COMPREHENSIVE REVIEW ON PLANT FICUS RACEMOSA LINN

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ABSTRACT

Ficus racemosa (Family Moraceae) commonly known as the cluster fig tree or gular. It is very popular in indigenous system of medicine like Ayurveda, Siddha, Unani & homoeopathy. In the traditional system of medicine whole part of plant is used such as bark, root, leaves fruits & latex are used in dysentery, diarrhea, diabetes, stomachache, menorrhage, haemoptysis, piles, anti-ulcer, anti-oxidant, anti-asthmatic, leucoderma Memory enhancing activity in Alzheimer's disease. The review article is related to give detailed description about *F.racemosa* Pharmacognostical, Phytochemical & Pharmacological uses.

Index term: Ayurveda, indigenous system, Memory etc.

Medicinal plants used for treatment of Alzheimer's disease

1. St John's wort (*Hypericum perforatum*)
Hypericum is herbaceous plant with height of 30-80 cm. It has spoon-shaped and sessile leaves with numerous cavities of essential oil. Flowering branches and leaves of this plant contain various compounds like essential oils, tannins, hayperciyn, hayperpyron, choline & flavonoids. Hypericum include amelioration of neurological diseases, antidepressant, anti-anxiety, anti-inflammatory, wound healing and analgesic effect.

Hypericum contains flavonoids such as quercetin and quercitrin which shows free radical scavenging activity, antioxidant activity of quercetinis also reduces lipid peroxidation. From experimentation, we found that active constituents of Hypericum improve passive avoidance memory in mice via shuttle box.

2. Maca (*Lepidium meyenii*)
Maca grows at altitude of 3500-4500 meters in the Andes of Peru. Maca aqueous extract and hydro alcoholic extract increase memory and learning deficits induced by scopolamine (1 mg/kg) in mice for 35 days of dosing. Scopolamine increases the brain AChE level up to 1.5 times. Maca extract reduces brain AChE activity by 45% compared to the group that received only scopolamine.

3. Woundwort (*Prunella vulgaris*)
P.vulgaris is widely distributed in Korea, Japan, China & Europe. It contains several active compounds such as oleic acid, ursolic acid, butyric acid, flavonoids and rosmarinic acid. It has anti-inflammatory, anti-allergy, antioxidant, antimicrobial and antiviral activity.

P.vulgaris show beneficial effect on memory & learning via increase cholinergic neurotransmitters and methyl-D-aspartate receptor signalling.

4. Nagermontha (*Cyperus rotundus*)
Cyperus rotundus belongs to the family cyperaceae. The rhizome of plant is rich in essential oils that contains pinene, a little cineole, terpenes & isoeiprol. Ethanolic extract of *C.rotundus* rhizome contains anti-AChE activity.

5. Lavender (*Lavandula officinalis*)
Lavandula officinalis, also known as lavender. This is widely used in the cosmetics and perfumes industry .Its flowers are purple and its flower-stalk are used. Lavender has a very pleasant smell and a bitter taste & its essential oil is yellow or greenish yellow in colour with pleasant aroma.

Many chemical compounds are isolated from the lavender extracts like geraniol, linalool, linalyl acetate, cineol, borneol, aflapin, camphor, butyric acid, valerianic acid, ursolic acid, & luteolin flavonoids, some of them effects central nervous system, causing calming & soothing effects through GABA receptor. Ethanolic extract of lavender improves spatial learning and memory, motor coordination and passive avoidance learning, its neuroprotective effects may be due to its antioxidant properties.

6. Ginkgo (*Ginkgo biloba*)
G.biloba, is native to china and now cultivated in Europe and America. *G.biloba* extract treat insufficiency of blood circulation problems, especially in the brain that

causes of memory loss, loss of consciousness, headaches, and depression in the elderly.

The antioxidant and free radical scavenging properties of *G.biloba* extract inhibits the cognitive function in brain. *G.biloba* extract inhibits the AChE activity; reduction in AchE activity indicates an increase in the level of acetylcholine.

7. Ginseng (Panax ginseng)
Ginseng root used for boosting energy. Ginseng extract may enhance cognitive and psychomotor functions and improve brain cholinergic function, minimizing the level of Aβ, and repair neuronal networks.

8. Ashwagandha (*Withania somnifera*)
Ashwagandha is widely used as a nervine tonic, aphrodisiac, adoptogen. It possess antioxidant activity, free radical scavenging activity & ability to improve immune system. Aqueous extract of herb have been found to increase cholinergic activity & increase acetylcholine, choline acetyl transferase activity this helps in memory improving effect.

9. Turmeric (*Curcuma longa*)
Turmeric is a rhizomatous herbaceous perennial plant of the ginger, family zingiberaceae. Turmeric is anti-inflammatory, antiseptic & anti bacterial etc. It reduces oxidative damage & reversed the amyloidal pathology in Alzheimer's disease.

10. Shankhpuspi (*Convolvulus pluricaulis*)
It is used for nervous disorder such as stress anxiety, mental fatigue, & insomnia. It improve learning and memory.

11. Gotu kola (*Centella asiatica*)
In the ayurvedic system of medicine, gotu kola is important herb for nerve & brain cells it has potency of increasing intelligence, longevity & memory.

12. Jyotismati (*Celastrus paniculatus*)
Jyotismati used in traditional medicinal system. The plant is widely used in ayurveda for sharpening the memory & improves concentration, cognitive function.

13. Guggulu (*commiphora mukul*)
This plant is an oleo gum resin exudation from obtain from incision of bark. Guggulu contains ferulic acid phenol, non-phenolic aromatic acid. It is useful in Alzheimer's disease, it has anticholinestrase activity & inhibits the β–amyloid forming amyloidogenic pathway.

14. Jatamansi (*Nardostachys jatamansi*)
The plant is popularly used in Ayurvedic system of medicine. The rhizome & root of the plant have medicinal value. They contains many sesquiterpines and coumarine derivative.

15. Nettle (*Urtica dioica L.*)
Stinging Nettle treat allergy symptoms, such as hayfever. It contains biologically active compounds that prevent inflammation. Stinging nettle is also useful in the improving condition of Alzheimer's patients.

16. *Guduchi(Tinosporacordifolia)*
Tinospora Cordifolia (*Guduchi*) possesses a memory enhancing property. *Tinospora Cordifolia's* mechanism for cognitive enhancement is by immunostimulation and synthesis of acetylcholine, this supplementation of choline enhances the cognitive function.

17. *Acorus(AcoruscalamusL.)*
Acorus Calamus (Sweet flag) (Araceae) having a beneficial memory enhancing property for memory impairment, learning performance, and behavior modification. *Acorus Calamus* inhibits the acetyl cholinesterase (AChE). *Acorus Calamus* also shows anti-inflammatory, antioxidant, antispasmodic, cardiovascular hypolipidemic, immunosuppressive, cytoprotective, ant diarrheal, antimicrobial, and anthelmintic activities

18. *Gular (Ficus racemosa)*
It is commonly known as Gular. It is cherished tree for Hindus and Buddhist. It having various properties like antidiuretc, antitussive, antihelmintic, antibacterial, antipyretic, Wound healing, antifilarial, antidiarrhoeal, anti-inflammatory, analgesic, hepatoprotective, antifungal, hypoglycemic, anti-Alzheimer's, antiulcer etc.

Ficus Racemosa
The *Ficus racemosa* is an important group of trees it has many chemical constituents of medicinal value. It is an evergreen, moderate lactiferous deciduous tree 15-18 m height, without much leading aerial roots. *Ficus racemosa* has various synonyms like Udumbara, Gular, cluster Fig, yajnayoga, yajnanga, country fig tree, crattock, Rumbodo, atteeka, Redwood etc. This is used in ritual sacrifice. It is commonly known as **''Gular''**, all parts of Gular are medicinally important in the treatment of biliary disorders, jaundice, dysentery diabetes, diarrhea and inflammatory conditions. *Ficus racemosa* stem bark exhibit several biological activities such as in-vitro antidiabetic, in vivo antihyperglycemic, hepatoprotective effect. It is cultivated for its fruit, shade and medicinal purpose. It serves as a food plant for the caterpillars & butterflies of northern Australia. The plant is a large deciduous tree distributed all over India from outer Himalayan ranges, Punjab, Khasia mountain, Bihar, Orissa, West Bengal, Rajasthan, and common in south India.

Figure No. 1: Plant of *Ficus racemosa*.

Habit and Habitat
This plant grows all over India in several forests and hills. The bark is reddish grey and often cracked. The tree is medium tall, growing 10-16 meters in height. Ficus trees are tropical forest plants.

Taxonomy
Kingdom   : Plantae
Division   : Magnoliophyta
Class   : Magnolipsida
Order   : Rosals
Family   : Moraceae
Genus   : Ficus
Species   : F.racemosa
Synonyms : F.glomerata Roxb

Vernacular Names
Panjabi: Guular, **English:** Cluster fig, **Hindi:** Guular, **Kanada:** Atti, **Gujarati:** Umaraa, **Assamese:** Jagna dimaru, **Odiya:** Dimbiri, **Telugu:** Medi pandu, **Tamil:** Malaiyin munivan, **Malayalam:** Aththi, **Bengali:** Jogdumur, **Nepal:** Dumn.

Pharmacognostical characteristics
Macrosocopy
F.racemosa is native to Australia, south East Asia and the India Subcontinent. It is found mainly in hills an forests It is about 18 m tall with quite green leaves that provide shade. The **leaves** are dark green, 7.5-10 cm long, ovate or elliptic, in bunch from old nodes of main trunk. The **fruit** are 2-5 cm in diameter and greenish colour when unripe, becomes orange and dull reddish or dark crimson on ripening.

The **roots** are long and brownish in colour. *F.racemosa* having characteristics odour and slightly bitter in taste. **Bark** is reddish grey, soft surface uneven and often cracked 0.5-1.8 cm thick.

Microscopicpy
The leaves of plant contain epidermal cells & palisade cells are also observed. The lignified sclerenchyma cells frequently present in between the palisade tissue. The cork is made up of rectangular cells or polygonal cells. The cortex is wide and having numerous sclereids and some cortical cells contain resinous mass. Phellogen is made up of 1-2 layers of thin walled cells. Prismatic crystals of calcium oxalate and few clustered crystals are also present. Starch grains are ovoid to spherical.

Chemical composition
The stem bark of ficus racemosa contain tannin, wax saponin gluanol acetate, β-sitosterol leucocyanidin -3-o-β-D-glucopyrancoside, ceryl behenate, lupeol acetate, α-amyrin acetate, leucoanthocyanidin and leucoanthocyanin from bark. Fruit contains gluanol acetate, glucose, tiglic acid esters of taraxasterol, lupeol acetate, higher hydrocarbons, friedelin, and other phytosterols.

A new tetracyclic triterpine glaunol acetate which is characterized as 13α, 14β 17βH, 20 α H-lanosta-8, 22-diene -3β acetate and racemosic acid were isolated from leaves.
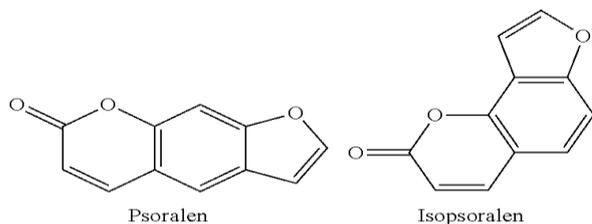
Medicinal use of *Ficus racemosa*
Ficus racemosa Linn has been used in wide range of disease. It's all parts are useful like fruit, bark, leaves, roots, Latex.

Bark
Bark is useful in abortion and also useful in diabetes hiccough, leprosy, dysentery and piles.

Leaves
The leaves are useful for wounds and ulcers. They are useful in dysentery and diarrhea, abscess, chronic wounds cervical adenitis and haemoptysis.

Fruit
The fruits are astringent, stomachic, refrigerant, dry cough, loss of voice, disease of kidney and spleen, styptic, useful in leucorrhoea, blood disorder, burning sensation, fatigue, urinary discharges, leprosy, intestinal worms and carminative, miscarriage, menorrhagia, cancer, scabies, haemoptysis and visceral obstructions.

Roots
Roots are used in dysentery pectoral complaints and diabetes applied in mumps, hydrophobia.

Latex
Latex is aphrodisiac and given in the hemorrhoids diarrhea, diabetes, boils, traumatic swelling, toothache and vaginal disorder.

Root sap
It is used for treatment of diabetes.

Litrature Review
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CONCLUSION

The present review contains the entire summary related to pharmacognostical study, pharmacological study, and phytochemical study. The Phytohemical test performed on the various extracts of *F.racemosa* leaves shows the presence of phenols flavonoids, quinones & steroids in major quantities present in nearly all extracts. Tannins, cardiac glycoside present in moderate quantity in ethanol & in methanol.

Terpenoids & saponins present in leaves of *F.racemosa*. The plant is used from ancient times it having incredible properties which is beneficial for several diseases like anti-pyretic, anti-diuretic, anti-bacterial, leukemia, wound healing, anti-filarial, diabetes, gonorrhea, urinary disease, hemorrhage, leucorrhoea.

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