

## PHYTOCHEMICAL AND ANTIOXIDANT ANALYSIS OF MEDICINALLY IMPORTANT PLANT *FICUS RELIGIOSA* L.

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### Abstract

The present study was undertaken to evaluate the ethnomedicinal prospective of locally found *Ficus religiosa* L. through experimental trials. Phytochemical and antioxidant activities of the plant parts i.e., leave and stem has been investigated separately. Initially the crude extracts were being prepared through maceration method in different polar (distilled water) and non-polar solvents viz., petroleum ether, chloroform and methanol. Later on different phytochemical tests were performed using both vegetative plant parts. Overall the plant is very active for the production of secondary metabolites as alkaloids, terpenoids, tannins, anthraquinone, cardiac glycosides and flavonoids hence possess the strong defense system. Saponins were present in plant leaves but found in negligible amount in stem. However phlobatannins and anthraquinones were absent in leaves contrary to stem. Moreover the total antioxidant assay and DPPH test was additionally performed in which both the plants parts separates in various solvents demonstrated various qualities in agreement to the accessible standard as BHT and  $\alpha$ -Tocopherol. The present study intends to refresh data on its pharmacological and phytochemistry exercises.

Keywords: Antioxidant potential, *Ficus religiosa* L. Leaves extract, Phytochemical analysis, Stem extract.

### Introduction:

*Ficus religiosa* (Family: *Moraceae*) usually called as 'Peepal tree' is a huge broadly spread tree with weathered heart-shaped with long tipped leaves on long thin petioles and purple natural products developing two in pairs (Shi *et al.*, 2014). The plants have been utilized in customary Asian drug for different scopes of illnesses. Generally the bark is utilized as an antidiarrhoeal, antibacterial, antiviral, antiprotozoal in the treatment of ulcer, gonorrhoea and the leaves utilized for skin maladies. The leaves detailed antibody movement and manages the menstrual cycle (Ghimire and Bastakoti, 2009). Organic products (fruits) are utilized for the treatment of asthma, other respiratory issue and scabies. Fiber from *F. religiosa* produces hyperlipidemia (Jain and Jain, 2016).

The stem bark of *F. religiosa* are accounted for phyto constituents of tannins, alkaloids, phenols, flavonoids, steroids,  $\beta$ -sitosterol-D-glucoside, n-octacosanol, nutrient K, lupen-3-one and stigma sterol (Chandrasekar *et al.*, 2010). The dynamic constituent from the root concentrate of *F. religiosa* was observed to be  $\beta$ -sitosterol-D-glucoside, which demonstrated a peroral hypoglycemic impact in fasting. The organic products have 4.9% protein having the fundamental amino acids viz., isoleucine and phenylalanine (Ezuruike and Prieto, 2014). The seeds contain phytosterol,  $\beta$ -sitosterol and its glycoside. *F. religiosa* organic products encompass flavonols to be specific quercetin, kaempferol and myricetin (Khare, 2008).

Antioxidative properties of the of *F. religiosa* extract products of the soil were finished utilizing various solvents. They were assessed based on 'oil stability index' along with their 'radical scavenging capacity' alongside 1, 1-diphenyl-2-picrylhydrazyl (DPPH) (Ghara and Ghadi, 2016). Oxidative pressure and oxidative harm to tissues are basic end purposes of incessant illnesses, for example, rheumatoid joint inflammation, atherosclerosis, and diabetes. 'Oxidative stress' in diabetes exists together with a decrease in the cancer prevention agent status, which can further expand the malicious impacts of free radicals. Watery extract of *F. religiosa* lessens oxidative stress in tentatively actuated sort II diabetes rodents. Diminishing in take up of glucose, free unsaturated fats

from dissemination and quickened  $\beta$ -oxidation in fat tissue lead to weight reduction in diabetes. The watery concentrate of *F. religiosa* improved the body weight of diabetic rodents (You and Nicklas, 2006). The methanolic concentrate of *F. religiosa* leaves hinders the creation of nitric oxide and 'professional incendiary cytokines in LPS (lipopolysaccharide) animated microglia by means of mitogen initiation protein kinase (MAPK) pathway by utilizing cell reasonability test, nitric oxide test, and ELISA (enzyme linked immunosorbent assay).

The concentrate applies solid mitigating properties in microglial enactment. Almost certainly, extricate has a neuroprotective impact against irritation by fiery go between, for example, nitric oxide and cytokines (Jung *et al.*, 2008). As of late, the methanolic concentrate of *F. religiosa* has been accounted for to have neurotrophic impacts and acetyl cholinesterase inhibitory action (Vinutha *et al.*, 2007). Subsequently, the present examination assesses the fundamental phytochemical investigation and cell reinforcement movement of leaves and stem concentrates of *F. religiosa* clarify your aim of conducting this study.

### Materials and Methods

The following experiment was designed (figure 01) to perform the pharmacological effects of leaves and stem parts of *F. religiosa*.

1. *F. religiosa* collection and preservation from Bagh-e-jinnah.
2. Solvent extraction by maceration method in non polar and polar solvents e.g., petroleum ether, chloroform, methanol and distilled water (Khalid *et al.*, 2016).
3. Phytochemical activity of plant extracts according to Jamil *et al.* (2012).
4. Antioxidant evaluation of the plant extracts was done by total antioxidant assay by Prieto *et al.* (1999) was performed.

5. Statistical analysis of total antioxidant assay was done by using analysis of variance ANOVA (Alfonso *et al.*, 1990).

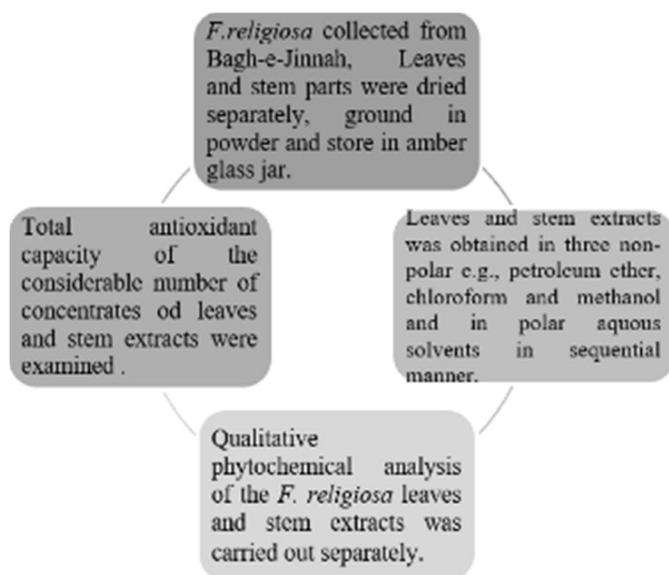


Figure 1: Schematic diagram of experimental design.

### Results and Discussion

'Medicinal plants' are the neighborhood legacy with the worldwide significance. World is enriched with a rich abundance of therapeutic plants. Restorative plants additionally assume a significant job in the lives of rustic individuals, especially in remote pieces of creating nations with couple of wellbeing offices (Prakash *et al.*, 2017). The present study reveals that *F. religiosa* contains several phytoconstituents like alkaloids, saponins, coumarins, terpenoids, tannins, phlobatannins, cardiac glycosides, anthraquinones, and flavonoids that relates that *F. religiosa* harbor many phytoconstituents like  $\beta$ -sitosteryl-D-glucoside, vitamin K, n-octacosanol, kaempferol, quercetin and myricetin (Chandrasekar *et al.*, 2010). By and by there is an expanding premium worldwide in herbal drugs joined by expanded research facility examination concerning the pharmacological properties of the bioactive fixings and their capacity to treat different illnesses. Various medications have entered the worldwide through investigation of ethnopharmacology and customary prescription. Albeit logical investigations have been done on countless Indian botanicals, an extensively more modest number of attractive medications or phytochemical substances have entered the proof based therapeutics. Endeavors are in this way expected to set up and approve proof in regards to wellbeing and practices of Ayurvedic drugs (Choudhary and Sekhon, 2011; Sultana and Anwar, 2008). Secondary metabolites in *F. religiosa* leaves and stem parts were indicated by applying nine different phytochemical tests. The results of the leaves sample of *F. religiosa* showed that alkaloids, terpenoids, tannins, anthraquinone, cardiac glycosides, flavonoids, saponins are present. Hence the secondary metabolites such as alkaloids, terpenoids, tannins, anthraquinone, cardiac glycosides, flavonoids, phlobatannins and anthraquinones are found in stem sample while saponins are present in negligible amount as shown in table 01.

The fluid concentrate of dried bark of *F. glomerata*

showed portion subordinate cancer prevention agent action, assessed by site explicit and non-site explicit cell reinforcement movement. The concentrate has appeared of flavonoids, phenolics, terpenoids, starches and alkaloids. The cell reinforcement movement might be credited to flavonoids and phenolics present in the medication (Sirisha *et al.*, 2010). In this research work, appearance of yellow color of leaf and reddish orange colour in stem sample indicated the presence of flavonoids as shown in table 01. In this way, *Ficus* species because of their solid antioxidant and organic properties are additionally known to diffuse the dangerous free radical and

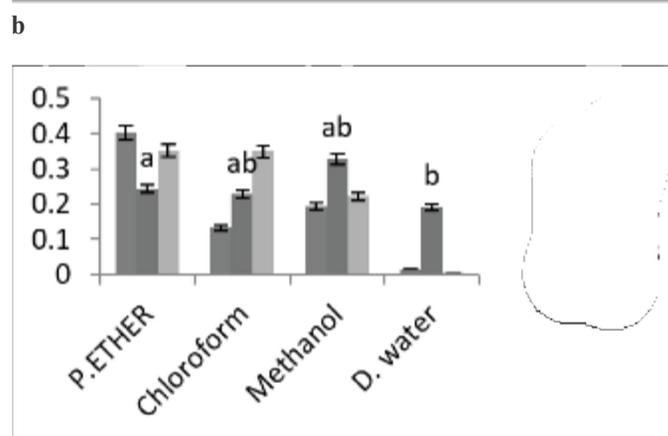
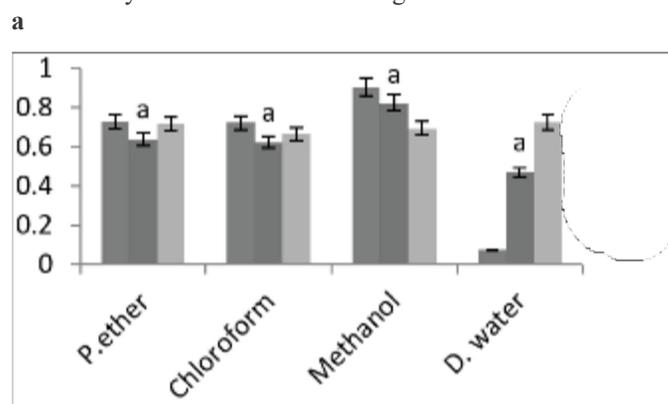


Figure no. 02: Antioxidant activity of various leaves (a) and stem (b) extract of *F. religiosa* in different solvents (non-polar and polar) indicated at X-axis and standard variation values at Y-axis

can be utilized as a conceivable nourishment added substance or in nutraceutical and biopharmaceutical businesses (Santiago and Mayor, 2014). In relevance to this study, *F. religiosa* leaf and stem both showed good antioxidant activity as shown in table 02 and figure 2. Overall leaves extracts showed strong antioxidant activity as compared to stem extracts.

**Table 01. Illustrates presence/absence of phytochemicals in leaves and root extract of *F. religiosa*.**

Test name	Plant parts	Result	Inference
Alkaloids	Leaves	Creamish precipitate/orange precipitate	+
	Stem		+
Saponins	Leaves	persistent froth	++
	Stem		-
Coumarins	Leaves	No yellow florescence detected	-
	Stem		-
Terpenoids	Leaves	blue-green ring appeared	++
	Stem		+
Tannins	Leaves	brownish- green coloration appeared	+
	Stem		+
Phlobatannins	Leaves	red precipitation	+
	Stem		+
Cardiac glycoside	Leaves	blue green coloration	+
	Stems		+
Anthraquinones	Leaves	reddish pink color appeared	-
	Stem		+
Flavonoids	Yellow/reddish orange color	Leaves	+
		Stem	+

Presence or absence of compounds is indicated by '+' or '-' sign respectively.

**Table 02: Antioxidant readings of various extracts of *F. religiosa* in different solvents by total antioxidant assay.**

Plant Portion	Absorption at 695 nm				
		Petroleum ether	Chloroform	Methanol	Distilled Water
Leaves	R1	0.728	0.722	0.905	0.072
	R2	0.638	0.623	0.824	0.468
	R3	0.717	0.666	0.693	0.724
	Standard deviation	0.69 ± 0.04 <sup>a</sup>	0.67 ± 0.04 <sup>a</sup>	0.80 ± 0.10 <sup>a</sup>	0.42 ± 0.32 <sup>a</sup>
Stem	R1	0.403	0.132	0.194	0.015
	R2	0.243	0.228	0.329	0.192
	R3	0.351	0.349	0.222	0.001
	Standard deviation	0.33 ± 0.08 <sup>a</sup>	0.23 ± 0.10 <sup>ab</sup>	0.24 ± 0.07 <sup>ab</sup>	0.06 ± 0.10 <sup>b</sup>

<b>Standards</b>	$\alpha$ -Tocopherol : 0.513	BHT: 0.476	Blank: 0.026
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