents the mean values of MIC and MBC of both the plant latex solvent extracts which were studied from the range of 1.56 to 25.0 mg/ml in triplicates. The gram negative *K. pneumonia* is least sensitive, while ethanol extract of *F. benghalensis* and acetone extract of *F. religiosa* shows maximum zone of inhibition of 19 mm and 16 mm respectively and MIC and MBC of 1.56 mg/ml and 6.25 mg/ml respectively.

Table 6: MIC and MBC of *Ficus* ethanol plant extracts against test organisms

Plant/Micro–organism	*F. benghalensis*				*F. religiosa*			
	Ethanol		Acetone		Ethanol		Acetone	
	MIC (mg/ml)	MBC (mg/ml)	MIC (mg/ml)	MBC (mg/ml)	MIC (mg/ml)	MBC (mg/ml)	MIC (mg/ml)	MBC (mg/ml)
E. coli	1.56	6.25	3.125	12.5	3.125	12.5	1.56	6.25
B. subtilis	3.125	12.5	3.125	12.5	3.125	12.5	3.125	12.5
K. pneumonia	6.25	25.0	6.25	25.0	6.25	25.0	6.25	25.0
S. aureus	3.125	12.5	3.125	12.5	6.25	25.0	3.125	12.5
S. typhii	3.125	12.5	3.125	12.5	1.56	6.25	3.125	12.5

* Each value is the mean of the three analyses (triplicates)

DISCUSSION

Poly-phenolics flavonoids are universal in food and medicinal plants. They occur in the form of phyto-constituents like glycosides, flavonoids, phenolics acid and tannins which have phenolics hydroxyl groups responsible for strong antioxidant, scavenging activity of reactive oxygen species [21], anti-inflammatory, anti-carcinogenic and anti-atherosclerotic [22]. The present study results reveal that the presence of phytochemicals by qualitative analysis was confirmed by many number of spots on TLC sheets where in the methanol extracts of both the plants contains notable quantity of phenolics compounds endowed with high antioxidant activity. Literature reported that the bioactive fractions of various medicinal plants have free radical scavenging and antioxidant activity that can be employed in curing many diseases like cancer, tissue inflammation and cardiovascular disease [23-26]. Methanol extracts are more potent compared to other fractions and found in accordance with previous report [27, 28] exhibiting significant correlation as reported by Bortolomeazzi *et. Al* [29].

The results existed clearly indicated that in screening of various fractions of *Ficus benghalensis* and *Ficus religiosa*, methanol fraction marked scavenging effects, reduction potential of molybdate and iron with IC50 values much lower than standard phyto-chemicals used which infers that they have high antioxidant activity. Our results go in accordance with those of Shukla *et. Al*. [30] during the screening of *in vitro* antioxidant activity and total phenolics content of ethanol extract of *Stevia rebaudiana* Bert and Aqil F *et. al* [31]. Flavonoids are known for their anti-allergic effect as well as a wide variety of activity against Gram-positive and Gram-negative bacteria, fungi and viruses [32] could be attributed to the results of the antibacterial activities observed in the present study.

CONCLUSION

The results obtained in this study conclude that the plant latex extracts contain phenolics and poly phenolics compounds that have considerable value with respect to antioxidant activities. Our results suggested that the extract can be used as an effective and safe antioxidant source as well as ethno-medicine on the commercial basis of drug development for the well being of human kind.

COMPETING INTERESTS

The authors declare that they have no competing interests

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