

FICUS RACEMOSA LIN- GOOLER A REVIEW**Prashant Kumar Dubey^{1*}, Phoolsingh Yaduwanshi¹ and Vinod Gouttam¹**

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Article Received on
25 April 2018,Revised on 15 May 2018,
Accepted on 05 June 2018

DOI: 10.20959/wjpr201812-12653

Corresponding Author*Prashant Kumar Dubey**IES Institute of Pharmacy,
Kalkheda, Ratibad Main
Road, Bhopal 462048.**ABSTRACT**

Ficus Racemosa Lin is a large tree dedicious tree distributed throughout India particularly in evergreen forests and moist localitie. Root bark, leaves fruit and galls are part of tree used for therapeutic activity. Bark, leaves and unripe fruits having various pharmacological activity like Antibacterial Activity, Analgesic activity, Anti-inflammatory Activity, Cardioprotective Activity, Hepatoprotective Activity, Anti-filaria, Anthelmintic, Renal Anticarcinogenic, carminative, astringent, stomachic and vermicide charecter. The chief chemically constitutes are gluanol acetate, beta-sitosterol, leucocynedin and leaf chemically contain beta-amyrin, beta-sitosterol and tannin. Fruit chemically contain lupeol-OAc, glucose, sterol and gluanol-OAc.

KEYWORDS: *Ficus racemosa*, Cardioprotective, Anticarcinogenic, gluanol-OAc, leucocunedin.

INTRODUCTION

Ficus Recemosa Lin is a large dedicious tree distributed throughout India particularly in evergreen forests and moist localitie. Root bark, leaves fruit and galls are part of tree used for therapeutic activity. Bark, leaves and unripe fruit are carminative, astringent, stomachic and vermicide. As mentioned in the *Ayurvedic Nighanthus* that the infusion of the bark, fruit and leaves is cooling, sweet and astringent.^[1] The bark chemically constitutes of gluanol acetate, beta-sitosterol, leucocynedin and leaf chemically contain beta-amyrin, beta-sitosterol and tannin. Fruit chemically contain lupeol-OAc, glucose, sterol, and gluanol-OAc.

India is known for its rich diversity of medicinal plants and hence called botanical garden of the world.^[2] Many of the natural products in plants of medicinal value offer us new sources of drugs which have been used effectively in traditional medicine. *Ficus racemosa* Lin has

various synonyms like Udumbara, yajnanga, yajniya, ajnayoga, yajnyasara, gular, Cluster Fig tree, Country fig tree etc. It has been used in ritual sacrifice. It is one of the ksiri vriksha – latex oozes out when the leaves are cut or plucked.^[3] It is one of the plants from a group, called pancavalkala, meaning the thick bark skins of five herbs, viz. udumbara, vata, asvattha, parisa and plaksa. The decoction of pancavalkala is used internally or for giving enema in bleeding per rectum and vagina. Maharishi Charka has categorized udumbara as mutra sangrahaniya – anti-diuretic herb.^[1]



Fig. 1: *Ficus Racemosa* Lin.

Table 1: Taxonomic Classification of *Ficus racemosa* Lin.^[4]

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnolipsida
Order	Urticales
Family	Moraceae
Genus	<i>Ficus</i>
Species	<i>racemosa</i>

Table 2: Vernacular Names of *Ficus racemosa* Lin.^[5,7]

S. no.	Language	Names
1.	Sanskrit	Yajnayoga, Sadaphalah, Brahanvrkisha, Shitavalkah, Sutah, Udumbara, Gular, Mashakin, Jantukaphalah, Jantuphalah, Krmiphalah, Vasudrumah, Saumya, Hemadugdhaka, Jantumati, Yagniyah, Audumbara
2.	Hindi	Pushp-hina, Pani Bhuj, Dumar, Goolar, Umari, Yajnyadumbur, Udumbara, Jantu Phal, Dharma Patra, Goolar
3.	English	Gular fig, Cluster Fig, Country Fig
4.	Bengali	Udumbara
5.	Telugu	Brahmamamidi, Atti, Bodda
6.	Gujrati	Goolar, Umbaro

7.	Manipuri	Heibong
8.	Malayalam	Atthi, Atthi Al, Aththi, Atthi-al, Udumbaram, Jantuphalam
9.	Marathi	Umbar, Udumbar
10.	Urdu	Dumar
11.	Others	Goolar, Atthi, Atteeka, Athi, Crattock, Country Fig, Dumrii, Cluster Fig, Vellaiatthi, Gular Fig, Indian Fig, Redwood Fig, Rumbodo

Microscopy of *Ficus racemosa* Lin.^[8]

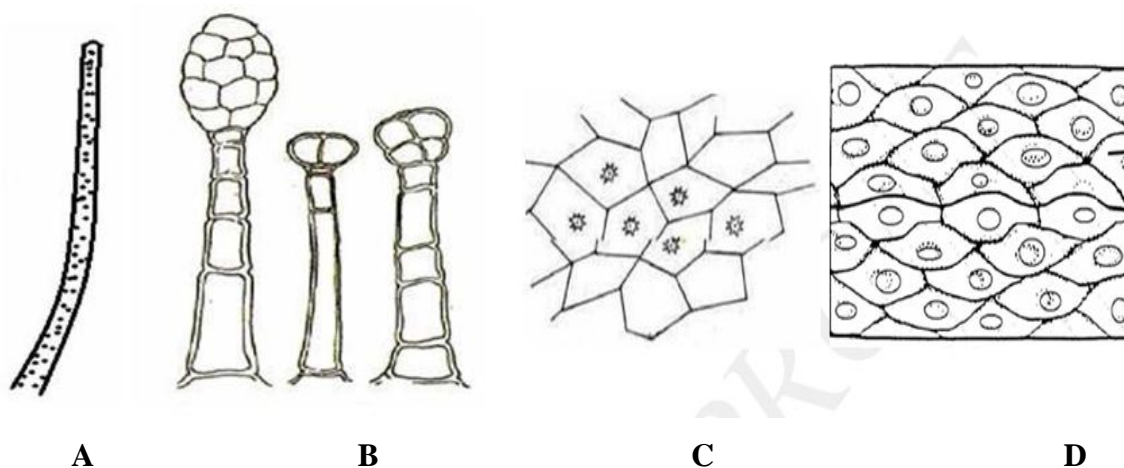


Fig. 2: – A- Fibre, B- Glandular Trichomes, C- Calcium oxalate, D-Stone cells

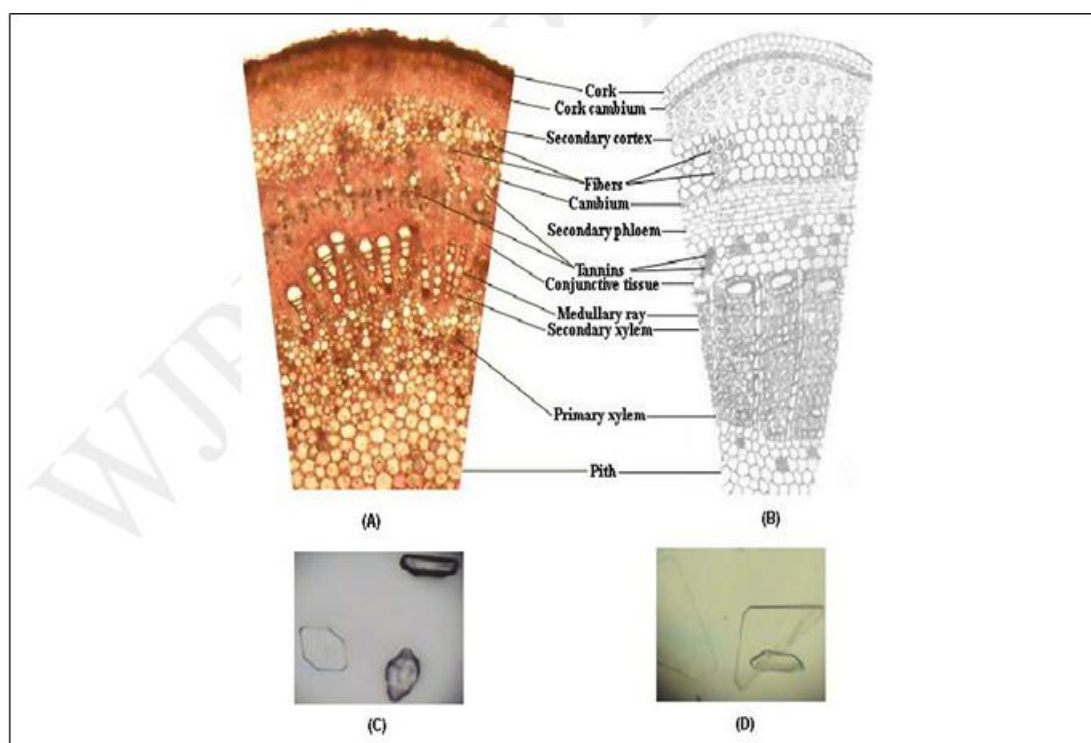


Fig. 3 - (A)- T.S. of the young stem containing the bark.^[8]

(B)- Schematic diagram of the T.S. (C) -Rhomboidal crystals. (D)- Prismatic crystals

Table 3: Behavior of the *Ficus racemosa* Lin. bark powder with different chemical reagents.^[8]

S. No.	Reagent	Colour / Precipitate	Result
1.	Picric acid	No precipitation	Alkaloids absent
2.	Conc. H ₂ SO ₄	Reddish brown	Steroids / tri terpenoids present
3.	Aq. FeCl ₃	Greenish black	Tannins, flavonoids present
4.	Iodine solution	Blue	Starch
5.	Ammonia solution	No change	Anthraquinone glycoside absent
6.	5% Aq. KOH	No change	Anthraquinone glycoside absent
7.	Mayer's reagent	No precipitation	Alkaloids absent
8.	Spot test	Stain observed	Fixed oil present
9.	Aq. AgNO ₃	Precipitation Observed	Proteins present
10.	Aq. NaOH	Reddish brown	Flavonoids present
11.	Mg- HCl	Magenta	Flavonoids present
12.	Dragendorff's reagent	No Precipitation	Alkaloids absent
13.	Aq. Lead acetate	White precipitate	Tannins presents
14.	Libermann Burchard test	Redidsh green	Steroids / Triterpinoids present

*NaOH- Sodium Hydroxide, KOH- Potassium Hydroxide, Mg-HCl- Magnisium metal-hydrochloric acid, FeCl₃- Ferric chloride, H₂SO₄ - Sulphuric acid, AgNO₃- Silver Nitrate.

Table 4: Phytoconstituents of *Ficus racemosa* Lin.

Leaf	Sterols, tannins and flavonoids, triterpenoids (Lanosterol) and alkaloids. A new tetracyclic triterpene glauanol acetate which is characterized as 13 α , 14 β , 17 β H, 20 α H-lanosta-8, 22-diene-3 β -acetate and racemosic acid were isolated from the leaves. ^[9]
Stem-Bark	Tannin, wax, saponin glauanol acetate, β -sitosterol, leucocyanidin- 3 – O – β – D - glucopyranoside, leucopelargonidin – 3 – O – β – D - glucopyranoside, leucopelargonidin – 3 – O – α – L - rhamnopyranoside, lupeol, ceryl behenate, lupeol acetate, α -amyrin acetate, leucoanthocyanidin, and leucoanthocyanin from trunk bark, lauanol acetate, lupeol, β -sitosterol and stigmasterol were isolated from stem bark. ^[10]
Trunk-Bark	Upenol, β -sistosterol and stigmasterol. ^[9]
Fruit	Glauanol, glauanol acetate, hentriacontane, β sitosterol, glauanolacetate, glucose, tiglic acid, esters of taraxasterol, lupeolacetate, friedelin, higherhydrocarbons and other phytosterol. ^[10]
Root	Cycloartenol, euphorbol and its hexacosanoate, taraxerone, tinyatoxin; bark euphorbol and its hexacosanate, ingenol and its triacetate, taraxerone. ^[10]
Latex	a-amyrin, β -sitosterol, cycloartenol, cycloeuphordenol, 4-deoxyphorbol and its esters, euphol, euphorbinol, isoeuphorbol, palmitic acid, taraxerol, tinyatoxin, tirucallol, trimethyl ellagic acid. ^[10]

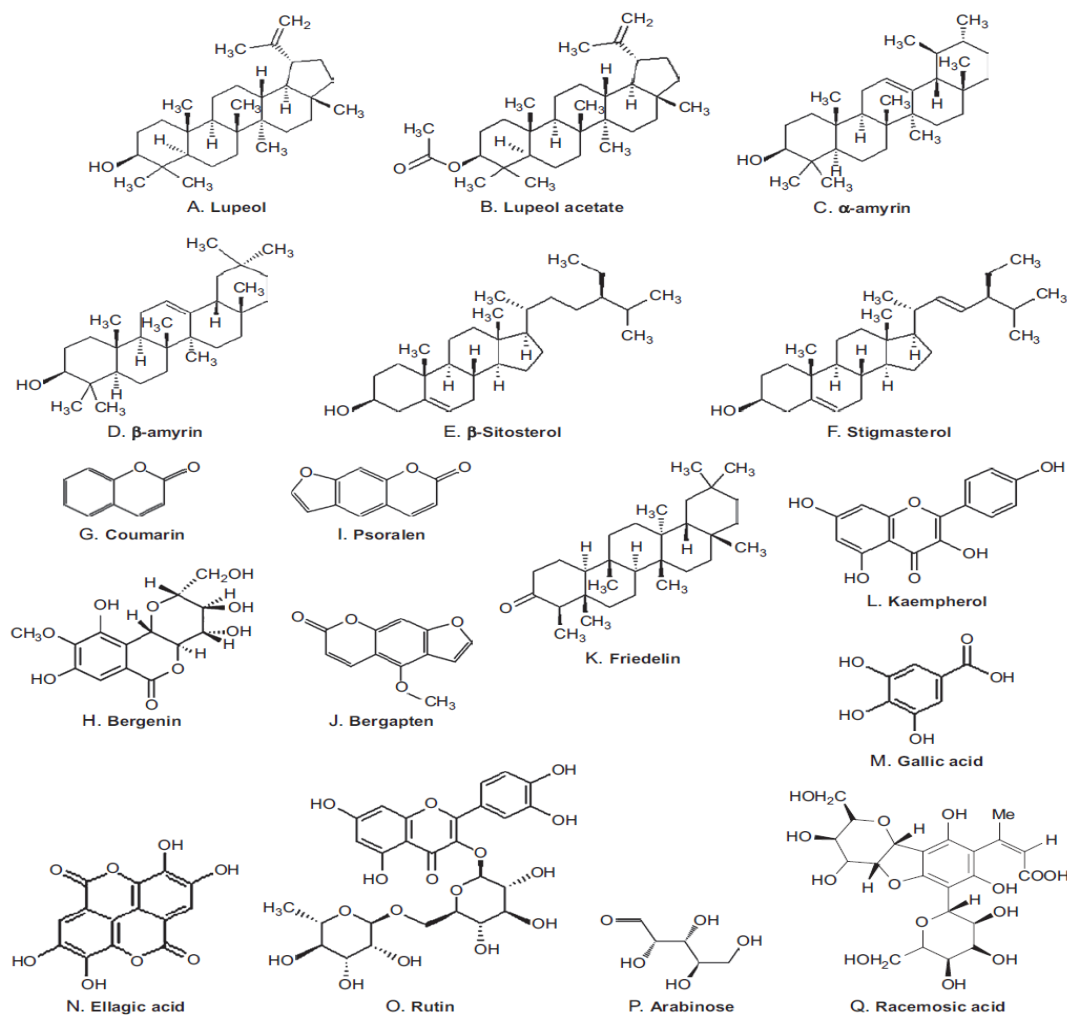


Figure 4: Structures of phytochemicals identified and isolated from various parts of *Ficus racemosa* Lin.^[11]

Table 5: Ethnobotanical uses of *Ficus racemosa* Lin.

PLANT PART	USE
Fruits	<i>Ficus racemosa</i> Linn. used in leprosy, diarrhoea, circulatory and respiratory disorders and menorrhagia. ^[12,14] Tender fruits are used as astringent, stomachic, refrigerant, in dry cough, loss of voice, diseases of kidney and spleen, astringent to bowel, styptic, tonic, useful in the treatment of leucorrhoea, blood disorder, burning sensation, fatigue, urinary discharges, leprosy, epistaxis, carminative and intestinal worms. They are also useful in miscarriage, spermatorrhoea, epididymitis, cancer, myalgia, scabies, haemoptysis, intrinsic haemorrhage and extreme thirst. ^[15,16]
Roots	Roots are used in dysentery, pectoral complaints, and diabetes, applied in mumps, other inflammatory glandular enlargements and hydrophobia. ^[15,17]
Bark	It is highly effective in threatened abortion and also recommended to treat Menorrhagia, leucorrhoea, gonorrhoea, urinary diseases, hemorrhage and skin diseases. ^[21] The bark is highly recommended in urological disorders, diabetes, hiccough, leprosy, dysentery and piles. ^[18,21]

Leaves	The leaves are excellent wash for wounds and ulcers. They are useful in dysentery and diarrhea. The infusion of bark and leaves is also employed as mouth wash to spongy gums and internally in dysentery, menorrhagia, efficient remedy in glandular swelling, abscess, chronic wounds, cervical adenitis and haemoptysis. ^[20,22]
Latex	It is administered in haemorrhoids, boils, alleviates the edema in adenitis, parotitis, orchitis, traumatic swelling, toothache, vaginal disorders, diarrhoea particular in childrens and also aphrodisiac. Latex is applied externally on chronic infected wounds to alleviate edema, pain and to promote the healing. ^[23] The latex is reportedly used for treating piles. ^[24]
Root Sap	It is used for treating diabetes. ^[25] The sap of this plant is a popular remedy for mumps and other inflammatory enlargements. ^[17,22] In Sri Lankan indigenous system of medicine, it is used in the treatment of skeletal fracture. The Australian aborigines use this plant in the treatment of mumps, smallpox, heamaturia, menorrhagia and inflammatory conditions. In Siddha the bark, fruits and latex are used to treat constipation, anaemia and dysentery. ^[25,26]

Table 6: Pharmacological activity reported in *Ficus racemosa* Lin.

S. No.	Part of plant	Pharmacological activity	Reported by
1.	leaves	Antibacterial Activity	Mandal SC et al 2000
2.	Barks and Leaves	Analgesic activity	Malairajan P et al 2006
3.	Leaves	Anti-inflammatory Activity	Mandal SC et al 2000
4.	Stem Bark	Antipyretic activity	Rao RB et al 2002
5.	Stem Bark	Anti-tussive activity	Bhaskara RR et al 2003
6.	Leaves	Hypotensive activity	Trivedi CP et al 1969
7.	Fruit	Anti-filarial activity	Mishra Vet al 2005
8.	Leaves, Bark, Fruit	Radio Protective /Antioxidant Activity	Veerapur VP et al 2009 Channabasavaraj KP et al 2009 Jahan IA et al 2008
9.	Stem Bark	Angiotensin Converting Enzyme Inhibitor Activity	Ahmed F et al 2010
10.	Stem Bark	Cardioprotective Activity	Ahmed F et al 2012
11.	Tanins	Diabetic Complications	Velayutham R et al 2012
12.	Stem Bark	Hepatoprotective Activity	Ahmed F et al 2010
13.	Stem Bark	Memory Enhancing Activity	Ahmed F et al 2011
14.	Stem Bark	Protective Renal Oxidative Injury	Khan N et al 2005
15.	Fruit	Anti-filaria Activity	Mishra V et al 2005
16.	Stem Bark	Anthelmintic Activity	Chandrashekhar CH et al 2008
17.	Leaves, Bark,	Wound Healing Activity	Biswas TK et al 2003
18.	Stem Bark	Renal anticarcinogenic	Khan N et al 2005
19.	Stem Bark	Larvicidal Activity	Bhatt RM et al 1984
20.	Stem Bark	Anti-diarrhoeal Activity	Mukherjee PK et al 1998
21.	Stem Bark	Antidiuretic Activity	Ratnasooriya WD et al 2003
22.	Stem Bark	Antinociceptive Activity	Ferdous M et al 2008
23.	Stem Bark	Anti-Parkinson Activity	Jitendra O et al 2016
24.	Fruit	Cytotoxic and Anticancer Activity	Dnyaneshwar S et al 2016
25.	Stem Bark	Platelet Aggregation Inducing Activity	Faiyaz Ahmed et al 2012

Pharmacological Activity Reported In *Ficus racemosa* Lin.**Antibacterial Activity**

The antibacterial potency of petroleum ether extract of *Ficus racemosa* Lin. Leaves against bacterias E.coli ATCC 10536, Basillus pumilis ATCC 14884, Bacillus subtilis ATCC 6633, Pseudomonas aeruginosa ATCC 25619, and Staphylococcus aureus ATCC 29737. The results were significant comparable to standard Chloramphenicol. It could be inferred that ether extract consist of alkaloids, terpenoids, coumarins, and fatty acids. The antibacterial activities are attributes of terpenoids, alkaloids thus the of *Ficus racemosa* Lin. has confirmed antibacterial activity in all sorts of conditions and can be actively incorporated into ointments for infectious conditions.^[28]

Analgesic activity

Analgesic activities of ethanol extracts of *Ficus racemosa* Lin. bark and leaves were evaluated using hot-plate and tailimmersion methods. At 300 mg/kg, i.p., *Ficus racemosa* Lin. leaf extract increased the latency time significantly, giving about 40.1% protection; the bark extract increased the reaction time significantly providing 35% protection. They observed analgesic effect was attributed to the presence of friedelin, behanate, bergenin, lupeol and lupeol acetate.^[29] A similar effect was seen in the hot-plate test where a significant analgesic activity was observed which continued until 3 h after the administration of the decoction in mice. A significant anti-epidemic effect was exhibited by the petroleum ether extract in carrageenan-induced paw edema in mice.^[30]

Anti-inflammatory Activity

The anti-inflammatory activity of *Ficus racemosa* Lin. leaves extract was evaluated on carrageenin, serotonin, histamine and dextran-induced rat hind paw oedema models. The extract at doses of 200 and 400 mg/kg has been found to possess significant anti-inflammatory activity on the tested experimental models. The extract (400 mg/kg) exhibited maximum anti-inflammatory effect that is 30.4, 32.2, 33.9 and 32.0% at the end of 3 h with carrageenin, serotonin, histamine, dextran-induced rat paw oedema, respectively. In a chronic test the extract (400 mg/kg) showed 41.5% reduction in granuloma weight. The effect produced by the extract was comparable to that of phenylbutazone, a prototype of a non-steroidal anti-inflammatory agent.^[28]

Antipyretic activity

The methanol extract of *Ficus racemosa* Lin. 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.^[33] The decoction and petroleum ether extract of the leaves manifested a significant antipyretic effect comparable to that of indomethacin against yeast-induced pyrexia in rats.^[30]

Anti-tussive activity

The methanol extract of stem bark of *Ficus racemosa* Lin. was tested for its antitussive potential against a cough induced model by sulphur dioxide gas in mice. The extract exhibited minimum inhibition 56.9% at a dose of 200 mg/kg, after 90 minutes of administration.^[34]

Hypotensive activity

The leaves of *Ficus racemosa* Lin. extracted with various solvents and the fraction rich in glycosides exhibited significant hypotensive and vasodilator effect on anesthetized dogs and direct cardiac depressant action on isolated hearts of frog and rabbit. The extract did not affect the behavioral activity and did not show signs of acute toxicity in rats.^[35]

Anti-filarial activity

Alcoholic and aqueous extracts of the fruits of *Ficus racemosa* Lin. caused inhibition of spontaneous motility of whole worm and nerve muscle preparation of *Setaria cervi* characterized by increase in amplitude and tone of contractions. The concentrations required to inhibit the movement of the whole worm and nerve muscle preparation for alcohol extract were 250 and 50 µg/mL, respectively, while, for aqueous extract it was 350 and 150 µg/mL, respectively. Both alcohol and aqueous extracts caused death of microfilaria *in vitro*.^[36]

Radio Protective /Antioxidant Activity

Radio protective potential was studied using micronucleus assay in irradiated Chinese hamster lung fibroblast cells. Pre-treatment with *Ficus racemosa* Lin. ethanolic and water Extract at different doses 1h prior to 2 Gy γ -radiation resulted in a significant decrease in the percentage of micro nucleated binuclear V79 cells suggesting its role as radio protector.^[37] The methanol extract of stem bark *Ficus racemosa* Lin. has shown potent *in vitro* antioxidant activity when compared to the methanol extract of its roots.^[38] The ethanol extract of fruits,

exhibited significant antioxidant activity in DPPH free radical scavenging assay. 3-O-(E)-Caffeoyl quinate showed significant antioxidant activity 54.^[39]

Angiotensin Converting Enzyme Inhibitor Activity

The study evaluated the radical scavenging and angiotensin converting enzyme (ACE) inhibitory activity of cold aqueous extracts of *Ficus racemosa* Lin. (FRC) and hot aqueous extracts of *Ficus racemosa* Lin. (FRH) stem bark. HPLC profiles of cold aqueous extract showed the presence of bergenin, an isocoumarin, while hot aqueous extract was found to contain ferulic acid, kaempferol and coumarin in addition to bergenin FRH showed significantly higher radical scavenging activity than FRC. The extracts exhibited a dose dependent inhibition of porcine kidney and rabbit lung ACE. FRH showed significantly higher activity than FRC with lower IC(50) values of 1.36 and 1.91 µg/mL respectively, for porcine kidney and rabbit lung ACE, compared with those of FRC (128 and 291 µg/mL). Further, a significant correlation was observed between radical scavenging activity and ACE-inhibitory activity.^[40]

Cardioprotective Activity

The cardio protective potential of standardized extract of *Ficus racemosa* Lin. stem bark against doxorubicin induced toxicity. The extract significantly decreased the (TBARS) thiobarbituric acid reactive substances & increased glutathione levels in serum and cardiac tissue.^[41]

Diabetic Complications

The administration of tannin fraction from *Ficus racemosa* Lin. significantly reversed the increased blood glucose, total cholesterol, triglycerides, low density lipoprotein and also significantly restored the insulin and high density lipoprotein in the serum. In addition, tannins significantly restored the activity of antioxidant enzymes such as superoxide dismutase, catalase, and decreased the, glutathione peroxidase, and glutathione, thereby restoring the antioxidant status of the organs to normal levels.^[42]

Hepatoprotective Activity

Hepatoprotective effects of petroleum ether and methanol extract of *Ficus racemosa* Lin. stem bark were study CCl₄ administration, induced a significant decrease in serum total protein, albumin, urea and significantly increase in total bilirubin associated with a marked elevation in the activities of aspartate, aminotransferase, alanine, aminotransferase and

alkaline phosphatase. Pre treatment with *Ficus racemosa* Lin. petroleum ether extract and *Ficus racemosa* Lin. methanolic extract showed significant restoration of total protein and albumin to near normal rats.^[43]

Memory Enhancing Activity

The extract of *Ficus racemosa* Lin. at two levels 250 and 500 mg/kg significantly raised Ach levels in hippocampi of rats compared to control. The percentage enhancement in Ach levels was found to be 22% and 38%, respectively. Further, the extract at both dosage levels elicited significant reduction in transfer latency on elevated plus-maze, which was used as an exteroceptive behavioral model to evaluate memory in rats. It finds out that *Ficus racemosa* Linn. had a potential in management of Alzheimer disease.^[44]

Protective Renal Oxidative Injury

Treatment of rats with *Ficus racemosa* Lin. 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. Thus *Ficus racemosa* Lin. extract is a potent chemopreventive agent and suppresses potassium bromated mediated nephrotoxicity in rats.^[45]

Anti-filaria Activity

Alcoholic as well as aqueous extracts of *Ficus racemosa* Lin. caused inhibition of spontaneous motility of whole worm and nerve muscle preparation of *Setaria cervi* characterized by increase in amplitude and tone of contractions. Both extracts caused death of microfilaria in vitro. LC50 and LC90 were 21 and 35 ng/ml respectively for alcoholic and 27 and 42 ng/ml for aqueous extracts.^[46]

Anthelmintic Activity

The crude extracts of bark of *Ficus racemosa* Lin. were evaluated for anthelmintic activity using adult earthworms; they exhibited a dose-dependent inhibition of spontaneous motility and evoked responses to pin-prick, which was comparable with that of 3% piperazine citrate. However, there was no final recovery in the case of worms treated with aqueous extract suggesting wormicidal activity.^[47]

Wound Healing Activity

Ethanol extract of *Ficus racemosa* Lin. stem bark showed wound healing in excised and incised wound model in rats.^[48]

Renal anticarcinogenic Activity

Ficus racemosa Lin. extract (200 mg kg⁻¹ body weight and 400 mg kg⁻¹ body weight) resulted in a significant decrease in xanthine oxidase, lipid peroxidation, γ - glutamyl transpeptidase and hydrogen peroxide. There was significant recovery of renal glutathione content and antioxidant enzymes, decrease in the enhancement of renal ornithine decarboxylase activity, DNA synthesis, blood urea nitrogen and serum creatinine.^[45] Similar results were obtained when Ferric nitrilotriacetate (Fe-NTA) was used as renal carcinogen.^[49]

Larvicidal Activity

The larvicidal activity of crude hexane, ethyl acetate, petroleum ether, acetone and methanol extracts of the leaf and bark of *Ficus racemosa* Lin. were assayed for their toxicity against the early fourth-instar larvae of *Culex quinquefasciatus* (Diptera: Culicidae). The larval mortality was observed after 24-h exposure. All extracts showed moderate larvicidal effects; however, the highest larval mortality was found in acetone extract of bark. The bioassay-guided fractionation of acetone extract led to the separation and identification of a tetracyclic triterpenes derivative. Gluanol acetate was isolated and identified as new mosquito larvicidal compound. Gluanol acetate was quite potent against fourth-instar larvae of *Aedes aegypti* L.^[50]

Anti-diarrhoeal Activity

Ethanol extract of stem bark of *Ficus racemosa* Lin. has shown significant inhibitory activity against castor oil induced diarrhea and PEG2 induced enter pooling in rats and also showed a significant reduction in gastro intestinal motility in charcoal meal test in rats which proves its efficacy as anti-diarrheal agent.^[51]

Antidiuretic Activity

The decoction of *Ficus racemosa* Lin. bark has shown antidiuretic effect at doses of 250, 500 or 1000 mg/kg body weight. It had a rapid onset (within 1 h), peaked at 3 h and lasted throughout the study period (5 h). It also caused a reduction in urinary Na⁺ level and Na⁺/K⁺ ratio and an increase in urinary osmolarity indicating multiple mechanisms of action.^[52]

Antinociceptive Activity

The ethanolic extract of *Ficus racemosa* Lin. bark and fruit were tested for its possible antinociceptive activity study on acetic acid induced writhing method in mice. Both the bark and fruit extracts at a dose of 500 mg/kg body weight showed significant antinociceptive activity on the experimental animals. The fruit extract showed most potent inhibition of acetic acid induced writhing in mice 61.38%, where as the bark extract showed inhibition only 42.6%.^[53]

Anti-Parkinson Activity

The study showed anti-Parkinson's activity of petroleum ether extract of *Ficus religiosa* (PEFRE) leaves in haloperidol and 6 hydroxydopamine (6-OHDA) induced experimental animal models. In the study, effects of *Ficus religiosa* (100, 200, and 400mg/kg, p.o.) were studied using in vivo behavioral parameters like catalepsy, muscle rigidity, and locomotor activity and its effects on neurochemical parameters (MDA, CAT, SOD, and GSH) in rats. The increased cataleptic scores (induced by haloperidol) were significantly ($p < 0.001$) found to be reduced, with the PEFRE at a dose of 200 and 400mg/kg (p.o.). 6-OHDA significantly induced motor dysfunction (muscle rigidity and hypolocomotion). 6-OHDA administration showed significant increase in lipid peroxidation level and depleted superoxide dismutase, catalase, and reduced glutathione level. Daily administration of PEFRE (400mg/kg) significantly improved motor performance and also significantly attenuated oxidative damage. Thus, the study proved that *Ficus religiosa* treatment significantly attenuated the motor defects and also protected the brain from oxidative stress.^[54]

Cytotoxic and Anticancer Activity

The *in vitro* cytotoxicity and anticancer activity of *Ficus racemosa* Lin. on MCF7 human breast cancer cell line. Effect of ethanolic extracts of tender fruits of *F. racemosa* on MCF7 human breast cancer cell lines by Sulphorodamine B (SRB) assay was carried out. Three observations *viz.* LC50, TGI, GI 50 were recorded. The absorbance was recorded on an Elisa plate reader at a wavelength of 540 nm with 690 nm. *Ficus racemosa* Lin. showed LC50, TGI and GI50 activity at $\geq 80 \mu\text{g/ml}$ concentration. Thus, it can be concluded that *Ficus racemosa* Lin. fruit extract has some cytotoxic and anticancer activity (*in vitro*) at $\geq 80 \mu\text{g/ml}$ concentration of plant extract on MCF7 human breast cancer cell line.^[55]

Platelet Aggregation Inducing Activity

Platelet aggregation was studied by adding FRC (*Ficus racemosa* Lin. Cold aqueous extract) and FRAE (*Ficus racemosa* Lin. Hot aqueous extract) at two concentrations (50 and 100 µg ml⁻¹) dissolved in 25 µl PBS to 450 µl aliquots of PRP. The final volume was made up to 0.5 ml with PBS, and aggregation was recorded over 10 min by the change in light transmission as a function of time using a dual-channel lumi-aggregometer in triplicates. *Ficus racemosa* Lin. extracts induced platelet aggregation, despite being a rich source of phenolics, flavonoids, and isocoumarins. This observation indicates that some phytoconstituents present in FRB overshadow the anti-platelet activity of polyphenols and the flavonoids. It is inferred that platelet aggregation inducing activity of FRB extracts is a limiting factor for its utilization despite having proven therapeutic potential.^[56]

CONCLUSION

Tribal and rural societies have discovered solution for their needs, problem and treatment of disease from the natural resources. The *Ficus racemosa* Lin. having various important pharmacological activity which is discussed in the current review. This signifies that it is the most vital plant for the human civilization and require more concentration for the formulation development.

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