

**PHYTOCHEMICAL SCREENING AND INVITRO ANTIOXIDANT ACTIVITY OF  
UNRIPE FRUIT OF FICUS HISPIDA****Varalakshmi Lattupally\*, Amrutham Sruthi, Sudha Mudurukolla, Adla Sangeetha and Katta Sarika**Avanthi Institute of Pharmaceutical Sciences, Approved By AICTE, PCI, NAAC, JNTUH, Gunthapally, Hayath Nagar,  
Hyderabad -501512.**\*Corresponding Author: Varalakshmi Lattupally**Avanthi Institute of Pharmaceutical Sciences, Approved By AICTE, PCI, NAAC, JNTUH, Gunthapally, Hayath Nagar,  
Hyderabad -501512.

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**ABSTRACT**

Chemical constituents such as Flavonoids, glycosides, alkaloids, tannins, proteins, phytosterols etc, present in plants, these chemical constituents are responsible to treat many diseases, free radicals accumulation in the body causes many diseases, antioxidants are substances that protects cells from the damage caused by free radicals, medicinal plants have antioxidant property, so the aim of the present study was to evaluate the *invitro* antioxidant activity of methanol extract of unripe fruit of ficus hispida Linn, family: Moraceae. Methanolic extract of unripe fruit of ficus hispida have been evaluated for *in vitro* antioxidant activity using DPPH radical scavenging and ascorbic acid was used as a standard, unripe fruits possess significant free radical scavenging properties at concentration-dependent manner. The results show that unripe fruit of ficus hispida has an antioxidant activity.

**KEYWORDS:** Ficus hispida, Ascorbic acid, invitro antioxidant activity, DPPH.**INTRODUCTION**

Free radicals and oxidants play a dual role as both toxic and beneficial compounds, since they can be either harmful or helpful to the body. They are produced either from normal cell metabolisms *in situ* or from external sources (pollution, cigarette smoke, radiation, medication). When an overload of free radicals cannot gradually be destroyed, their accumulation in the body generates a phenomenon called oxidative stress. This process plays a major part in the development of chronic and degenerative illness such as cancer, autoimmune disorders, aging, cataract, rheumatoid arthritis, cardiovascular and neurodegenerative diseases.<sup>[1]</sup>

Antioxidant plays a major role in protecting our body from disease by reducing the oxidative damage to cellular component caused by ROS.<sup>[2]</sup> investigations suggest that the plant origin antioxidants with free-radical scavenging properties may have great therapeutic importance in free radical mediated diseases like diabetes, cancer, neurodegenerative disease, cardiovascular diseases, aging, gastrointestinal diseases, arthritis, and aging process. Many synthetic antioxidant compounds have shown toxic and/or mutagenic effects, while relatively plant-based medicines confer fewer side effects than the synthetic drug in some instances.<sup>[3]</sup>

*Ficus hispida* commonly called hairy fig, it belongs to family Moraceae, it is a shrub to moderate sized tree and

grows well in damp and in shady places, distributed throughout the India. It is used in traditional medicine for the treatment of various diseases. Fruit, seed and bark contain  $\beta$ -sitosterol, beta-amaryn, n-tryacontanylacetate, glucolacetate, hispidine, phenanthraindolizidine alkaloid, Bergapten, psoralein.<sup>[4]</sup> Almost all parts of the plant can be used for the treatment of various ailments such as emetic, anti-diarrheal, antitussive, astringent, hepatoprotective, antipyretic, anti-inflammatory, depurative, vulnerary, haemostatic, antiulcer agent as well as in the treatment of anemia.<sup>[5]</sup>

Herbal plants contain and produce a variety of chemical substances used as a remedy for treating diseases. Medicinal plants have antioxidant properties, unripe fruit of ficus hispida (Linn.) was selected for invitro antioxidant activity based on its availability and Activity has not been scientifically investigated. Methonolic extracts of ficus hispida possess significant free radical scavenging properties at concentration-dependent manner.

**MATERIALS AND METHODS****Plant material**

The plant *ficus hispida* (unripe fruit) was collected from Salem, Tamilnadu, India, The collected plant material was identified and Plant material was subjected to extraction.<sup>[6]</sup>

### Preparation of plant extract

The collected unripe fruit of *figus hispida* (Linn.) was dried under shade for 10 days and then made into a coarse powder. The dried powder material of fruit (240gm) was first extracted with petroleum ether (60-80°C) in the soxhlet apparatus for 12 hrs for defatting purpose, after complete defatting, the powder material was extracted with methanol (60-70°C). The methanolic extract of *figus hispida* (MEFH) yielded a brown residue and stored in air tight container.

### Phytochemical screening

The Methonolic extract of *figus hispida* was subjected to qualitative Phytochemical analysis for detection and identification of various plants constituent's present.<sup>[7,8]</sup> Phytochemical screening of the extract was performed by using the following reagents and chemicals: Carbohydrates with Molisch test, Alkaloids with Dragendorff's reagent, Flavonoids with Shinoda test, saponins with foam test, proteins and amino acids with Xanthoprotein test. These were identified by characteristic colour changes using standard procedures.<sup>[9]</sup> (Table: 1)

**Chemicals required:** 1, 1-diphenyl-2-picrylhydrazyl (DPPH) and Ascorbic acid (Reference standard).

### In vitro antioxidant activity

*In vitro* Antioxidant activity has been performed by DPPH method. Scavenging activity of antioxidant was studied by using DPPH (1,1-diphenyl-2-picrylhydrazyl free radical).

Various concentration of test solution such as 2.5, 5, 10, 25, 50 and 100µg/ml in 0.1ml was added to 0.9ml of 0.1 Mm solution of DPPH in methanol. Methanol only (0.1ml) was used as experimental control.

After 30 min of incubation at room temperature, the reduction in the number of free radical was measured by reading the Absorbance at 517 nm. Reference standard (Ascorbic acid) tested at 1,2,4,8,16µg/ml. The scavenging activity of the Samples corresponded to the intensity of quenching DPPH.<sup>[10,11]</sup>

The percent inhibition was calculated from the equation  

$$\% \text{ inhibition} = \frac{[(\text{Absorbance of control} - \text{Absorbance of test sample}) / \text{Absorbance of control}] \times 100}{100}$$
<sup>[12]</sup>

Methonolic extract were tested for *invitro* anti oxidant activity. (Table: 2 & 3)

## RESULTS AND DISCUSSION

Table 1.

S. No	Tests	Pet. ether extract	Methanol extract
1	Carbohydrates	—	+
2	Glycosides	—	—
3	Proteins and Amino acids	—	+
4	Fixed oils & fats	+	—
5	Gums and mucilage	—	—
6	Alkaloids	—	+
7	Phytosterols	—	—
8	Flavanoids	—	+
9	Phenolic compounds	—	+
10	Saponins	—	+
11	Tannins	—	—

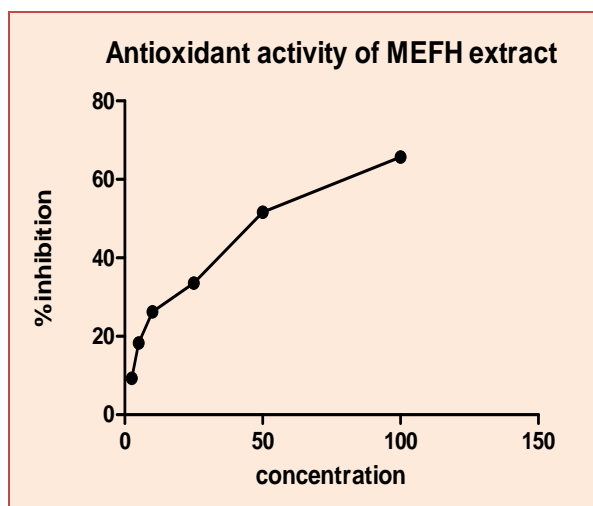
*In vitro* antioxidant activity of methanol extract of *Ficus hispida*. The values are expressed in mean  $\pm$  standard error mean. Extract is tested at 2.5,5,10,25,50 and

100µg/ml, The concentration of ascorbic acid varied from 1 to 16 µg/mL.

### Percentage inhibition of Methanolic extract

Table 2.

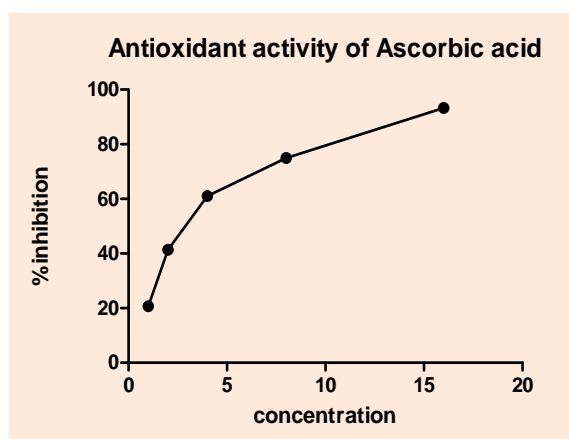
S.No	Concentration (µg/ml)	Absorbance	%inhibition
1	Control	0.726	-
2	2.5	0.658	9.3%
3	5	0.593	18.3%
4	10	0.534	26.24%
5	25	0.482	33.6%
6	50	0.351	51.65%
7	100	0.249	65.70%
	-	0.513 $\pm$ 0.063	34.13 $\pm$ 8.62



Percentage inhibition of standard (Ascorbic acid)

Table 3.

S/no	Concentration µg/ml	Absorbance	%inhibition
1	Control	0.726	-
2	1	0.575	20.7%
3	2	0.425	41.4%
4	4	0.283	61.0%
5	8	0.182	74.93%
6	16	0.048	93.3%
		0.302±0.09	58.26±12.66



## DISCUSSION

*Ficus hispida* belongs to family- Moraceae. Unripe fruits were collected, dried and extracted with organic solvents. Preliminary Phytochemical screening of crude extract of the unripe fruit of *Ficus hispida* Revealed the presence of carbohydrates, proteins and amino acids, Alkaloids, Flavonoids, saponins, Phenolic compounds etc.

Methanolic extract of unripe fruits of *Ficus hispida* shows 9.3 % inhibition at 2.5 µg/ml and 65.70% inhibition at 100 µg/ml (IC<sub>50</sub> value was observed 45µg/ml)

Standard (Ascorbic acid) shows 20.7%inhibition at 1 µg/ml and 93.3 % inhibition at 16µg/ml (IC<sub>50</sub> value was observed 3.12µg/ml). Methanolic extract of unripe fruit of *Ficus hispida* and standard ascorbic acid shows DPPH

free radical scavenging activity in a concentration dependant manner.

## SUMMARY AND CONCLUSION

The *Ficus hispida* (Linn.) unripe fruit, Family: Moraceae has been observed for its Phytochemical investigation and Pharmacological evaluation. The Phytochemical investigation of Methanolic Extract of *Ficus hispida* (Linn.) unripe fruit showed the presence of Flavonoids, saponins, Alkaloids, Carbohydrates, Phenolic compounds were identified. The methanolic extract of the unripe fruit of the *Ficus hispida* produced a Significant antioxidant activity (*in vitro*) using ascorbic acid as reference standard in a concentration dependant Manner.

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