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## AN UPDATED REVIEW OF PHARMACOLOGICAL STUDIES ON *FICUS BENGHALENSIS* LINN.

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**ABSTRACT:** In olden days, plants have been an ever dependent source of medicine. Ayurveda, Siddha, Unani and Homeopathy have mentioned the use of plants in the treatment of various human diseases. *Ficus benghalensis* Linn. (Banyan tree) Moraceae is a plant that is widely distributed in India. The English name Banyan is given by the Britishers to this tree because under the tree Banias, i.e., the Hindu merchants used to assemble for business. To the Hindus, it is sacred and worshipped with special prayers on Vata Sawitri day. This plant is reported to possess many useful pharmacological activities also viz. anti-inflammatory, antihyperglycemic, antidiabetic, anti-arthritis, antihyperlipidemic, hypocholesterolemic, analgesic, antibacterial, antifungal, larvicidal, anti-diarrhoeal, antimutagenic, antioxidant, cytotoxic, hepatoprotective, antiallergic and immunostimulatory. The aim of the present review is an effort to give a detailed survey of the literature on its traditional uses, pharmacological activities, and other commercial uses.

**INTRODUCTION:** Plants have been playing the role of a major source of drugs in Indian as well as other ancient systems of medicine in the world. Earliest descriptions of curative and preventive properties of medicinal plants found in Rig-Veda, Charaka Samhita and Sushruta Samhita give extensive details on various medicinal herbs. India has an ancient heritage of traditional medicine, by means of Materia Medica, provides a great deal of information on the traditional aspects of therapeutically important natural products obtained from herbs.

Indian traditional medicines have their roots well spread in various systems of medicines including Ayurveda, Siddha, Unani and Homeopathy. The herbal drugs are primarily evaluated based on their phytochemical and pharmacological aspects<sup>1</sup>. *Ficus benghalensis* (FB) (Moraceae) is commonly known as Banyan tree or Vata or Vada tree in Ayurveda. There are more than 800 species and 2000 varieties of *Ficus species*, most of which are native to the old world tropics<sup>2</sup>.

It is endemic to Bangladesh, India and Sri Lanka. It is also known as Bengal fig, Indian fig and East Indian fig, Indian Banyan or simply banyan (English), also borh, nyagrodha (Sanskrit), Bat, Bargad and Bar (Hindi). The English name Banyan is given by the Britishers to this tree because under the tree Banias that is, the Hindu merchants used to assemble business.

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The triad Ganges, the Himalayas, and the banyan tree symbolize the images of India; for this reason, it is considered as National Tree. *Ficus* means fig and *benghalensis* mean belonging to or is of Bengal<sup>3</sup>.

**Taxonomic Classification of *F. benghalensis*:**<sup>4</sup>

- Kingdom : Plantae
- Kingdom : Subkingdom
- Plantae : Tracheobionta
- Super division : Spermatophyta
- Division : Magnoliophyta
- Class : Magnoliopsida
- Subclass : Hamamelidae
- Order : Urticales
- Family : Moraceae
- Genus : *Ficus*
- Species : *F. benghalensis*

**Botanical Description:** It is a very large tree up to 30 m in height, found throughout the year. It grows in an evergreen environment, except in dry

localities where it is leafless for a short time. It is hardy and drought-resistant; withstands mild frost. It is epiphytic when young. It develops from the seeds dropped by birds on old walls or on the other trees and is, therefore, considered destructive to forest trees, walls and buildings<sup>4, 5, 6, 7, 8</sup>.

It has widely spread branches having many aerial roots functioning as prop roots. The bark gives greenish white appearance; leaves are simple, alternate, often in clusters at the ends of the branches, stipulate, 10 to 20 cm long and 5 to 12.5 cm broad. Leaves are broadly elliptic to ovate in shape, entire, and are strongly 3 to 7 ribbed from the base.

The fruit reaches are axillary, sessile, occurring in pairs, globose in shape, brick red in color when ripe, and enclose male, female and gall flowers; fruits are small, enclosed in the common fleshy receptacles<sup>5</sup>.



LEAVES



FRUIT



BARK



TREE

FIG. 1: *FICUS BENGHALENSIS* LINN.

**Traditional Uses** *Ficus benghalensis* commonly called nyagrodha. Ancient Nighantus and modern

Pharmacopoeias of Indian. The medicine contains much valuable information about the

pharmacological properties of various parts of *Ficus benghalensis*. The tree is regarded everywhere, as a symbol of peace and harmony<sup>9</sup>. According to Ayurveda, *F. benghalensis* is astringent to bowels; useful in the treatment of ulcers, vomiting, vaginal complaints, fever, different kinds of inflammations, and leprosy.

According to Unani system of medicine, the latex of this plant is aphrodisiac, tonic, vulnerary, and a maturant. The latex also lessens the inflammations, hence useful in piles, nose-diseases, gonorrhoea, etc. The aerial root is found to be useful in syphilis, biliousness, dysentery, and in treating the inflammation of the liver, etc.<sup>10</sup>. The milky juice is used for targeting pains, rheumatism, lumbago, and bruises. For the treatment of spermatorrhea, 2 drops of fresh latex in a lump of sugar are taken once daily on an empty stomach early in the morning. Seeds are cooling and tonic in nature<sup>11, 12, 13</sup>. The leaf-buds of *Ficus benghalensis* are astringent. Infusion of leaves is given in diarrhoea and dysentery, a poultice of hot leaves is applied on abscesses. The bark is astringent and tonic and used in diabetes and leucorrhoea, lumbago, sores, ulcers pains and bruises<sup>12</sup>.

In the traditional system of medicine, the plant is used for various health problems and disease. Therefore, the study aims to present an overview of traditional, medicines investigations carry out on plant<sup>15</sup>.

#### Improving Fertility:

- Edible part: Buds of *Ficus benghalensis* have been taken for improving fertility.

#### Leucorrhoea:

- Bark, fruit, and milk of *Ficus benghalensis* are useful for leucorrhoea.
- The bark of *Ficus benghalensis* with 'Triphla' powder has been taken up 20 days with the help of honey to cure Leucorrhoea.
- The bark of this plant after boiling with water locally used to cure leucorrhoea.

#### Toothache:

- The bark of *Ficus benghalensis* and gum of *Accasia catechu* with black pepal locally use

as a pest is cure tooth problem, pyria problem and clean teeth.

#### Improving Memory:

- The bark of *Ficus benghalensis* after drying and cruising take 5 to 6 g powder with cow milk it improved memory.
- The bark of *Ficus benghalensis*, whole plant of Bramhi (B.N.) and after cruising take 21 days daily it improved memory power.
- The young twigs of *Ficus benghalensis* cruised and prepare 21 tablets to take one tablet daily with cow butter. It improved memory power.

#### Dysentery:

- The extracted drop of *Ficus benghalensis* aerial roots with honey daily three times it cures dysentery.
- The young twigs of *Ficus benghalensis* cruised and take twice a day with the help of cure dysentery.

#### Pimples:

- The milk of *Ficus benghalensis* is useful to cure pimples.
- The arial root of *Ficus benghalensis* and puls of (masoor) greed with milk and put locally on pimples it cures pimples.
- Leaf extract of *Ficus benghalensis* with butter potted on pimples it cures pimples.
- Aerial roots of *F. benghalensis* with gulab jal potted locally on pimples it cures pimples.

#### Piles:

- The bark of *Ficus benghalensis* after boiling with water mixed sugar and cow butter take 10 to 20 days early morning to cure piles.

#### Arthritis:

- The milk of *Ficus benghalensis* locally uses for arthritis.

#### Hair fallings:

- Aerial roots of *Ficus benghalensis* with black til (B.N.) after cruising mixed in

coconut oil use locally in hairs it cures hair falling.

### Gyanic Disorder:

- 5 to 10 drops of *F. benghalensis* milk with taking with sugar candy up to 20 days before sunrise.

Some important Ayurvedic marketed formulations formulated from *F. benghalensis* are Nyagrodhaadi churnam (Bhaishajya Rutnavali), Saarivaadya Chandanaasava, Dineshavalayaadi Taila (Sahasrayoga)<sup>13</sup>.

Charaka prescribed aqueous extract of leaf buds of Nyagrodha (*Ficus benghalensis*) mixed with sugar and honey for checking diarrhea; milk processed with the aerial roots or leaf buds of Nyagrodha in hemorrhages and bleeding piles; a decoction of leaf buds and aerial roots of Nyagrodha, mixed with honey, was given for checking vomiting and thirst; also during fevers with burning sensation (Ashtanga Hridaya, Vrindamaadhava, Vaidya-manorama)<sup>14</sup>.

### Pharmacological Activities:

#### Antihyperglycemic and Antidiabetic Activity:

Antihyperglycemic activity of  $\alpha$ -amyrin acetate, isolated from aerial roots of *F. benghalensis* was testified in STZ-induced diabetic rats and db/db mice at a dose level of 50 mg/kg p.o. Anti-hyperglycemic results were compared with the same dose of metformin.  $\alpha$ -amyrin acetate caused 22.3% improvement of glucose tolerance in normoglycemic rats, and 35.6% (comparable to metformin 37.8%) fall in blood glucose of STZ-induced diabetic rats. Multiple-dose oral administration in db/db mice, lowered blood glucose level on day 3, 5, 7 and 10 by 18.7%, 27.1%, 40.0% and 51.6% respectively, comparable to the effect of metformin i.e. 17.8%, 30.5%, 39.4% and 52.5% respectively. Average anti-hyperglycemic effect of  $\alpha$ -amyrin acetate on glucose tolerance in db/db mice was calculated to be around 35.6%, comparable to that of metformin 43.2%<sup>16</sup>.

In a comparative study, using glibenclamide (5 mg/kg) as the reference standard, ethanolic extract of stem bark showed relatively more hypoglycemic activity in alloxan-induced diabetic rats than that of

aerial roots, at same dose level, i.e. 100 mg/kg<sup>17</sup>. Inhibitory activities of the aqueous extracts of the heat treated and untreated stem bark were studied on  $\alpha$ -amylase,  $\alpha$ -glucosidase, and sucrase. Honda and Hara method was used to evaluate inhibitory potential<sup>18</sup>. Both heat treated and untreated extracts showed significant inhibitory activities. Heat treated extracts showed IC<sub>50</sub> values of 77 and 141  $\mu$ g/ml and untreated extracts showed IC<sub>50</sub> values of 158 and 193  $\mu$ g/ml for  $\alpha$ -glucosidase and sucrase respectively. This is the possible mechanism of antidiabetic effect of this plant<sup>19</sup>.

Oral administration of the aqueous extract to fed fasted and glucose loaded diabetic rats significantly decreased the blood glucose level at 5 h and restored the levels of serum electrolytes, glycolytic enzymes and hepatic cytochrome P-450 dependent enzyme systems and decreased the formation of liver and kidney lipid peroxides at the end of 12 weeks. The aqueous extract of *Ficus benghalensis* at a dose of 500 mg/kg/day exhibits significant antidiabetic and ameliorative activity shown by histological studies in normal and streptozotocin-induced diabetic rats.

Antidiabetic and ameliorative potential of aqueous extract of the stem bark at a dose level of 500 mg/kg/day p.o. was studied in streptozotocin-induced diabetic rats by using tolbutamide (100 mg/kg/day p.o.) as the reference standard. Results revealed the hypoglycemic activity comparable to that of tolbutamide and restoration of hepatic cytochrome P-450 dependent enzymes (PNPH, PROD, and EROD), kidney and liver lipid peroxidation (malondialdehyde and hydroperoxides) and glycolytic enzymes to near normal levels; also decrease in the levels of serum electrolytes (potassium, sodium and calcium) was observed. Histological examination revealed a reduction in swelling and inflammation of pancreatic tissue<sup>20</sup>.

In another study, using the same extract and experimental conditions, results with regard to total protein (g/dl), albumin (g/dl), urea (m mol/l), uric acid (m mol/l), creatinine ( $\mu$  mol/l), Hb (g/dl), RBC, WBC and platelets were almost equivalent to that of tolbutamide<sup>21</sup>. Anti-diabetic effect of aqueous extract of *F. benghalensis* aerial roots at a dose level of 300 mg/kg p.o. was studied in

streptozotocin-induced diabetic rats using glipizide (2.5 mg/kg p.o.) as the reference standard. Results revealed a 43.8% reduction in BGL of normal rats at 6 h. 40.7%, 54.8% and 51.7% improvement in glucose tolerance of normal, sub diabetic and mild diabetic rats respectively, was observed at 3 h during GTT<sup>22</sup>.

Aqueous extract of the stem bark at a dose level of 50 mg/kg/day p.o. when tested on normal, alloxan recovered, mildly diabetic and severely diabetic rabbits caused improvement in glucose tolerance in alloxan recovered and mildly diabetic rabbits. It also caused 55.8% and 68% fall in FBG in mildly diabetic and severely diabetic rabbits respectively<sup>23</sup>. In a comparative study performed on alloxan-induced diabetic rats, ethanolic extract of the fruit, at a dose of 120 mg/kg/day p.o., showed more diabetic activity than that of aerial root and stem bark. Glibenclamide at a dosage of 0.5 mg/kg/day p.o. was used as reference standard<sup>24</sup>.

A partially purified preparation from aqueous extract of the stem bark demonstrated the significant hypoglycemic and hypocholesterolemic effect on diabetic rabbits. ED<sub>50</sub> and LD<sub>50</sub> were determined to be 10 mg/kg and 1000 mg/kg p.o. respectively. For chronic toxicity studies, 50 mg, 100 mg and 150 mg/kg of this preparation, about 5, 10 and 15 times of the ED<sub>50</sub> value respectively, were given to diabetic rats for three months. Fall in FBG, cholesterol, and triacylglycerol and improvement in GTT were similar to those of normal control group. Weight gain and values of SGOT, SGPT, S. alkaline phosphatase, serum protein, blood urea, serum cholesterol, hemoglobin, total leukocyte count, differential count were not affected. So, partially purified aqueous extract of stem bark is nontoxic and safe even in a dose of 5, 10 and 15 times of the ED<sub>50</sub>, but the crude extract is hepatotoxic<sup>25</sup>.

*F. benghalensis* (Banyan tree) is one of the common herbs used in Tribal Belts of Midnapur (West) District of Bengal for the treatment of diabetes. A decoction of the bark is to be prepared and consumed twice daily in a dose of 40 to 80 ml<sup>26</sup>. So *Ficus benghalensis* is known to have a considerably good hypoglycemic activity. A dimethoxy derivative of leucocyanidin 3-O-beta-D-galactosyl-cellobioside isolated from the bark of *F.*

*benghalensis* Linn. demonstrated antidiabetic action. Antidiabetic activity of ethanolic extract of *F. benghalensis* was performed on male Albino alloxan-induced diabetic rats. Oral administration of the ethanolic extracts of the fruit, aerial root and bark of *F. benghalensis* for 21 days produced significant hypoglycemia or decrease in blood glucose as 31.73, 18.33 and 28.84%, respectively.

The study reveals that the ethanolic extract of the fruits produces a maximum reduction in blood glucose level as compared to the extract of aerial root or bark of *F. benghalensis*. Histopathological studies were made for both untreated and treated diabetic rats. Untreated diabetic rats showed almost destruction of pancreatic beta cells due to alloxan. Diabetic rats which were treated with ethanolic extract of the fruits showed almost normal cells. It seems that extract either protected the cells from the toxic effect of alloxan or the cells recovered after the initial injury<sup>27</sup>.

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia, and its occurrence is increasing fast in most of the countries. Herbal medicine derived from plant extracts has been utilized increasingly for the treatment of various disorders like diabetes mellitus. The study was designed to evaluate the antidiabetic activity of methanolic extract of *H. benghalensis* L. Kurz (MEHB) in alloxan-induced diabetic rats and chick model. Alloxan (120 mg kg<sup>-1</sup>) was used to induce diabetes in rats, and the blood glucose levels were estimated by using the commercial kit in the market. The methanolic extract of *H. benghalensis* was administered to diabetic rats as a single dose for one day at a dose of 100 and 200 mg kg<sup>-1</sup>. The extract produced a significant reduction (p<0.01) of blood glucose levels at a dose of 100 and 200 mg kg<sup>-1</sup> in diabetic rats. It also showed a beneficial effect on the lipid profile in alloxan-induced diabetic rats. These results showed that methanolic extract of *H. benghalensis* produced a dose dependent anti-hyperglycemic activity in rats<sup>28</sup>.

Evaluation of the hypoglycemic activity of extract of bark and leaf of *Ficus benghalensis* Linn. in alloxan-induced diabetic Albino rats and comparison with standard antihyperglycemic drug glibenclamide. Aqueous extracts of bark and leaf of *Ficus benghalensis* were evaluated for

hypoglycemic activity. Albino rats were divided into six groups of six animals each. Diabetes was induced by using alloxan monohydrate (160 mg/kg.b.w.i.p). Control group was treated with normal saline 0.5 ml; the second group was treated with glibenclamide 5 mg/kg as a standard antidiabetic drug. Remaining groups were treated with different doses (150 and 300 mg/kg. b.w) of bark and leaves of *F. benghalensis* for 28 days and fasting glucose level estimated by using Glucometer on days 3, 7, 14, 21 and 28.

An aqueous extract of *F. benglensis* Linn. produced a significant reduction in the fasting blood glucose in diabetic rats. At the dose of 300mg/ kg of bark showed a significant fall in blood glucose level as compared to other doses of the extract. Post-prandial reduction in the blood glucose levels on day 3 after 3 h of drug administration was significant ( $p = 0.007$ ) with bark 300 mg as compared to other doses. This is however, highly significant ( $p = 0.0001$ ) when compared with standard drug glibenclamide. The current small sample size study shows relevant antidiabetic potential for *Ficus benghalensis*. Further, studies are required to elaborate on the antidiabetic activity and mode of hypoglycemic action of *Ficus benghalensis*<sup>29</sup>.

**Antibacterial Activity:** Extract from fruits exhibits antitumor activity in the potato disc bioassay. None of the tested extracts showed any marked inhibition on the uptake of calcium into rat pituitary cells GH4C1. The extracts of the four tested *Ficus species* had significant antibacterial activity<sup>30</sup>.

In 2007, aqueous and ethanolic extracts of *F. benghalensis* were investigated for antibacterial activity against *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Staphylococcus aureus*, *Bacillus cereus*, *Alcaligenes faecalis*, and *Salmonella typhimorium*. The ethanolic extract showed considerable antibacterial activity against *Pseudomonas aeruginosa*, *Proteus mirabilis*, and *Bacillus cereus*. It also showed certain antibacterial effects against *A. faecalis* and *S. typhimorium*, but it was inactive against *S. aureus*. Aqueous extract of *F. benghalensis* had no antibacterial activity against any of the six bacterial strains investigated. From the results of the experiment, it was concluded that ethanolic extract of *F. benghalensis* has great

potential as antimicrobial compound against microorganisms and it can be used for the treatment of infectious diseases caused by resistant microorganisms<sup>31</sup>. *Actinomyces viscosus* belongs to a group of Actinomycetes. It is gram-positive, aerobic, non sporing rod-shaped bacteria. It is frequently encountered in a high proportion of smooth tooth surface and gingiva.

Various experiments were performed to check the antibacterial activity of *F. benghalensis* against *A. viscosus*. These show that the extract of *F. benghalensis* bark of 0.08 mg/ml to 0.1 mg/ml has better antibacterial activity<sup>32</sup>. Antibacterial activity of methanolic extract of the stem bark determined by disc diffusion method at the dose of 200 mg/ml against enterotoxigenic *E. coli* was comparable to that of standard drug amikacin at the dose of 10 µg/disc<sup>33</sup>. Antibacterial activity of hydro-alcoholic (70% methanol) extract of the stem bark at a concentration of 0.01-0.10 mg/ml was testified against *Actinomyces viscosus* using cup plate diffusion method and broth dilution technique. MIC was found to be 0.08 mg/ml, and the zone of inhibition at this concentration was 9.4 mm. No zone of inhibition was found at a concentration of 0.01-0.07 mg/ml<sup>34</sup>. Antibacterial activity varies with a change in environmental conditions and geography<sup>35</sup>.

In the present investigation, the antimicrobial efficiency of cotton fibers' loaded with silver nanoparticles (AgNPs) was studied which are developed by "green process" using natural extracts, of *Eucalyptus citriodora* and *Ficus benghalensis*. The formation of AgNPs on the cotton fibers was observed by UV-vis spectrophotometer. The size of the silver nanoparticles was found to have 20 nm. The structure and morphology of silver nanoparticles formed on the cotton fibers were confirmed by electron microscopy. The antibacterial activity of cotton fibers loaded with silver nanoparticles was evaluated against gram-negative *Escherichia coli* (*E. coli*) bacteria. The results suggest excellent antibacterial activity by the incorporation of 2% leaf extracts on cotton fibers. These fibers have also exhibited superior antibacterial activity even after several pieces of washing indicating their usage in medical and infection prevention applications<sup>36</sup>.

Catechin and genistein, isolated from methanol extracts of the leaves of Sudanese varieties *F. benghalensis* were testified for their antimicrobial activity by using disc diffusion method at a dose level of 100 µg/ml. Streptomycin sulfate and nystatin at the dose level of 25 µg/discs and 50µg/discs respectively, were used as the reference standard. Both compounds showed antibacterial activity, comparable to that of streptomycin and nystatin, against *B. cereus* and *Pseudomonas aeruginosa*. No antifungal activity was found against *Aspergillus ochraceus*, *Saccharomyces cerevisiae*, *Candida lipolytica* and *Saccharomyces lipolytica*<sup>37</sup>.

Antibacterial activity of aqueous extracts of the stem bark, leaf and root were evaluated by agar diffusion technique. Among the three extracts, stem bark extract showed maximum antibacterial activity against *Bacillus subtilis*, *Pseudomonas aeruginosa*, *K. pneumonia*, *Staphylococcus aureus* and *Escherichia coli*<sup>38</sup>.

*In-vitro* antibacterial activity of banyan (*Ficus benghalensis*) fruit based on inhibition zone. The aqueous, methanol and ether extract of fruit was used to test its antibacterial activity by disk diffusion method against *E. coli*, *S. typhi* and *L. acidophilus*. Results obtained show the positive antibacterial activity of aqueous extract of fruits for all the three bacteria and highly response showed against *E. coli*. Methanol extract of fruit extract was most effective for *E. coli* and no response showed against *S. typhi* and *L. acidophilus*. Ether extract of fruit show the positive antibacterial activity for all the three bacteria and highly bactericidal for *L. acidophilus*<sup>39</sup>.

Medicinal plants have been used as an alternative source and remedy from centuries for treating human diseases because they contain numerous active constituents of therapeutic value. The methanolic and DMSO extracts of various plant parts *viz.* prop roots, stems, leaves, and fruits of *Ficus benghalensis* var *krishnae* (C.DC) C.DC. has been studied for antibacterial activity against the pathogenic bacteria *Bacillus subtilis*, *Escherichia coli*, and *Pseudomonas aurignosa*. Ampicillin antibiotic disc was used as standard. Various selected parts of *F. benghalensis* var. *krishnae* in methanolic and DMSO extract were observed

positive minimum inhibition zone against *E. coli*, *P. aurignosa* and *Bacillus subtilis*<sup>40</sup>.

**Hypolipidemic Activity:** The water extract of *F. benghalensis* bark has been reported to possess hypocholesterolemic and hypolipidaemic effects<sup>41</sup>. In 1995 hypolipidemic effect of water extract of the bark of *F. benghalensis* was investigated in alloxan-induced diabetes mellitus in rabbits. Treatment for one month (50 mg/kg body weight/day) brought down the level of total serum cholesterol (TC) in sub diabetic and diabetic rabbits from 82 ± 11 and 118 ± 10.6 mg% to 42.7 ± 3.1 mg% and 51.7 ± 4.7 mg%, respectively. Low-density lipoprotein cholesterol and very low-density lipoprotein cholesterol also came down<sup>42</sup>.

Hypolipidemic and antioxidant effect of aqueous extract of the stem bark at a dose level of 50 mg/kg/day p.o. was studied in hypercholesterolaemic rabbits (rabbits fed with cholesterol suspended in groundnut oil at a dose of 100 mg/kg/day, for 6 weeks). Results of this study revealed a decrease in triacylglycerol, serum cholesterol and LDL+VLDL cholesterol by 54%, 59%, and 60% respectively, increase in levels of catalase, glutathione reductase, superoxide dismutase and glutathione peroxidase 30%, 22%, 36% and 90% respectively, compared to untreated animals<sup>43</sup>.

Administration of  $\alpha$ -amyrin acetate, isolated from aerial roots of *F. benghalensis*, to db/db mice for 10 consecutive days decreased triglycerides, cholesterol and LDL-C by 21.5%, 24.1%, and 21.2%; increased HDL-C and HDL-C to TC ratio by 21.0% and 59.1% respectively. It is concluded that  $\alpha$ -amyrin acetate improves plasma lipid profile not only by lowering total plasma cholesterol and LDL-C levels significantly but also by increasing HDL-C level and HDL-C/TC ratio<sup>44</sup>.

Diabetes mellitus is a metabolic disorder and associated with many other metabolic functional alterations. The bark of *Ficus benghalensis* and other plants are reported as antidiabetic and hypolipidemic due to the presence of flavonoids and sterols. Based on the literature survey, tribal information and chemical constituents, the present study is undertaken to observe the hypolipidemic potential of leaves and fruits of *Ficus benghalensis* because they also contain the same active

constituents. Hence, the leaves and fruits may have same activity like bark. To study the effect, different doses of ethanolic extract of leaves and fruits of *Ficus benghalensis* was given to alloxan induced diabetic rats <sup>45</sup>.

**Hepatoprotective Activity:** Hepatoprotective effect of leucopelargonidin derivative, isolated from the bark of *F. benghalensis*, at a dose level of 100 mg/kg/day i.p. was evaluated in CCl<sub>4</sub> induced hepatotoxic rats, using Vitamin E at dose level 50mg/kg/day i.p. as the reference standard. Result with regard to decrease in biochemical parameters like total cholesterol, HDL, LDL, FFA, TAG; decrease in the activities of glucose 6- phosphate dehydrogenase, HMG-CoA reductase in the liver and enzymes like ALT, ALP and AST in serum and liver; increase in the levels of antioxidant enzymes in liver; inhibition of fatty infiltration and fibrosis, was comparable to that of Vitamin E <sup>46</sup>.

Methanolic extract of the aerial root was tested for hepatoprotective activity against isoniazid-rifampicin induced liver injury in rats using Liv 52 at a dose level of 10mg/kg p.o. as the reference standard. Results of MEFB at a dose level of 100, 200 and 300 mg/kg p.o. about bilirubin level, total protein level, albumin level, AST and ALT were almost same as that of Liv 52. Histopathological results about hepatocytic necrosis, inflammation, and neutrophil infiltration were also comparable to that of Liv 52 <sup>47</sup>.

The study was made to investigate the protective effect of methanolic extract of *Ficus benghalensis* Linn., Moraceae, on isoniazid-rifampicin-induced hepatotoxicity in rats. Rats were divided into six different groups; group 1 served as a control, group 2 received isoniazid and rifampicin (100 mg/kg, i.p.), in sterile water, groups 3, 4 and 5 received 100, 200 and 300 mg/kg bw, p.o. methanolic extract of *F. benghalensis* and group 6 received Liv 52. All the treatment protocols followed 21 days and after rats were sacrificed blood and liver were used for biochemical and histological studies, respectively.

Administration of isoniazid and rifampicin caused a significant elevation in the levels of liver marker enzymes ( $p < 0.05$  and  $p < 0.01$ ) and thiobarbituric acid reactive substances ( $p < 0.001$ ) in experimental

rats. Administration of methanolic extracts of *F. benghalensis* significantly prevented isoniazid-rifampicin-induced elevation in the levels of serum diagnostic liver marker enzymes and TBARS level in experimental groups of rats.

Moreover, total protein and reduced glutathione levels were significantly ( $p < 0.001$ ) increased in the treatment group. The effect of the extract was compared with a standard drug, Liv 52. The changes in biochemical parameters were supported by the histological profile. It is to be concluded that the methanolic extract of *F. benghalensis* protects against isoniazid and rifampicin-induced oxidative liver injury in rats <sup>48</sup>. The hepatoprotective activity of water extract of *Ficus benghalensis* (Family Moraceae) bark was studied against ethanol (3g/kg, 20% w/v p.o. once daily for 28 days) induced liver damage in rats. Ethanol produced significant changes in various liver parameters.

It increased the biochemical parameters like AST, ALT, ALP, total bilirubin and decreased the levels of albumin and total protein along with changes in histological parameters (damage to hepatocytes). Treatment with water extract of *Ficus benghalensis* bark (at a dose of 400mg/kg, p.o. daily for 28 days) significantly prevented the biochemical and histological changes induced by ethanol, indicating the recovery of hepatic cells. The activity of the extract was also comparable to that of silymarin, a standard hepatoprotective drug. These results demonstrate that the water extract of *Ficus benghalensis* bark is found to have a significant beneficial effect on ethanol-induced hepatotoxicity in Wistar rats about liver function tests performed <sup>49</sup>.

**Anti-inflammatory Activity:** This review explores medieval, ancient and modern sources for ethnopharmacological uses of *Ficus* (fig) species, specifically for employment against malignant disease and inflammation. The close connection between inflammatory/infectious and cancerous diseases is apparent both from the medieval/ancient merging of these concepts and the modern pharmacological recognition of the initiating and promoting importance of inflammation for cancer growth. Also considered are chemical groups and compounds underlying the anticancer and anti-inflammatory actions, the relationship of fig wasps



and fig botany, extraction, and storage of fig latex, and traditional methods of preparing fig medicaments including fig lye, fig wine and medicinal poultices<sup>50</sup>.

The ethanolic (300 mg) and petroleum ether extracts (600 mg/kg/day) of *Ficus benghalensis*, significantly reduced ( $P < 0.05$ ) carrageenan-induced paw edema in rats. The ethanolic and petroleum ether extracts showed a greater anti-inflammatory effect compared with the standard drug indomethacin. The results indicated the ethanolic extract of *Ficus benghalensis* exhibited more significant activity than petroleum ether in the treatment of inflammation<sup>51</sup>. Anti-inflammatory activity of bark of young plant of *F. benghalensis* was compared with that of the mature plant using carrageenan-induced hind paw edema for acute inflammation and cotton pellet induced granuloma for chronic inflammation, in rats. Ethanolic, chloroform and petroleum ether extracts at a dose level of 300 and 600 mg/kg/day p.o. were studied using indomethacin at the dose level of 10 mg/kg/day p.o. as standard drug.

Ethanolic extract of a younger plant at a dose level of 300 and 600 mg/kg/day p.o. caused 37.64% and 69.04% reduction in paw volume after 3 h, while the mature plant caused 55.03% and 65.54% reduction respectively, in carrageenan-induced paw edema model. In the cotton pellet granuloma model, ethanolic extract of a younger plant at a dose level of 300 and 600 mg/kg/day p.o. caused 19.27% and 39.03% reduction in paw volume after 3 h, while the mature plant caused 14.12% and 34.25% reduction respectively. So, the younger plant possesses relatively more anti-inflammatory activity than the mature plant. Chloroform and petroleum ether extracts did not possess significant anti-inflammatory activity<sup>52</sup>. Anti-inflammatory activity of methanolic extract of the stem bark and the leaf in carrageenan-induced and formalin-induced hind paw edema in rats was comparable to that of potent drugs, *i.e.* diclofenac sodium and aspirin<sup>53, 54, 55, 56</sup>.

According to Ayurveda, it is astringent to bowels; useful in the treatment of biliousness, ulcers, erysipelas, vomiting, vaginal complaints, fever, inflammations, leprosy. According to Unani system of medicine, its latex is aphrodisiac, tonic,

vulnerary, maturant, lessens inflammations; useful in piles, *etc.* The study was evaluated of anti-inflammatory property of the aqueous, chloroform and alcoholic extracts of the bark by *in-vitro* methods. The *in-vitro* method was estimated by the human red blood cell membrane stabilization (HRBC) method. Results showed the significant anti-inflammatory property of the different extracts tested. The methanolic extract at a concentration of 200 mg/ml. showed potent activity on comparing with the standard drug diclofenac sodium<sup>57</sup>.

**Analgesic and Antipyretic Activity:** Many attempts have been made to study various pharmacological actions of this plant especially its analgesic and antipyretic activity. Recently Jain Vika *et al.* made a valuable effort in this aspect. They utilized Albino rats to check the analgesic activity of *F. benghalensis* and antipyretic activity was studied in Brewer's Yeast induced pyrexia in rats. To study analgesic activity, the rats were kept on fasting for 24 h. Then aqueous, ethanol, chloroform, and petroleum ether extracts of *F. benghalensis* and also aspirin was administered orally (100 mg/kg) 60 min before the commencement of the reaction time. Finally, the animal models were subjected to the hot plate and tail immersion analgesic activity. The ethanolic extract showed more significant analgesic activity as compared to other extracts. In case of antipyretic activity, animals were fevered by injection of Brewer's Yeast suspension (10 mg/kg) subcutaneously in the back below the nape of the neck. All the above-mentioned extracts were fed to fevered rats.

Ethanolic extract showed a significant decrease in elevated body temperature while other extracts did not show a significant decrease in elevated body temperature. So it is concluded that ethanolic extract of *F. benghalensis* shows analgesic and antipyretic activity similar to those observed for non-steroidal analgesic drug aspirin. The phytochemical analysis showed the presence of flavonoids, alkaloids, triterpenoids, and tannins that might be responsible for its activity<sup>58</sup>. Analgesic activity of methanolic extract of the leaf and the stem bark in Acetic acid induced writhing and Eddy's hot plate method in rats was comparable to that of potent drugs *i.e.* diclofenac sodium and aspirin<sup>54, 55, 56</sup>.

**Antioxidant Activity:** *F. benghalensis* possesses antioxidant activity which is mostly due to phenolic compounds<sup>59</sup>. Anti-oxidant and free radical scavenging activity of methanolic and acetone: water (70:30) extracts of *F. benghalensis* aerial roots was studied. Antioxidant potential of the methanol extract, estimated by using potassium ferric cyanide reduction method, was comparable to that of tannic acid. DPPH free radical scavenging activity (%) of the 70% acetone and methanol extracts was about 50, nearer to each other, at concentrations of 46.79 $\mu$ g and 39.3 $\mu$ g respectively.

The values of TAA determined by ABTS<sup>+</sup> radical cation scavenging activity of the 70% acetone and methanol extracts were 6182.7 and 6096.1  $\mu$ mol/g respectively. Hydroxyl radical scavenging activity (%) of the 70% acetone and methanol extracts at a concentration of 250  $\mu$ g was 24.2 and 32.4 respectively. Linoleic acid peroxidation inhibition of both extracts was comparable to that of  $\alpha$ -tocopherol. Antihemolytic activity (%) and metal chelating activity (mg EDTA/g sample) of 70% acetone and methanol extracts were 75.0, 70.5 and 19.9, 7.4 respectively<sup>60</sup>. Antioxidants protect the body against oxidative stress by neutralizing free radicals and reactive oxygen species (ROS) for example, superoxide radicals, hydroxyl radicals, hydrogen peroxide radicals, etc. The body has an antioxidant defense system (AODS) that include superoxide dismutase (SOD) and catalase, etc. Sometimes prolonged exposure to infection may result in irreversible oxidative damage to the body, and the body needs an exogenous supply of antioxidant from some natural sources. Flavonoids, flavonols, and terpenoids are favorite choices among natural antioxidants.

Antioxidant activity and phenolic contents of *F. benghalensis* was observed<sup>61</sup>. In their experiment, aqueous extract of fresh aerial roots of *F. benghalensis* showed good antioxidant activity due to the presence of phenolics and flavonoids. Phenolics are the phytochemicals that provide a natural intake of antioxidants. Out of all phenolics, flavonoids have diphenyl propane structure with different degrees of oxidation, hydroxylation, and substitution. They normally occur in plants as glycosides and are a rich source of antioxidant. They found that *F. benghalensis* showed high

flavonol to total phenolics ratio and high flavonoid to total phenolics ratio, but it exhibited very low antioxidant activity. It might be due to the presence of certain other factors which could impede the antioxidant efficacy of flavonoids in the root extract of *F. benghalensis*. Research on the antioxidant potential of various central medicinal plants explored that the maximum antioxidant activity is exhibited by the aerial roots of *F. benghalensis*. The phytochemical assay showed the presence of flavonoids and tannins that might be responsible for the antioxidant activity of *F. benghalensis*<sup>62</sup>.

The extract was investigated for its antioxidant activity by 1, 1-diphenyl, 2-picryl hydrazyl (DPPH) radical scavenging activity, hydroxyl radical scavenging activity, reducing capacity, hydrogen peroxide activity, total phenolic content using Folin-Ciocalteu's phenolic reagent. The extract showed maximum scavenging of DPPH radical (96.07%) at 250  $\mu$ g mL<sup>-1</sup> concentration and hydrogen peroxide (69.23%) at 1000  $\mu$ g mL<sup>-1</sup> concentration. The extract shows good results when compared with other compounds. This shows the scavenging activity of the extract<sup>63</sup>. Anti-oxidant activity of the methanolic extract of the bark of *Ficus benghalensis* (MFB) was studied at doses of 100, 200 and 300 mg/kg (i.p) using the Freund's Complete Adjuvant-induced arthritis model, the Formalin-induced arthritis model and the Agar induced arthritis model.

The extract produced a marked inhibitory effect on edema especially on secondary immunological arthritis and caused graded inhibition of both phases of Formalin-induced pain. The study validated the traditional use, demonstrating that the methanolic extract of bark of *Ficus benghalensis* possesses dose-dependent anti-rheumatic activity in all the models with a possibility of acting through the central and peripherally mediated activities. The DPPH and hydrogen peroxide model demonstrated positive antioxidant activity in a concentration-dependent manner (100  $\mu$ g/ml)<sup>64</sup>.

Methanolic extract of *F. benghalensis* leaves was evaluated for the presence of carbohydrates, proteins, phenolic compounds, oil and fats, saponins, flavonoids, alkaloids, and tannins by using standard protocols. Antioxidant activity of



and the fecal excretion of bile acids and neutral sterols increased, the HMG-CoA reductase and lipogenic enzyme activities in liver and lipoprotein lipase activity in heart and adipose tissue and plasma Lecithin-Cholesterol Acyltransferase LCAT activity and the incorporation of labelled acetate into free and ester cholesterol in liver decreased significantly<sup>69</sup>.

**Antitumor Activity:** Fruit extracts exhibited anti-tumor activity in the potato disc bioassay. None of the tested extracts showed any marked inhibition on the uptake of calcium into rat pituitary cells GH4C1. The extracts of the four tested *Ficus species* had significant antibacterial activity, but no antifungal activity. The results of this preliminary investigation support the traditional use of these plants in folk medicine for respiratory disorders and certain skin diseases<sup>70</sup>. The extract from fruit exhibited anti-tumor activity in the potato disc bioassay. The other tested extracts showed no marked inhibition on the uptake of calcium into rat pituitary cells GH4C1. The extracts of the four tested *Ficus species* had no significant antifungal activity. The results support the traditional use of these plants in folk medicine for respiratory disorders and certain skin diseases<sup>71</sup>.

**Immunostimulatory Effect:** The aqueous extract of *F. benghalensis* aerial roots was evaluated for immunostimulatory activity, using *in-vitro* polymorphonuclear (PMN) function test and hypersensitivity and hemagglutination reactions in rats. Maximum percentage phagocytosis, *i.e.* 64% was observed at 1.0 mg/ml, compared to 34% in control. Maximum early and delayed hypersensitivity reactions and an increase in the antibody titer in rats were observed at a dose of 100 mg/kg p.o. for five days<sup>72</sup>. Immunostimulatory effect of the aerial roots was testified by using feed containing 5% aerial root powder, in fish models (*Channa punctatus*). Levels of ALT and AST remained almost the same. Serum lysozyme, SOD, phagocytotic index, %age phagocytosis, total serum protein, nitric oxide, and immunoglobulin increased significantly<sup>73</sup>. In another study, the hydroalcoholic extract of the leaves and its four fractions (*n*-hexane, chloroform, *n*-butanol, and water) showed prominent immunostimulatory activity in phagocytosis of killed *C. albicans* and candidacidal assay<sup>74</sup>.

**Immunomodulatory Activity:** To evaluate the immunomodulatory activity of the aerial roots of *Ficus benghalensis* (Family Moraceae). Various extracts of the aerial roots of *Ficus benghalensis* were evaluated for potential immunomodulatory activity, using the *in-vitro* polymorphonuclear leucocyte (human neutrophils) function test.

The methanol extract was evaluated for immunomodulatory activity in *in-vivo* studies, using rats as the animal model. The extracts were tested for hypersensitivity and hemagglutination reactions, using sheep red blood cells (SRBC) as the antigen. Distilled water served as a control in all the tests. The successive methanol and water extracts exhibited a significant increase in the percentage phagocytosis versus the control. In the *in-vivo* studies, the successive methanol extract was found to exhibit a dose-related increase in the hypersensitivity reaction, to the SRBC antigen, at concentrations of 100 and 200 mg/kg. It also resulted in a significant increase in the antibody titer value, to SRBC, at doses of 100 and 200 mg/kg in animal studies. The successive methanol extract was found to stimulate cell-mediated and antibody-mediated immune responses in rats. It also enhanced the phagocytic function of the human neutrophils, *in-vitro*<sup>75</sup>.

The aqueous extract of the aerial roots of *F. benghalensis* was evaluated for its effect on both specific and nonspecific immunity. This extract exhibited a significant increase in percentage phagocytosis by human neutrophils in the *in-vitro* tests. It exhibited promising immunostimulant activity at doses of 50, 100, 200 and 400 mg/kg body weight in sheep red blood cells (SRBC), induced hypersensitivity reaction and hemagglutination reaction in rats. The aqueous extract was found to stimulate the cell-mediated and antibody-mediated immune responses. Oral administration of the aqueous extract for five days produced a dose-related increase in early (4 h) and delayed (24 h) hypersensitivity reactions in rats. The maximum response was observed at a dose of 100 mg/kg. Increase in the dose beyond 100 mg/kg did not result in a further increase in the immune response<sup>76</sup>.

**Anti-arthritis Activity:** Anti-arthritis activity of methanolic extract of the stem bark (MESB) at a

dose level of 400 mg/kg/day p.o was studied in formalin and Complete Freund's adjuvant (CFA) induced arthritis in rats by using arthritis score, oxidative stress, radiographic pattern of hind legs and biomarkers viz. lipid peroxidation, antioxidants (non-enzymatic and enzymatic), nitric oxide, serum lysosomal enzymes (ALT, AST, and LDH), connective tissue biomarkers (sialic acid, hydroxyproline and glucosamine) and pro-inflammatory mediators (IL-6 and TNF- $\alpha$ ). Diclofenac sodium, dexamethasone, and methotrexate at a dose level of 10, 0.03 and 0.007 mg/kg/day p.o. respectively were used as reference standards. Anti-arthritic activity of MESB was slightly better than that of diclofenac sodium and less effective than that of dexamethasone and methotrexate<sup>77</sup>.

The study was carried out to evaluate the anti-arthritic activity of ethanol and aqueous extract of the root of *Ficus benghalensis* on Freund's adjuvant-induced arthritis in rats. The crude ethanol and aqueous root extract were administered orally at a dose of 300 mg/kg body weight for 28 days. Indomethacin at a dose of 10 mg/kg body weight was used as standard drug. The paw volume was measured on days 7, 14, 21 and 28. At the end of day 28<sup>th</sup>, the animals were anesthetized with anesthetic ether, and blood was collected from retro-orbital route to all the groups of animals and various hematological parameters such as hemoglobin content, total WBC, RBC, and erythrocyte sedimentation rate (ESR) were estimated. The body weight of the animals was measured by digital balance to assess the course of the disease at the initial day before induction and the end of the 28<sup>th</sup> day.

The results indicate that at the dose of 300 mg/kg b.w, both the extracts protect the rats against primary and secondary arthritic lesions, body weight changes and hematological perturbations induced by FCA. Daily treatment with crude extracts and standard drug effectively inhibits paw edema in rats. Both the extracts significantly ( $p < 0.01$ ) altered the parameters which were estimated, when compared to control group rats. The observations showed that ethanol extract shows highly inhibition of paw edema in rats. The ethanol extract inhibits rat paw edema by 63.64% than the aqueous extract 31.82% when compared to standard drug 62.34% on the 28<sup>th</sup> day. At the end of

the study, the ethanol extract showed more pronounced effect than aqueous extract when compared to the standard drug. Our findings showed significant anti-arthritic activity of *F. benghalensis* root extracts against FCA induced arthritis in rats<sup>78</sup>.

**Antifungal Activity:** Antifungal activity of aqueous extracts of the stem bark, leaf, and root were evaluated by agar diffusion technique at a dose level of 30 mg/ml using nystatin (30  $\mu$ g/ml) as the reference standard. Among the three extracts, stem bark extract showed antifungal activity against *Trichophyton rubrum* and *Candida albicans* comparable to that of nystatin. *T. rubrum* was resistant to the leaf extract, and *K. pneumonia* was resistant to both leaf and root extracts<sup>79</sup>. In another study, water and ethanolic extracts of the stem bark increased breaking strength and decreased the period of epithelialization and percentage wound contraction in incision and excision model respectively<sup>80</sup>.

**Larvicidal Activity:** Larvicidal activity of methanolic extract of the leaf was studied against early 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> instar larvae incorporated in different concentrations in glass beakers. Results revealed LC<sub>50</sub> values against early 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> instar larvae of *Culex quinquefasciatus*, *Anopheles stephensi* and *Aedes aegypti* as 41.43, 58.21 and 74.32 ppm, 60.44, 76.41 and 89.55 ppm and 56.54, 70.29 and 80.85 ppm respectively. LC<sub>50</sub> values against early 3<sup>rd</sup> instar larvae of *Culex tritaeniorhynchus* and *Anopheles subpictus* were 100.88 and 159.76 ppm respectively<sup>81, 82</sup>.

**Wound Healing Activity:** Since ancient times various herbs and medicinal plants have been of medicinal importance for the treatment of different ailments. One of these is wound healing activity. Wound healing process holds various steps which involve coagulation, inflammation, the formation of granulation tissue, matrix formation, remodeling of connective tissue, collagenization and acquisition of wound strength<sup>83</sup>. Research on wound healing drugs is developing the area in modern biomedical sciences. Scientists who are trying to develop newer drugs from natural resources are looking toward the Ayurveda, the traditional Indian system of medicine. Several drugs of plant, mineral and animal origin are

described in the Ayurveda for their wound healing properties under the term Vranaropaka.

Most of these drugs are derived from plant origin. Some of these plants have been screened scientifically for the evaluation of their wound healing activity in different pharmacological models and patients, but the potential of most remains unexplored. In a few cases, active chemical constituents were identified. Some Ayurvedic medicinal plants, namely, FB, *Cynodon dactylon*, *Symplocos racemosa*, *Rubia cordifolia*, *Pterocarpus santalinus*, *Ficus racemosa*, *Glycyrrhiza glabra*, *Berberis aristata*, *Curcuma longa*, *Centella asiatica*, *Euphorbia nerifolia*, and *A. vera*, were found to be effective in experimental models<sup>84</sup>. For wound healing activity, leaf powder of *F. benghalensis* is mixed with coconut oil and applied topically on the affected places to treat the wounds. Dosage is once a day for 3 days<sup>85</sup>.

The wound healing capacity of aqueous and ethanolic extract of the root was studied by incision model, excision model and dead space wound model in rats. Increased breaking strength, decreased the period of epithelialization and percentage wound contraction and increased hydroxyproline content were observed in the incision, excision, and dead space model respectively. Results were comparable to that of standard drug povidone iodine<sup>86</sup>. In another study, using excision and incision wound models, wound healing ability of aqueous and ethanolic extracts of the stem bark was evaluated in excision and incision wound models. Significant wound healing activity was shown by an increase in the skin breaking strength and the rate of wound contraction and a decrease in the period of epithelialization, compared with placebo<sup>80</sup>.

**Growth Promoting Activity:** The growth-promoting the potential of alcohol and aqueous extracts of young prop roots of *F. benghalensis*, a medicinal plant widely used among the tribes of the Western zone of Maharashtra state, India to increase height was studied. Its growth promoting effect was evaluated in one-month-old immature female rats. Extracts were administered to young rats for 30 days. Significant ( $p < 0.05$ ) increase in body weight was observed in alcohol, and aqueous extract treated immature female rats.

Animals treated with alcohol extract showed a statistically significant difference ( $p < 0.05$ ) in parameters such as mean food consumption, total body length and increase in alkaline phosphatase levels, a biochemical marker for bone formation. Significant results were not observed in other parameters such as feed efficiency, tail length, relative organ weight, bone density, tibial epiphyseal cartilage width, and bone hydroxyproline levels. The results obtained establish the efficacy of the plant material as well as the importance of chronic studies to justify the use of this plant in growth promotion<sup>87</sup>.

**CONCLUSION:** Plants have been serving humanity for centuries by providing a good source of medicines. Active constituents are isolated from plants and are used for diagnosis, treatment, and prevention of various human diseases, but many crude drugs are also in use. This review article comprised of plant study, pharmacological activity and toxicological study of *F. benghalensis* Linn. (Moraceae), a medicinal plant found throughout India and also in other countries. The various extracts of *Ficus benghalensis* showed various pharmacological activities as similar to standard drugs. It has pharmacological activities such as antidiabetic, hypolipidemic, antiatherogenic, antibacterial, immunomodulatory, analgesic and antipyretic, antioxidant, anti-inflammatory, anti-diarrhoeal, wound healing and growth promoting. Thus, the plant can be considered as a great herbal remedy for human beings.

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