

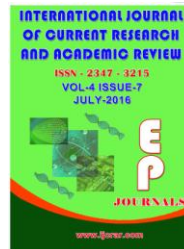


## International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 4 Number 7 (July-2016) pp. 44-49

Journal home page: <http://www.ijcrar.com>

doi: <http://dx.doi.org/10.20546/ijcrar.2016.407.006>



### Screening of Laxative Effect of Leaves of *Ficus auriculata*

Mathew George, Lincy Joseph and Nimisha M. Paul\*

Pushpagiri College of Pharmacy, Thiruvalla-689107, Kerala, India

\*Corresponding author

#### KEYWORDS

*Ficus auriculata*,  
laxative,  
phytochemical,  
hydroalcoholic

#### A B S T R A C T

The aim of the paper is to evaluate the laxative effect of *Ficus auriculata*. In-vivo laxative effect was studied using the castor oil method. The hydroalcoholic extract of leaves are used for study. *Ficus auriculata* Lour (Moraceae) is a type of fig tree seen all over Asia, noted for its big and round leaves. It is a perennial evergreen shrub or small tree that grows up to 12m high. Primary phytochemical screening of hydroalcoholic leaf extract shows the presence of carbohydrates, flavonoids, tannins, phenolic compounds. This plant is popular in indigenous system of medicine like Ayurveda, siddha, Unani and homeopathy. Various plant parts such as bark, root, leaves, fruits and latex are used in dysentery, diarrhoea, diabetes, stomach ache, piles and as carminative, astringent and also as antioxidant and anticancer agent.

#### Introduction

This research article emphasizes on traditionally used clinically potential plant *Ficus auriculata*. *Ficus auriculata* is a huge tropical, deciduous and evergreen tree with more than 800 species. Bark, root, leaves, fruit and latex of this plant are commonly used for the treatment of various illnesses. *Ficus auriculata* produces a unique fruit which is actually an inverted flower. Ficus species are rich source of polyphenolic compounds, flavonoids which are responsible for strong antioxidant properties that help in prevention and treatment of various oxidative stress related diseases such as neurodegenerative and hepatic diseases.

Leaves are crushed and the paste is applied on the wounds for curing. *Ficus auriculata* has a very tasty fruit. And the fruit is very much liked by all. The fig is a very juicy fruit. It contains B-sitosterol, friendelin and epifriedlanal isolation from Egyptian plant.

#### Plant Description

A deciduous woody tree, having a short trunk, which soon divides into a few stout laterals, which further- branch irregularly, spreading in all directions; height. 10-12 metres; bark, smooth, grey, with a tinge of yellow or green. Leaves are exstipulate,

petiolate, each having an 8.5 cm-long. petiole, deciduous, obtuse, cordate, entire to undulate, alternate, 21.5 cm long, 23.5 cm. broad, having reticulate venation. Flowers are unisexual; inflorescence, hypanthium, both the male and female flowers are borne on the fleshy receptacle; the male flowers, 4 mm long; the female flowers, 6 mm long the calyx and the corolla, modified into threadlike scales; stamens, very small, about 2 mm long; style, long, deeply two-branched; ovary, single, ovoid. Fruit are syconoid, globose, having a 4.5-cm-long stalk, 4.5 cm in diameter. 30.55 g in weight, 30.12 ml in volume; the apical opening of the fruit, guarded by scales; mature fruits are yellowish to purple; pulp is light red. The fruit is, in fact, a fleshy receptacle, enclosing a number of true fruits or achenes, which develop from the female flowers lying within this receptacle. Seeds are numerous and are very small. They are eaten along with the fruits. The flowering starts from the first week of March and continues till the end of April. The fruiting season was observed to last from the first week of June to the end of July. The average yield of a tree of *Ficus auriculata* was recorded to be 32.4 kg. This study is to evaluate the laxative effect of the leaf extract of this plant.

### **Materials and Methods**

All the experimental studies and chemical examinations were performed in the laboratory and CPSEA registered animal house.

#### **Plant materials**

The leaves of the plant were obtained from Ernakulam district in Kerala, India.

#### **Preparation of plant extract**

The leaves were shade dried, powdered and then were extracted with 80% aqueous

ethanol by maceration process at room temperature for 72 hours. The extract was filtered and then filtrate was concentrated to obtain a semisolid product, which was further used for in-vivo studies.

### **Experimental animals**

Albino rats of either sex, weighing 150-180g are used for the studies.

### **Acute toxicity studies**

As per guidelines set by the Organisation of Economic Cooperation and Development (OECD – 423) guidelines, the animals were weighed and the extracts were administered in a single dose as 1% suspension in CMC, by oral intubation, food was withheld for the study with a dose of 2000mg/kg body weight.

Animals were observed individually at every 30 minutes, periodically during the first 4 hours, and daily for total of 14 days.

Additional signs of toxicity were observed like, changes in body weight, skin and fur, eye and mucous membrane, respiratory system and also observe for tremors, convulsions, salivation, diarrhoea, sleep and coma.

The absence or presence of compound related mortality of the animals are determined. Any mortality during experiment was observed and recorded.

### **Phytochemical screening**

Phytochemical screening was performed for plant leaf extract.

### **Test for carbohydrates**

Mix equal volume of Fehling's solution A and B, boil for 1 minute and add equal

volume of extract. Heat in a boiling water bath for 5-10minutes. Brick red precipitate formation is the indication of presence of carbohydrates.

**Benedict's test:** to 5ml of Benedict's reagent, 1ml of extract solution was added and boiled for 2minutes and cooled. Red precipitate indicates the presence of carbohydrates.

### **Test for proteins**

**Biuret test:** To 3ml of extract solution add 4% sodium hydroxide and few drops of 1% copper sulphate solution. Violet colour indicates the presence of proteins.

**Lead acetate test:** A fraction of extract was treated with 1ml of lead acetate. White precipitate formation is the indication of proteins.

**Ninhydrin test:** 3ml of extract solution was heated with 3 drops of 5% ninhydrin solution in a boiling water bath for 10minutes. Purple colour indicates the presence of proteins.

### **Test for glycosides**

**Legal test:** The extract was dissolved in pyridine and sodium nitroprusside was added to make it alkaline. Pink red to red colour indicates the presence of glycosides.

**Killer-killiani test:** To 2ml of extract, glacial acetic acid, one drop of 5% ferric chloride were added. Reddish brown at the junction of two liquid layers. Bluish green colour in the upper layer shows the presence of glycosides.

**Borntrager's test:** A few ml of dilute sulphuric acid was added to 3ml of extract solution. It was then heated, filtered. To the

solid filtrate, added equal volume of benzene and chloroform. The chloroform layer was then treated with 1ml of ammonia. Red colour indicates the presence of antraquinone glycosides.

### **Test for saponins**

**Foam test:** The extract was vigorously shaken with water. Persistent foam indicates the presence of saponins.

### **Test for flavonoids**

**Sodium hydroxide test:** Addition of increasing amount of sodium hydroxide to the extract. Yellow colour which decolourises after addition of an acid indicates the presence of flavonoids.

### **Test for alkaloids**

**Dragendroff's test:** A fraction of extract was treated with Dragendroff's reagent and observed for formation of yellow coloured precipitate.

**Wagner's test:** A fraction of extract was treated with Wagner's reagent. Reddish brown precipitate indicates presence of alkaloids.

### **Test for tannin**

**Lead acetate test:** A fraction of extract was treated with few drops of lead acetate solution. White precipitate shows presence of tannins.

### **Test for phenolic compounds**

**Ferric chloride test:** To extract solution add few ml of 5% ferric chloride solution was added. Formation of black colour indicates the presence of phenolic compounds.

### Laxative screening method

Healthy adult albino rats of Wistar strain weighing 180 – 250g of either sex were used for this study. The animals obtained from animal house and are placed in poly propylene cages with paddy husk / sawdust as bedding. Animals were housed at a temperature of 24+2°C and relative humidity of 30- 70%. A 12:12 light: dark cycle was followed. All animals were allowed to free access of water and feed with standard commercial pelleted rat chow.

Albino rats (200-300g) of either sex were obtained from animal house. Each were starved for about 12 hours prior to experiment, but was allowed to have free access to water. Group of at least six rats weighing 150-200g of either sex, were fed on standard diet for 3 days, with water adlibitum.

In this model, group I served as normal control received normal saline (1ml/kg), group II served as solvent control (0.5% CMC, 1ml/kg p.o), group III served as standard received castor oil (0.2ml/rat p.o) whereas group IV animals received extract of *Ficus auriculata*.

Then each rat was kept for observation under transparent cage, the floor of each was lined with blotting paper and observed for 5 hours.

The parameters observed were, numbers of wet faecal pellets, total number of faecal pellets output. Then calculations were made for the correspondent percentages and later by comparison with respective control group.

### Results and Discussion

Phytochemical screening of the *Ficus auriculata* reveals the presence of carbohydrates, flavonoids, tannins, phenolic compounds.

The test group animal has shown laxative effect when compared with standard. The laxative effect may be due to the presence of various phytochemicals such as flavonoids, tannins, phenolic compounds. The plant has not been studied for its effectiveness in gut disorders. The current study was designed to provide scientific evidence to the ethnobotanical uses of the plant in the treatment of constipation.

**Table.1** Laxative effect of *Ficus auriculata* leaf extract

Animal and weight	Dose	Total number of faecal pellets (Mean ± SEM)
Control (152g)	Saline 1ml/kg	0.5 ± 0.54**
Standard (160g)	0.2ml castor oil	11 ± 0.89**
Test (164g)	0.328g extract	5.5 ± 1.04**

### Conclusion

Laxatives are drug which promote defecation. Since normal size, frequency and consistency of faecal output are difficult to define objectively and may have

a wide inter-individual variation depending on personal habit and sociological pattern, there is a tendency to abuse laxative drugs. Though laxative agents have their valid uses; majority of causes of constipation can

be managed by increasing dietary intake of fibres, regular exercise, adequate water intake and bowel training with reassurance. Laxatives may enhance the motility of the colon, thereby reducing the available time for absorption of electrolytes and water. *Ficus auriculata* is an important plant for various pharmacological activity as well as the plant possess high nutritional value. The leaf extract of this plant has shown laxative effect.

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**How to cite this article:**

Mathew George, Lincy Joseph and Nimisha M. Paul. 2016. Screening of Laxative Effect of Leaves of *Ficus auriculata*. *Int.J.Curr.Res.Aca.Rev.*4(7): 44-49.  
doi: <http://dx.doi.org/10.20546/ijcrar.2016.407.006>