

# A REVIEW ON MEDICINAL BENEFITS OF FICUS RACEMOSA

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## Abstract

Medicinal plants have great importance in the field of therapeutics, to treat various severe ailments. One of the medicinal plant known as *Ficus racemosa*. It is famous with a name of fig tree. This is an evergreen plant, parts of the plant are traditionally used as edible, fodder and ceremonial rituals. This plant has several therapeutic uses in the traditional system. All parts of the plant are involved in medicinal cure. Parts of the plant contain no. of phytochemicals which are responsible for fighting with ailments. With its traditional uses, fig has many biological properties like antitussive, chemo preventive, hepatoprotective, anti-inflammatory, antidiuretic and antipyretic, which will be discussed in this article.

## KEYWORDS

*Ficus racemosa*, chemo preventive, therapeutics.

## INTRODUCTION

*Ficus racemosa* (syn. *Ficus glomerata* Roxb.) is a species of plant in the family Moraceae. Popularly known as the cluster fig tree, Indian fig tree or gular fig, Udumbara, this is native to Australia, Malaysia, Indo-china and the Indian subcontinent. Moraceae family consist large taxa of over fifty genera and nearly, 1400 species, including some important groups like Artocarpus, Morus and Ficus. Ficus has around 850 species worlds over, includes woody trees, shrubs, vines, epiphytes, and hemiepiphytes belonging to the family Moraceae.

## Vernacular names

Hindi	: Gular, Umar
Beng	: Dumar, Jagya domar
Mar	: Umbar
Guj	: Umar, Gular
Tel	:Atti bodda, paidi, udumbara
Tamil, Kan, Mal	: Athi
Oriya	: Dimpri <sup>1</sup>
Sans	: Udumbarah, Sadaphakh
Assam	: Janyedumuru, Yagyadimru
English	: Cluster Fig, Country fig <sup>2</sup>

## Distribution

The tree is not epiphytic and is found throughout the greater parts of India in moist localities. e.g. along banks of streams and sides of ravines. It is found also on rocky slopes, almost gregariously. It is often cultivated around villages for its edible fruits<sup>1</sup>.

Gular is common throughout India except where frost occurs in the sub-Himalayan tract and Punjab. It is seen all over India, where they are either grown or seen naturally<sup>3</sup>.

## Climate and soil

It is naturally coming up in waste lands and forests. This requires well drained, medium to heavy soil for its successful cultivation. It is also found to be tolerate to lime sulphates and chlorides and can be thus used for planning in industrially polluted sites. However, it is not resistant to carbonates of sodium, potassium. It comes up in all kinds of soil except in water logged and clay types.

## Habits and features

Moderate to large sized spreading laticiferous, deciduous tree without much prominent aerial roots. It is an evergreen tree, 15-18 m high, young shoots glabrous.<sup>4</sup>

## Leaves

Dark green leaves 7.5-15×3.2-6.3 cm, ovate – oblong (or) elliptic, lanceolate, tapering to a blunt point at the apex, with entire margins glabrous on both surfaces, base acute and rounded 3 nerved, lateral main nerves 4-6 pairs, petioles 1.3-3.8 cm long, glabrous stipules 2 cm long, ovate – lanceolate, scarios, pubescent. Leaves shed by December, replenished by January and April when the tree becomes bare for a short period.

## Inflorescence

Hypanthodium- Three kinds of flowers are borne, sterile, male and female flowers together in one receptacle of hypanthodium. The male flowers forming a zone near the mouth, the fertile female flowers forming a layer in the walls of the receptacle and the gall flowers an internal layer. Receptacle short pedunculate on short leafless warted branches which issue from the stem and later branches much contracted at the base when young<sup>5</sup>.

## Flowers

Basal bracts 3, ovate-triangular, Male flower sessile, sepals 3-4 membranous, inflated enveloping the 2 elongate ovate anthers, filaments connate. Fertile female flowers sub-sessile, perianth gamophyllous with 4 or 5 long lanceolate teeth enveloping the small minutely tuberculate achene, style sub-terminal, stigma clavate. Gall flowers pedicellate, perianth gamophyllous, irregularly toothed covering only the base of the rough ovoid style, lateral elongate, stigma clavate.

## Fruits (syconium)

Fruits are sub-globose, pyriform 1-2 inches in diameter, beautiful when ripe red in colour with depressed umbilicus. Smooth or pubescent, edible but usually full of worms. They are seen clustered on leafless branches from the trunk and larger branches but very rarely axillary. Fruits borne in great perfusion, mature generally from March to July. When fully ripe, they have a pleasant odour, resembling that of cider apples. The syconns develops from a hollow, pear-shaped fleshy receptacle which encloses a number of minute male and female flowers. The receptacle grows and becomes fleshy encloses a number of fruits or achene which develop from the female flowers lying within the receptacle.

## Bark

The bark is astringent, rusty brown with a firmly smooth and soft surface, thickness from 0.5-2 cm according to the age of the trunk or bark surface with minute separating flakes of whitish tissue, texture homogenous leathery.

**Parts used** - Root, bark, leaves, fruits, milky juice<sup>6</sup>.

## Action

Fruits – Laxative, Improves blood, cooling

Bark leaves and unripe fruits – Astringent, Carminative, Stomachic, Vermicide.

## Medicinal uses

**SEED** - Powder of the seed mixed with honey is regarded a specific in diabetes, reducing sugar in the urine, thirst and polyuria of diabetes.

**LEAVES** - Young leaves crushed or reduced to powder or ripe figs mixed with honey or sugar are administered in bilious affections. Decoction prepared with a handful of leaves boiled in four pints of water is given with benefit every morning as a douche in dysmenorrhoea.

**MILKY JUICE** - Milky juice is administered in piles and diarrhoea.

**FRUITS** - Fruit is edible, it is given on apthous complaints, menorrhagia, haemoptysis with sugar and honey. Fruit when boiled in milk, it is a good remedy for visceral obstructions. In the diarrhoea of the pregnant women, the fruit with honey is given. Fruit and sap extracted from the trunk of the tree are efficacious in diabetes. Fruits are suppressor of pitta and effective in removing srama and sophia. The powder from the roasted fruits form a valuable breakfast food, almost similar to imported grape nuts. Fruits may be dehydrated ground into flour and taken with milk and sugar or used for preparing cold jelly. Fresh juice of ripe fruit is given as an adjunct or vehicle to a metallic medicine for diabetes and other urinary complaints. Dried fruit one tola with sugar and honey is given in cases of menorrhagia and haemoptysis<sup>7</sup>. The fruit is sweetish useful in chronic bronchitis, dry cough, loss of voice, diseases of the kidney and the spleen.

**BARK** - Bark, leaves and unripe fruit are used externally and internally in dysentery. Bark is used in the form of fine powder in dysentery and diabetes; “menorrhagia”, and in combination with gingelly oil, it is applied to cancerous affections.

Infusion of the bark is given in diabetes. "An Infusion of the bark and leaves is also employed as mouthwash in spongy gums and internally in dysentery, menorrhagia and haemoptysis" It is astringent, a decoction of it is used as a wash for wounds. The bark is useful in asthma and "piles". Leaves and bark are used as poultice for eczema.

**ROOTS** - Root is used in pectoral complaints and dysentery. A decoction of two tolas of roots is recommended in menorrhagia, dysentery. The sap of root gives relief in diabetes (T-R. Mudaliar) and is usefully applied in cases of mumps and root-juice is applied externally to other inflammatory glandular enlargements. The root is useful in hypochondria.

### Phyto-chemicals

A new tetracyclic triterpene – Glauanol acetate – isolated from leaves, bark and heartwood. Two Leucoanthocyanins isolated from stem and bark.  $\beta$  – Sitosterol and an unidentified long chain ketone isolated from bark. Ceryl behenate, lupeol, lupeol acetate  $\alpha$  – amyryl acetate and three unidentified compounds isolated from stem bark. Glauanol isolated from fruits. A glucoside rich fraction from leaves have reported hypotensive and cardiac-depressive effects. It has no effect or behaviour in rats or an isolated tissue preparation. Extract of fruit later did not show any significant effect on blood sugar of diabetes rats. They inhibited only glucose-6-phosphate but not arginase from rat liver. Petroleum ether extract of bark significantly reduced blood level of rats streptozotocin induced diabetes. It completely inhibited glucose-6 phosphate and arginase but activated glucose-6-phosphate dehydrogenase from rat liver<sup>8</sup>.

### Pharmacological action of *Ficus racemosa*

#### Antitussive activity

The antitussive potential of the methanol extract of the bark was evaluated in sulfur dioxide gas-induced cough in mice. The extract demonstrated significant antitussive activity comparable to that of codeine phosphate (10 mg) a standard antitussive agent<sup>9</sup>.

#### Antipyretic activity

The methanol extract of the bark given at a dose of 200 and 300 mg/kg bw showed a significant dose-dependent reduction in body temperature in both normal and yeast-induced pyrexia in albino rats. The antipyretic effect of the extract was comparable to that of paracetamol (150 mg/kg bw) a standard antipyretic drug<sup>10</sup>.

#### Gastroprotective Activity

Anti-ulcerogenic effect of 50% ethanol extract of unripe fruits of *F. racemosa* (100, 200, and 300 mg/kg) was studied in ethanol 4 h pylorus ligation-induced gastric ulcer in rats. The extract produced significant antiulcer activity at all the doses studied and the effect at 300 mg/kg dosage was comparable with that of sucralfate (250 mg/kg). Similar antiulcer effect comparable with that of sucralfate was exhibited by the methanol extract of unripe fruits of *F. racemosa* (100, 200, and 400 mg/kg) in gastric ulcer models induced by aspirin and cold restraint stress<sup>11</sup>.

#### Hepatoprotective activity

The hepatoprotective activity of petroleum ether extract of *F. racemosa* leaves was evaluated in carbon tetrachloride/paracetamol-induced chronic liver damage. Oral administration of the leaf extract (400 mg/kg) exhibited a significant reduction in the levels of SGOT, SGPT, alkaline phosphatase and serum bilirubin. The activity of the extract was comparable with that of Neutrosec<sup>12</sup>

The methanol extract of the bark when given orally along with CCl<sub>4</sub> at the doses of 250 and 500 mg/kg body weight (bw) showed a significant hepatoprotection as evident by the reversal of increased serum transaminases comparable to that of silymarin histological changes<sup>13</sup>.

#### Hypoglycemic activity

Methanol extract of the stem bark at doses of 200 and 400 mg/kg exhibited significant hypoglycemic effect in both normal and alloxan-induced diabetic rats, comparable to that of glibenclamide (10 mg/kg), a standard antidiabetic agent. The petroleum ether extract of the fruits (200 mg/kg) exhibited a significant anti-hyperglycemic activity in alloxan-induced diabetic mice<sup>14</sup>.

**Anti-inflammatory activity**

Anti-inflammatory activity in *Ficus racemosa* extract was carried on carrageenin, serotonin, histamine, and dextran-induced rat hind paw oedema models. The extract showed anti-inflammatory activity at doses of 200 and 400 mg/kg and found the results to be significant comparable to phenylbutazone<sup>15</sup>.

**Chemo preventive Activity**

Treatment of rats with *Ficus racemosa* extract (200 mg/kg body weight and 400 mg/kg body weight) resulted in significant decrease in xanthine oxidase, lipid peroxidation, gamma glutamyl transpeptidase activity. Overall, thus *Ficus racemosa* extract is a potent chemo preventive agent and suppresses potassium bromated mediated nephrotoxicity in rats<sup>16</sup>.

**FICUS RACEMOSA (ATTHI) IN SIDDHA LITERATURE****Other Names**

Atham, Athavu, Udumbaram, Kozhi and Supirathashtam.

“Atthinuda perthanaiyae ariya kelu  
alagana adhumaasha virusham  
Itthiendra yaematharuthasa kabalamagum  
Yaethamam thirusiyamam pushpiyagum  
Kutthiendra atthialukka kutrulakalaman  
Kooriya apushpa palavagum  
Sithiendra kadiviruchi panjakathi vendran  
Seppiyadho rathiuda seyalumamae”

Adhumashavirusham, Yaemadharu, Dhasakabalam, Thiruchium pushpin, Kpushpabala, kadiviruchi panjathi<sup>17</sup>.

**Varieties**

- |                             |  |
|-----------------------------|--|
| 1. Cluster (or) country fig | - <i>Ficus racemosa</i> , <i>Ficus glomerata</i> |
| 2. Red fig                  | - <i>Ficus heterophylla</i>                      |
| 3. Foreign fig              | - <i>Ficus carica</i>                            |
| 4. Jungle fig               | - <i>Ficus hispida</i>                           |
| 5. Devil fig                | - <i>Ficus oppositifolia</i>                     |
| 6. Creeper fig              | - <i>Ficus repens</i>                            |
| 7. Stone fig                | - <i>Ficus scadens</i>                           |
| 8. Mountain fig             | - <i>Ficus macro carpa</i>                       |
| 9. Tall fig                 | - <i>Ficus excelsa</i>                           |
| 10. Small fig               | - <i>Ficus polycarpa</i>                         |
| 11. Glossy long leaved fig  | - <i>Ficus jabela</i>                            |
| 12. Sand paper fig          | - <i>Ficus asperrima</i>                         |
| 13. Yellow fig              | - <i>Ficus callosa</i> <sup>18</sup>             |

**Properties of Athi Pattai**

“Veeru kadupiratham venseedha rathamodu  
Naaruvira nangalelam naadaavam-koorunkaal  
Atthitharu megampom aiyzhaiyae! Engyandrum  
Atthipaar pattai kari.”

Athi pattai cures ano rectal discomfort, excessive bleeding, dysentery, ulcers and leucorrhoea<sup>19</sup>.

**Siddha Medicines which includes Athi**

S.No.	Medicine	Dosage	Indication
1.	Udumbathi Kashayam	30ml twice a day	Perumbadu (Menorrhagia)
2.	Shayakulandha Legium	5g twice a day	Eela i(Tuberculosis), Irumal (cough), Malaturoham (Infertility),
3.	Aavarai nei	1 karandi	Mega neerizhivu (Diabetes), Adaipu (urinary incontinence)
4.	Karpoorathi chooranam	130mg with honey	Gunmam (gastric ulcer), Piramegam (leucorrhoea)
5.	Karisalai legium	Punnaikai alavu	Paandu (anaemia), Veekam (oedema), Arosagam (anorexia)
6.	Kodasoozhi mathirai	1 mathirai	Diarrhoea
7.	Adhividaya mathirai	1 mathirai with honey	Kazhichal (diarrhoea), Suram (Fever),

Kabam (cold)

**CONCLUSION**

The genus *Ficus* constitutes an important group of trees with immense medicinal value. Different parts such as fruit, leaves, stem, seeds, latex have been recommended for various ailments. *Ficus racemosa* showed a wide range of pharmacological actions. Bioactive constituents like  $\beta$ -sitosterol, glaucan acetate in *Ficus racemosa* L., has been found to be largely responsible for the therapeutic potentials. More clinical and pathological studies should be conducted to investigate the active potentials of bioactive compounds present in this plant which can help in proving its medicinal values.

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