



Review on Properties of Ehretia laevis Roxb (Khandu Chakka)

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Abstract

Herbal Plant, *Ehretia laevis roxb* is also called as khandu chakka and ajunvruksha. *Ehretia laevis* is used to treat respiratory system it is also used in wound healing, antioxidant, fungal infection, diabetes, weight gain, peptic ulcer, liver problem, tissues, asthma, blood clotting, antibodies, skin protective, anticoagulant, immunity booster, UTI, anti fatigue, antimalarial, thyroid uptake promotion, ophthalmic effect, gastric acid secretion & regulation, hormones, aging, neurotransmitter, calcium absorption, sports injury, muscle protein, RTI, fever, post surgery recovery, the first root is used syphilis for treatment, wood n stone dry, wines, schizophrenia, cosmetics phytoconstituents is important such as triterpenoids, flavonoids, steroid, alkaloids, 'carbohydrates', minerals, 'vitamins'. In contrast to these products are referred to as "secondary metabolites," and they are essential for plant growth and development. It's a chemical that's found in psychotropic drugs. The new root is worn in the care of syphilis. In the state of Maharashtra, it is worn for local wound care and pain management.

Keywords

Ehretia laevis roxb (khandu chakka), Traditional use, wound healing, blood clotting.

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I. Introduction

The Boraginaceae family includes the *Ehretia* genus. There are 150 species of *Ehretia laevis*.^[1,2] *Ehretia laevis* is a parasitic worm. *Roxb* is an example of a plant that is used in Indian traditional medicine to treat liver problems. *Ehretia laevis* is a medicinal plant native to India. It's a type of deciduous shrub. Because of its 12 m height, it is classified as a dwarf tree in the Boraginaceae family. A tiny tree, *Ehretia laevis*. It's mostly found in the tropics of Asia and Australia.

A review of the literature found that the Boraginaceae family has a wide range of biological activity. *E. laevis* inner bark is used to make food. Ulcers and headaches are treated with the leaves. Natural product is astringent, anthelmintic, diuretic, demulcent, and expectorant, and is utilized to treat urinary tract contaminations, lungs, and spleen problems. Ringworm can be treated with powdered kernel combined with oil. Seeds have anthelmintic properties. This herb has therapeutic properties. The recent study focuses on phytoconstituents in an ethanolic extract of *Ehretia laevis Roxb* using GC MS.^[4] In China, Japan, and India, the bract, bay, radicle, limb, fruits, and beam are utilized as traditional medicines. As a result of their benefit reactivity to numerous botanical activities, these species are employed in many grassy and standard remedies in India and China.^[5,6] The attendance of phenolic acids, lignans, flavonoids, nitrile glycosides, quinonoids, steroids, triterpenoids, and pyrrolizidine alkaloid has been documented in the *Ehretia* genus. Many *Ehretia* species have been found to have anti-inflammatory, anti-diabetic, and antibacterial properties. *Ehretia longiflora*, *Ehretia laevis*, *Ehretia acuminata*, *Ehretia microphylla*, and *Ehretia obtusifolia* are all notable species in this genus.^[7,8] From the previous few decades in China, India, and Japan, many plants of the genus *Ehretia* have been widely employed in many herbal and Chinese treatments.^[9,10] Many phytoconstituents are found in species belonging to the genus *Ehretia*, including phenolic acids, flavonoids, benzoquinones, cyanogenetic glycosides, fatty acids, and some other major admixture.

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|--------------------|----------------------------|
| Usage/ Application | Medicine Industry |
| Variety | Herbal Plant |
| Height | 1 ft |
| Other Necessities | Well Watered |
| Colour | Green |
| Family | Boraginaceae |
| Scientific Name | <i>Ehretia laevis</i> Roxb |

[11]

| NAME OF CHEMICALS | MEDICINAL USES |
|--|--|
| Naphthoquinone derivativ | antibacterial, antifungal, antiviral, insecticidal, toxic, anti-inflammatory, antipyretic, anti parasite |
| Baurenol | analgesic, in swellings |
| Ursolic acid | anti-inflammatory, anti-oxidant, anti-apoptotic, cytotoxic, obesity, diabetes mellitus, heart disease and brain |
| Minerals equally Na, NH ₃ , Fe, Mn, K, P, Zn, Cu, Si, Mg, Ca, | immune system, antioxidants, antiviral activity, preventing viral mutations |
| Gallic acid | antiviral property |
| Tannic acid | bacteria, fungi, yeasts, viruses growth is prohibited by tannins. Clotting of blood, reduce hyper tension, control lipid level |
| Tryptamine | hallucinations, used in psychotropic drugs |
| Cysteine | wound healing, antitumor and skin-whitening |
| Piperazine | anti-helminthic, antiviral |
| Vitamin C -ascorbic acid | Improve immune system |

[11]



Figure 2: Leaves of *Ehretia laevis* Roxb



Figure 3: Fruits of *Ehretia laevis* Roxb

[12]

The demand for standardisation of plant materials is urgent. Physicochemical characteristics are described only in certain pharmacopoeias comprising monographs of plant components.^[13,14] As a result, modern methods for identifying and quantifying active ingredients in herbal stuff may be valuable for the actual standardisation of herbals and their framing. Furthermore, the WHO has underlined the need of ensuring the quality of medicinal plant products through the use of contemporary, controlled processes and the use of appropriate standards.^[15,16] It's mostly found in the tropics of Asia and Australia. Literature survey discloses vast botanical task of family Boraginaceae. The inside bark of *E. laevis* is utilized as food. Leaves are used for ulcers and in headache. Fruit is astringent, anthelmintic, diuretic, demulcent, expectorant and used in affections of urinary progress, illness of lungs and spleen.^[17,18] For hydro alcoholic extract and its fractions, phytochemical screening and quantitative measurement of phenolic and flavonoid content.^[19] HPTLC was used to do principle screening of phytochemicals and conditional analysis of minor metabolites such as Glycosides, Tannins, Saponins, Phenols, Triterpenoids, Flavonoids, Alkaloids, and Steroids.^[20] *Ehretia laevis* Roxb is an example of a plant that is utilized in Indian traditional medicine to handle liver problems. Over the last 100 years, the creation and manufacturing of synthetic produced medicines has changed wellness program in most regions of the world. Significant sectors of the public in underdeveloped nations rely on orthodox practitioners and herbal medications for medical care. One of the bulk important branches of herbal therapy is herbal medicine. Herbal remedies are also used by the majority of the world's population in developed countries like India to meet their health needs.^[21] The protection and efficacy of a herbal cure will be attested to by long-term, seemingly unproblematic utilization. Herbal medications with a lengthy history of usage should be differentiated from those whose traditional use has not been defined by research methodologies.^[22] According to the WHO,

80% of people utilize essential medicines for any component of their primary health care, exposing them to lesser-known side effects and hazards associated with synthetic manufactured pharmaceutical treatments. As a result, medicinal plant bioactive removal and herbal medicine formulations offer a potential alternative to synthetic manufactured medicines.^[23]

Plant description

Ehretia laevis is an infrequent Indian remedial plant that has been utilized since antiquity. It is local to India, Pakistan, Laos, Myanmar, Vietnam, China, and Bhutan, and belongs to the Boraginaceae or Borage family. *Ehretia laevis* Roxb. is a valuable remedial plant that is fetching scarce in Maharashtra. Hindus regard it as religiously significant. Medicinal plant use is on the rise all around the world. The following is some general information on *Ehretia laevis*.^[24,25]

These drugs are both expensive and symptomatic, but they are usually only used for a limited time. The science underlying this wonderful plant was assessed in this study, its effects were demonstrated on empirical extend, a cost-effective and secure method was proposed, and its therapeutic utilization was successfully implemented, assisting needy people. It would also be one of the top crop production solutions for farmers seeking financial assistance.

The *E. laevis* plant is utilized to treat a range of ailments. The stem bark decoction is utilized to cure diphtheria, while the fresh root decoction is utilized to treat syphilis. *E. laevis* paste is applied externally to heal dermatitis, while powdered petals combined with milk are utilized as an aphrodisiac. The plant is used for ornaments, pot herbs, stone and wood dye, medicines, wines, and cosmetics, among other things. The inside bark and fruit of the tree are devoured during times of scarcity.^[26] Various writers treat the Ehretiaceae family as a subfamily of the Boraginaceae. It's mostly found in the tropics of Asia and Australia.^[27,28] Food is made from the inner bark of *Ehretia laevis* Roxb. Leaves are used to treat ulcers and headaches. Fruit is astringent, anthelmintic, diuretic, demulcent, expectorant, and is used to treat urinary tract infections, lung infections, and spleen infections. The new root decoction is utilized to cure syphilis, and the stem bark decoction is utilized to cure diphtheria. Apparently, tender leaf paste is used to treat dermatitis, while the powdered blossoms mixed with milk is touted as an aphrodisiac. Ringworm is treated with powdered kernel combined with oil. Seeds have antihelmintic properties.^[29]

Antioxidant activity

Numerous compounds found in plants are known to actively remove free radicals or scavenge oxygen. Finding naturally occurring antioxidants to replace synthetic antioxidants, which are being outlawed due to unfavourable effects including carcinogenicity, has recently attracted a lot of attention. Natural anti-oxidants can shield the body from free radicals, delay the onset of many chronic diseases, and prevent dietary lipids from being oxidised.^[30]

Anti-inflammatory activity

The inflammatory process is a series of processes that occur in the body in reaction to unpleasant stimuli, infection, or trauma. Redness, heat, swelling, discomfort, and loss of function are all common indicators of inflammation. Eicosanoids, kinins, complement proteins, histamine, and monokines are only a few of the chemical mediators that cause and regulate inflammation, which underpins these manifestations.^[30]

Anti-bacterial activity

When contrasted with methanol, chloroform, and watery concentrates, methanolic extract had higher antibacterial action against Gram-positive and Gram-negative microorganisms, while fluid concentrates had higher antibacterial action against Gram-negative microbes than Gram-positive microscopic organisms. Different species have likewise shown a gainful reaction to antibacterial movement.^[30]

Antiarthritic activity

Joint inflammation is an incendiary problem including harm of joints. There are more than 100 distinct types of joint pain, of which rheumatoid joint inflammation, osteoarthritis, and psoriatic joint pain are the most well-known. Antiarthritic action is supported by *E. laevis* therapy. The leaf extract was the most effective of the three sections used, which included stem, leaf, bark, and fruit. This antiarthritic response could be attributed to active components like hexadecanoic acid.^[30]

Antitubercular activity

Tuberculosis is a contagious infectious illness genesis mostly by *Mycobacterium tuberculosis* in humans. Treatment authority for tuberculosis do exist, however they are far from ideal. Given the rise in infections linked to the human immunodeficiency virus and immunocompromised people, developing effective treatment techniques for human tuberculosis has been difficult.^[30]

Antiarthritic activity

Arthritis is an inflammatory disease that causes joint deterioration. There are over a hundred different types of arthritis, the most prevalent of which being rheumatoid arthritis, osteoarthritis, and psoriatic arthritis. Antiarthritic action is supported by *E. laevis* therapy. The leaf extract outperformed the other two sections (stem, leaf, bark, and fruit). The attending of ongoing components such as hexadecanoic acid (palmitic acid), oleanenic acid, and other fixed oils may be responsible for the antiarthritic response.^[30]

Background

Ayurveda is a healing science that has been practised for millennia. Many herbs are indicated for wound healing in Ayurvedic literature. Folklore remedies are utilised in India to treat, including wound healing. Herbal plants have a wide range of phytochemicals that can aid in the treatment of a great many ailments as well as the prevention of disease progression. To allow for more clinical trials and novel drug development, all of these historical procedures must be thoroughly evaluated. This endeavour will help to prevent antibiotic misuse as well as the undesirable adverse event of stylish treatment. *Ehretia laevis* Roxb is also known as Ajan Vruksha and Khandu Chakka. They have long been utilized by the traditional peoples of Maharashtra, India.^[31]

| | |
|----------|--|
| Habit | It's a tiny tree. |
| Leaves | It has little alternate leaves that are elliptic-oblong, whole, glabrous or almost so. |
| Flowers: | It has white flowers that are up to 8-10 mm wide. |
| Fruits | It produces little drupes that are crimson at first and subsequently black. |

[31]

| Plant origin | Biological activity | References |
|----------------------------|---------------------|------------|
| Anti-inflammatory activity | Leaves | [32] |
| Antidiabetic activity | Leaves | [33] |
| Antioxidant activity | Fruits | [34] |
| Antibacterial activity | Leaves | [32,35] |
| Antiarthritic activity | Leaves | [36,37] |

II. Conclusions

These medical properties of the plant will pave the way for more study and create good chances for employment and farming, all of which will help to boost the global economy. This spiritual plant has the potential to help humanity.^[38] There are nine species tracked down in South Africa *E. coerulea*, *E. amoena*, *E. obtusifolia*, *E. namibiensis* subsp. *kaokoensis*, *E. namibiensis* subsp. *namibiensis*, *E. alba*, *E. rigida* subsp. *rigida*, *E. rigida* subsp. *silvatica*, and *E. rigida* subsp. *nervifolia*. As of late, another types of *Ehretia retroscerrata* is accounted for in China.^[39] Herbal of this genus, which are endemic to India, can be a valuable etymology of revenue for the country. As a result, it would be one of the best crop production solutions for farmers seeking financial assistance. This medicine has also found to be very successful in wound healing and less expensive than surgical treatment.^[40] Flavonoids, phenolic compounds, Saponins, triterpenoids, and steroids have been found in *Ehretia laevis*.^[41]

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