



Review Article

A CRITICAL REVIEW ON ASHVATTHA LEAVES (*FICUS RELIGIOSA* LINN.): AN AYURVEDIC PERSPECTIVE AND CURRENT PRACTICE

Ashish Kumar Gupta^{1*}, Shalini Gupta², Charu Bansal³

¹S.Ayurved Chikitsa Adhikari Govt. of MP,

²PG Scholar, Department of Anatomy, ³Professor, Department of Swasthavritta, Pt.K.L. Sharma Govt. (Auto).
Ayurved Institute Bhopal, MP, India.

ABSTRACT

Ficus religiosa is large deciduous tree also known as the *Bodhi vraksha*, often planted near temples or religious places. In Indian subcontinent it is also said that this is the mythical 'World Tree' or the 'Tree of Life'. Through the ancient times it is widely being used to treatment of various diseases like constipation, dysentery, skin diseases, heart diseases, snakebite. But this knowledge still scattered and unelaborated. Various pharmacological studies have been done to explore the chemical constitution of different parts of *Ashvattha*. They found campesterol, stigmaterol, isofucoesterol, α -amyrin, lupeol and different kind of Amino acids etc especially in leaf. various Ayurvedic texts describe about *Ashvattha* with their aspect. *Ashvattha* kept in Ayurvedic classics in different *Ganas/ Mahakashyas /Vargas* like *Kaidav Nighantu* kept in *Ausadhi Varga Madanpal Nighantu-Vatadi Varga, Raj Nighantu- Amrutadi Varga* etc. Numbers of Ayurvedic studies are available to explore different properties of *Ashvattha*. It has *Guru, Ruksha, Seet, Kashya* properties, *Sita, Pitta-Kaphahara, Vranaropak* property. It is also important constituent of various Ayurvedic preparations like *Shankha Vati, Chandraprabha Vati, Kaminivindravan Rasa*. Recent research also shows Hypoglycemic activity, Hypolipidemic activity, anti-microbial and anti-viral activities, wound healing activity, anti-oxidant, anti-convulsant activity, immunomodulatory activity, anti-ulcer activity, anti-cancer activity, anti-inflammatory and analgesic activities, anti-asthmatic activity, anti-acetylcholinestrase activity. These details are available in scattered way in different places. In this review article maximum possible information reviewed and collectively presented in concise form. This may be helps full to explore the holistic approach of the *Ashvattha*.

KEYWORDS: *Ashvattha, Ficus Religiosa.*

INTRODUCTION

Ficus is a big tropical, evergreen tree. There are more than 800 species found of *Ficus*. Maximum parts like bark, root, fruits, latex, and leaves are frequently used for treatment of various illnesses. These species are richest source of polyphenol compounds, flavonoids. These compound having strong antioxidant property to prevent various oxidative stress related diseases such as atherosclerosis, diabetes and dyslipidaemia. Through the ancient times it is widely being used to treatment of various diseases like *Swarsh* (juice) of leaf has been used for the treatment of cough, asthma, sexual disorders, hematuria, pain in teeth and ears, headache, eye troubles, gastric problems and scabies etc., decoction of leaf has been used as an analgesic for toothache, stem bark is used in gonorrhoea, bleeding, diabetes, diarrhoea, fracture, antiseptic, astringent etc^[1].

AIM AND OBJECTIVE

To explore holistic Knowledge about *Ficus religiosa* Linn. tree (*Ashvattha*) with special reference to *leave*

MATERIAL AND METHOD

- The Ayurvedic literature related to *Ashvattha patra* was studied from various sources like *Brihatrayee, Laghu Trayee and Nighantus* etc.
- The modern literature related to phytochemical composition of *Ashvattha Patra* will be studied from various texts.
- Materials from electronic media and journals related to the subject were reviewed.

Synonyms**According to Madanpal Nighantu**

Pippala, Syamala, Ksirivrksha, Gajasana, Harivasa, Caladala, Mangalya and *Bodipidae* are the synonyms for *Ashvattha*.

According to Saraswati Nigantu

Magalya, Keshvasa, Chetya Vraksha, Pavitrak, Ashvattha, Bodi Vraksha, Deerdhayau, Chal Patro,

Gajasana, Pippal, Ksheer vraksh, Shyamla, Bahuparnika.

According to Dhanvantari Nighantu

Keshvasa, Chalpatra, Pavitrak, Mangalya, Shyamla, Ashvattha, Bodhivraksha, Gajasana, Shriman, Ksheerdrumo, Vipra, Shubhad, Shyamlachhad, Sevyā, Satya, Suchidrum, Chetya drum, Dhramavraksha



Fig No. 10 *Ficus religiosa*

Place of Ashvattha in different classics- (Classical Categorization)

Table 2: Ashvattha kept in Classics in Different Ganas / Mahakashyas / Vargas

Sr.No.	Nighantu/ Samhitas	Varga/Gana/ Mahakashya
1.	<i>Charaka Samhita</i>	<i>Mutrasamgrahaniya Mahakashyam, Kasaya skandha</i>
2.	<i>Sushruta Samhita</i>	<i>Nyagrodhaadi Gana</i>
3.	<i>Vagbhata</i>	<i>Nyagrodhadi Gana</i>
4.	<i>Bhav Prakash Nighantu</i>	<i>Panchavalkala, Ksheeri-Vruksha, Vatadi Varga</i>
5.	<i>Astang Nighantu</i>	<i>Nyogrodhadi Varga</i>
6.	<i>Kaidav Nighantu</i>	<i>Ausadhi Varga</i>
7.	<i>Madanpal Nighantu</i>	<i>Vatadi Varga</i>
8.	<i>Raj Nighantu</i>	<i>Amrutadi Varga</i>
9.	<i>Saraswati Nighantu</i>	<i>Mahavraksha Varga</i>
10.	<i>Dhanvantari Nighantu</i>	<i>Amradi Varga</i>

Properties of Ashvattha**According to Bhava Prakasha**

Ashvattha is *Guru, Ruksha, Seet, Kashya, Varnya* and *Yonivisodhak* in properties. Not easily digestible, pacify *Pitta Vikar, Kapha Vikar*, wound and *Rakta Vikar*.

According to Kaidev Nigantu

Ashvattha is *Guru, Ruksha, Seet, Kashya, Varnya* and *Yonivisodhak* in properties. Not easily digestible, pacify *Pitta Vikar, Kapha Vikar*, wound and *Rakta Vikar*.

According to Madan Pal Nigantu^[2]

Ashvattha is *Duhkhasumaka, Sita, Pitta-kaphahara, Vranaropana* and *Raktadosahan* in nature.

According to Raj Nigantu

Ashvattha is sweet, astringent, cooling and it pacify *kapha* and *Pitta*. It controls the ailments arising out of *rakta dosa* and also burning syndrome. Its ripe fruit relieves from the ailments of vaginal passage, very quickly.

According to Dhanvantari Nighantu

Ashvattha has same properties as *Vata (ficus bengalensis)*. *Sheet Virya, Kashya, Stambhan, Rukshan, pacified Trashna, Vaman, Murchha*, and specially *Raktapitta*, and *Kapha Dosa*.

Botanical Description

A large tree, frequently epiphytal, leaves leathery, broadly ovate, entire, undulate, tip narrowed into a linear, tail like point, petiolate, fig

axillary, sessile, in pairs, globose, slightly vertically flattened, 12mm in diam., dark purple when ripe.

F. religiosa is a large deciduous tree without aerial roots.

Bark is grey with brownish specks, smooth, exfoliating in irregular rounded flakes.

Leaves- New leaf is red-pinkish in colour, after some time its colour change into deep green. Adult leaf is heart-shaped, shiny about 12 to 18cm long attached to long flexible stalks, each leaves have 6-8 pairs of side-veins with fine network of veins like strainer.

Flowers- The small red flowers are axillary sessile, unisexual and appear in February.

Fruits are circular in shape called as Figs. Raw fruits are green in colour during summer ripened fruits turn black in colour in rainy season.^[3]

Distribution

It is commonly found in wild or cultivated nearly throughout India in sub - Himalayan forests, districts of Bihar and Orissa, Upper Gangetic Plain, West Bengal and Central India. . It is native from India to Southeast Asia which grows up to 5000 ft. with the trunk.

Parts used: Stem bark, fruit, leaf -bud, latex, root, leaves.

Pharmacodynamics (Rasa Panchaka)

Rasa: Kashaaya, Madhur

Guna: Guru, Ruksha

Veerya: Shita

Vipaaka: Katu

Doshakarma: Kapha-Pitta shaamaka

Properties

Rogagnata: It is indicated in various ailments like- *Vedana, Shotha, Raktasrava, Vrana, Vranashotha, Bhagandara, Mukhapaka, Vatarakta, Raktavikara, Raktapitta, Udarashoola.*

Karma: (Therapeutic action of Ashvattha) It is *Vranaropana, Vedanasthapana, Shothahara, Raktashodhaka, Rakta pitta shamaka, Stambhana, Kaphaghna, Mridurechana.*

Actions and Uses:^[4]

The bark is astringent, sweet and cooling. It is used in treatment of gonorrhoea, diarrhoea, dysentery, haemorrhoids and gastric ulcers. The paste of powdered bark is good absorbent for inflammatory swellings and useful in burns. Leaves and young shoots are prescribed in wounds and skin diseases. The latex is also useful in inflammation.

Chemical Constituents:^[5]

B- sitosteryl - D - glucoside, (bark); n - octacosanol, methyloleanolate, lanosterol, stigmasterol,

bergapten, bergaptol and tannin.(stem bark); protein and amino acids (Leaves).

Constituents of the Leaves

Leaves yield campesterol, stigmasterol, isofucosterol, α -amyrin, lupeol, tannic acid, arginine, serine, aspartic acid, glycine, threonine, alanine, proline, tryptophan, tryosine, methionine, valine, isoleucine, leucine, nonacosane, n-hentricontanen, hexa-cosanol and n-octacosan.^[6,7,8,9]

Leaf Proteins- Leaf protein concentrates of *Ficus religiosa* has nitrogen contents about 12.25%. By the Liquid Paper Chromatography (LPC) of *Ficus religiosa* has found to be a condensation polymer of L-cystine, L-lysine, L-arginine, DL serine, DL-aspartic acid, glycine, DL threonine, D and L-alanine, L-proline tryptophan, L-tyrosine, DL-methionine, DL-valine, isoleucine and L-leucine.^[10]

Table 3: Nutritional composition of leaves of *Ficus religiosa*^[11-14]

Contain Proximate composition (per 100g)	
Moisture content	50.50gm
Carbohydrates	19.20gm
Proteins	13.55gm
Fats	2.5 g
Crude fibre	26.1g
Ash content	12.9 g
Calcium	1.67 mg
Iron	0.18mg
Copper	0.105 mg
Manganese	0.355 mg
Bark Zinc	0.09 mg

Pharmacological Activities

Nagwa E. Awad, *et al.* in the study; Assessment of *Ficus* spp. in Improving the Metabolic Syndrome Secondary to Hypercholesterolemia in Rats Fed with High-Fat Diet; fed the rats with high-fat-diet and orally administered with cholesterol (30 mg/0.3ml 0.7% tween/animal) five times/week for nine consecutive weeks. It has been recorded a significant decrease ($p < 0.001$) in hepatic glucose, glycogen, total protein, and vitamin E and C levels. Orally treatment with leaves extract (500mg/kg body weight) at the same time of cholesterol induction and with the same duration revealed an improvement of the selected parameters by variable degree. *F. religiosa* recorded the most potent effect.^[15]

Anti-microbial activity: Choudhary GP et al in 2006 found in their study, ethanolic extracts of *F. religiosa* (leaves) shows antimicrobial activity. There was a studied using the agar well diffusion method against

four bacteria: *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa* and against two fungi: *Candida albicans* and *Aspergillus niger* and found that 25mg/ml of the extract was active against all bacterial strains and comparatively less active against two fungi.^[16]

Anti-inflammatory: Gulecha VS et al. in 2010 found The leaves extract of *F. religiosa* was showed the anti-inflammatory activity in albino rats against carrageenan induced pedal oedema.^[17]

Antioxidant : Charde RM et. al. In 2010 found in his study, Ethanolic extract of leaves of *F. religiosa* shows antioxidant activity in different dilutions.^[18]

Wound-Healing: Hydroalcoholic extract of *F. religiosa* leaves applied on wounded Wistar albino

rats result in high rate of wound contraction, decrease in the period for epithelialisation, high skin breaking strength leading to wound healing.^[19]

Anti-ulcer: Ethanolic extract of leaves of *F. religiosa* was given to rats at a dose level 250mg/kg and 500mg/kg. It is found that significantly decreased the volume of gastric acid secretions, free acidity and total acidity and ulcer index in aspirin induced ulcer.^[20]

Laxative: Aqueous extract of *F. religiosa* leaves extract showed significant laxative activity when extract was administrated to albino wistar rats at different doses (100, 200, 400mg/kg, p.o.).^[21]

Table 4: Pharmacological activities: Previous Work

Activity	Research information
Hypoglycemic activity ^[22]	<ul style="list-style-type: none"> Mamata Pochhi et. al. in the year 2017 evaluate Hypoglycemic and antihyperlipidemic effect of aqueous leaves extract of <i>Ficus religiosa</i> in alloxan-induced diabetic rats, and found The aqueous leaves extract of <i>F. religiosa</i> induced significant improvement in glucose, serum lipids, lipoproteins concentration and lipid metabolizing enzymes activity (Lipase, HMG CoA reductase and LCAT)
Hypolipidemic activity ^[23]	<ul style="list-style-type: none"> Manal A Hamed in 2011 evaluate the Beneficial effect of <i>Ficus religiosa</i> Linn. on high-fat-diet-induced hypercholesterolemia rats. And found <i>Ficus religiosa</i> Linn. has hypolipidaemic and antioxidant properties
Antimicrobial and antiviral activities:	<ul style="list-style-type: none"> Aqueous extract of <i>F. religiosa</i> showed high antimicrobial activity against pathogenic organism; <i>B. subtilis</i>, <i>P. aeruginosa</i> and <i>B. subtilis</i> and <i>P. aeruginosa</i>.^[24]
Wound healing activity ^[25]	<ul style="list-style-type: none"> Leaf extract of <i>F. religiosa</i> (emulsifying ointment at a concentration of 5% and 10%) applied topically showed significant decrease in the period of epithelization and in wound contraction (50%). A significant increase in the breaking strength was observed in an incision wound model when compared to the control. The result suggests that leaf extract of <i>F. religiosa</i> (both 5% and 10%) applied topically possess dose-dependent wound-healing activity.
Anti-ulcer activity ^[26]	<ul style="list-style-type: none"> The hydroalcoholic extract of leaves of <i>Ficus religiosa</i> also exhibited antiulcer activity. The activity was evaluated against pylorus ligation-induced ulcers, ethanol-induced ulcers and aspirin-Induced ulcers. Determination of antiulcer effect was based upon ulcer index and oxidative stress.
Antiarthritic activity ^[27]	<ul style="list-style-type: none"> Ethanolic extract of <i>Ficus religiosa</i> leaves in Freund's complete adjuvant (FCA) induced arthritis in rat showed a significant antiarthritic activity
Antibacterial ^[28]	<ul style="list-style-type: none"> The chloroform extract of <i>F. religiosa</i> possessed a broad spectrum of antibacterial activity. The methanolic extracts possessed moderate antibacterial activity against a few bacterial strains. The aqueous extract shows very less antibacterial activity. The antibacterial activity against both Gram-positive and Gram-negative bacteria was in the order of chloroform > methanol >

	<p>aqueous extract of <i>F. religiosa</i></p> <ul style="list-style-type: none"> The extracts of <i>F. religiosa</i> were found to be active against <i>Aspergillus niger</i> and <i>Penicillium notatum</i>
Antibacterial effect [29-31]	<ul style="list-style-type: none"> Aqueous and ethanolic extracts of <i>F. religiosa</i> leaves showed antibacterial effect against <i>Staphylococcus aureus</i>, <i>Salmonella paratyphi</i>, <i>Shigella dysenteriae</i>, <i>S. typhimurium</i>, <i>Pseudomonas aeruginosa</i>, <i>Bacillus subtilis</i>, <i>S. aureus</i>, <i>Escherichia coli</i>, <i>S. typhi</i>.
antifungal effect[32]	<ul style="list-style-type: none"> The ethanolic extract of leaves showed antifungal effect against <i>Candida albicans</i>.
As a Therapeutic agent for the treatment of urinary calculi or their prevention. [33]	<ul style="list-style-type: none"> Higher concentration of the leaf extracts of <i>F. religiosa</i> is highly responsible for the inhibition of Calcium Hydrogen Phosphate Dihydrate (CHPD) urinary crystals growth.
antioxidant[34]	<ul style="list-style-type: none"> The ethanolic extract of leaves of <i>Ficus religiosa</i> was evaluated for antioxidant (DPPH), wound healing (incision, excision, and histopathological and dead space wound model) and anti-inflammatory (Carageenan induced paw odema) activity. The tested extract of different dilutions in range 200 µg/ml to 1000 µg/ml shows antioxidant activity in range of 6.34% to 13.35%
anticonvulsant effect[35]	<ul style="list-style-type: none"> The anticonvulsant effect of the extract obtained from the leaves of peepal was evaluated against PTZ (60mg/kg, i.p) induced convulsion in albino rats. The study revealed 80 to 100 % protection against PTZ induced convulsions when given 30-60 minutes prior to induced convulsion, respectively.
Antioxidative Activity	<ul style="list-style-type: none"> Sahoo Rashmi Rekha, in the year 2012 reported that <i>Ficus religiosa</i> leaf has interesting antioxidative properties and symbolize a potential source of medicine for the treatment of inflammatory activity and wound healing properties. [36]
Larvicidal and antibacterial activity [37]	<ul style="list-style-type: none"> Rapid biological synthesis of ZnO NPs and TiO₂ NPs using aqueous leaf extract of <i>F. religiosa</i> would be effective potential larvicides for mosquito control as well as antimicrobial agents with eco-friendly approach

Traditional Uses

Ashvattha have several therapeutic uses in folk medicine viz.:

Leaf Juice- Freshly prepared juice have laxative property it has been used for the treatment of asthma, cough, sexual disorders, haematuria, earache and toothache, migrane, eye troubles, gastric problems and scabies.

Decoction- Leaves decoction has been used for toothache.

Dried Powder- Leaves have laxative property and dried powder has been used for constipation also.

Traditionally the leaves of the Peepal are used in the treatment of heart diseases.[38] It works as tonic. It relieves in feverish feeling and are also useful in arresting secretion or bleeding.

Peepal leaves smeared with ghee, warmed over a fire and bandaged over the inflamed part (mumps or boil) to get relieve. If there is any pus

formation, it will burst, and if it is in preliminary stages, the growth will automatically subside.

DISCUSSION

Ashvattha is easily available dynamic tree. Although it has multiple qualities and these are associated with each other's but unfortunately these knowledge is scattered in different places. Like Roy K et. al. in 2009 found wound healing property and *Bhavprakash* and *Kaidev nighantu* also maintain same property.

CONCLUSION

The present review on *Ashvattha* may be useful to know about the different formulations. *Ficus religiosa* has lots of medicinal properties, various animal studies indicate its potential effect as anti-inflammatory hypoglycaemic, hypolipidemic, antioxidant, immunomodulatory properties. Various Ayurvedic text describe *Ashvattha* has *Guru*, *Ruksha*, *Seet*, *Kashya* properties. By this way we can use *Ashvattha* in the treatment of different diseases.

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***Address for correspondence**

Dr. Ashish Kumar Gupta

S.Ayurved Chikitsa Adhikari

Govt. of MP.

Email:

drayurvedexpert@gmail.com

Phone : 9827612691

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