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Ehretia laevis Roxb -A magic remedy

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ABSTRACT
The EhretialaevisRoxb is rare Indian medicinal plant and member of Boraginaceaefamily .Local people of vidharbha India using EhretialaevisRoxb. Commonly known as (Khandu-chakka) plant .People uses paste of leaves for wound healing problems like infections, old age stress, diabetes, chemotherapy drug ,obesity,alcohol consumption, smoking ,malnutrion . Khandu-chakka plant use in covid-19.EhertialaevisRoxb commonly known as :ovate- leaved invory wood, Gujarati: Vadhavaradi ,Hindi: Bhairi, chamror ,Marathi :Datrangi (As it colours teeth in red) .Ajanvruksha (SantDnyaneshwar from AlandiMaharastra India took Samadhi near base of this plant and considered as very spiritual plat) .It act as antimicrobial ,the antibacterial activity of leavesof this plant against gram +ve and gram -ve organisms responsible for wound infection. It is cheap conventional and alternative medicine .Both traditional and alternative medicine are inexpensive. In the states of Maharashtra, the EhretialaevisRoxb is a highly prized medicinal plant that is becoming scarce. Hindus value it for religious reasons. Secondary metabolites, which are usually organic molecules with distinctive and complicated structures, can be biosynthesized by plants to a greater extent. There are numerous secondary metabolites that have interesting pharmacological and therapeutic properties and are used in products like pharmaceuticals, insecticides, dyes, colours, and sweeteners in cosmetic flavours and fragrances. This plant's various therapeutic uses extend to all of its sections.

KEYWORDS: EhretialaevisRoxb.KHANDUCHAKKA,Phytochemisrty,Pharmacogical effects.

I. INTRODUCTION

Ajanvruksha, a plant regarded to be extremely spiritual and where Santa Dnyaneshwar of Alandi, Maharashtra, India, took his Samadhi. A rare member of the Borginaceae family, EhretialaevisRoxb is used medicinally in India.For HINDUS, it has religious significance. This plant contains strong ethanobotanical characteristics and a lot of compounds that are valuable for medicine. For wound healing, ulcer treatment, and blister treatment, locals in Vidharbha use a paste made from the leaves of Ehretialaevis.

It is one of the herbal plant from Wardha district Maharashtra was found to be very effective in wound healing .It is commonly used by tribal for wound management with surprising output . In Ayurvedicliterature , uses of this plant are for Prameha (Diabetes) and Vishaghna (Anti-venom).

This is possibly because of amino acids Cystein 3–4 and Di-n octyl phthalate 5–6. Ehretialaevis is a plant genus that has significant medicinal value and is used in traditional medicine as a remedy for the treatment of stomach venereal disease, toothache, bodyaches, diarrhoea, and cough syphilis. It is also used as an antidote to vegetable poison. A large variety of chemically active substances are present in plants used in traditional medicine, and these substances can be used to treat acute, chronic, and infectious disorders.EhretialaevisRoxb is one of such plant which being used in Indian traditional medicine for the cure of liver ailmrnts. This beneficial plant has

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an irregular trunk with a ligth grey or whitish bark .Leaves are variable in size and shape . They vary from 2cm to 6.3 cm in length and 1.3 cm to3.8 cm in width . Flowers are 2.5mm long , 3- lobed and the carollaaer 6-8mm elongated , in which 5 corolla are lobed . The tube and lobes of corolla are longer than calyx .It has about 50 species.

EhretiaLaevisRoxb's inner bark is consumed as food. For headaches and ulcers, leaves are applied. Fruit is used as an expectorant, astringent, anthelminitic, diuretic, demulcent, and for infections of the lungs and spleen. Fresh root decoction is used to cure syphilis, while stem bark decoction is used to treat diphtheria.
Flowers mixed with milk are used as an aphrodisiac, and the seeds are an anthelmintic. Ringworm is treated with oil and powdered kernel**.**

PHYTOCHEMESTRY :
Ehretialaevis**Plant .**
General Information :
Botanical Name : EhretialaevisRoxb **.**
Synonyms :
Synonym : EhretiacanarensisMiq .ex C. B. Cl.
Synonym : Ehretiafloribunda Royle
Synonym : Ehretialaevisvar . C. B.Cl.
Synonym : Ehretialaevisvar . platyphyllaMerr **.**

COMMON NAMES
Hindi :Chamror
Malayalam :Harandi
Marathi : Datrang
Other : Chamrod
Chamror
Tamil :Kalvirasu
Telugu :Paldattam

TAXONOMY

Kingdome	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Boraginales
Family	Boraginaceae
Genus	Ehretia
Species	Ehretialaevis (Rottler ex G.DON)Roxb .
Common name	Khandu-chakka

Habit and Habitat **:**Small deciduous tree , with short stem and grey bark ,occasionally common .

NATIVE : India , China , Bhutan , Laos , Myanmar .
FLOWERING AND FRUTING TIME :
January to april
FLOWERS : White , up to 8mm
FRUITS : A small drupe ,at first red,at length black
PROPERTIES AND USES : the inner bark of EhretialaevisRoxb is used as food . Leaves are applied to ulcers and in headache . Fruits are astringent , demulcent ,expectorant , diuretic and used in affection of urinary passage , disease of lungs and spleen . Seeds are anthelminitic.

PHARMACOLOGICAL REPORT :

EhretialaevisRoxb contains a large range of phytochemicals, many of which have pharmacological properties. The characteristics of the plant have been used to cure a variety of conditions, including jaundice and liver illnesses, chronic and acute inflammation, ulcers and gum issues, wound healing and discomfort, etc.Allethanobotanical research showed that tribes in rural and forested areas still rely on the medical system. People use the root extract to treat inflammation in the Amravati District, Maharashtra community.It has been proposed that plant components such as hexadecenoic acid (palmitic acid), oleanoic acid, and other fixed oils are responsible for the antiarthritic activity. Though comprehensive scientific investigations are still missing, upcoming research is likely to provide intriguing results and could offer potential E. laevis therapeutic options for the treatment of inflammatory illnesses

1. WOUND HEALING ACTIVITY :

E. laevis was utilised by Atribe of Wardha district in Maharashtra, INDIA to regulate wound healing, and he discovered some intriguing outcomes. Folklore practitioners in the Garasia community of Rajastan'sSiroho area also suggested using a paste made from plant leaves to hasten the healing of cuts.Future research may have a lot of room to explore the potential pathways and phytoactive metabolites for wound healing effects.Fresh leaves are gathered from the neighbourhood, cleaned three times with distilled water, and formed into a paste (Rasa-Shala) using a mortar and pestle. .Poeple apply on the cut area of skin .

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Before Treatment

After Treatment

2. ANTI-INFLAMMATORY ,ANTIARTHRITIC AND ANALGESIC ACTIVITIES :

An inflammatory condition called arthritis causes damage to the joints. Rheumatoid arthritis, osteoarthritis, and psoriatic arthritis are the three most prevalent types of the more than one hundred distinct types of arthritis. Any systemic disorder treated with allopathic medications has a moderate to severe side effect that may be fatal. As a result, researchers are looking into alternative medical practises to treat illnesses. Antiarthritic action is supported by E. laevis therapy. The leaf extract was the most efficient of the three sections (stem, leaf, bark, and fruit) used. The inclusion of active ingredients such hexadecanoic acid (palmitic acid), oleanenic acid, and other fixed oils may be the cause of this antiarthritic response.

3 . ANTIOXIDANT ACTIVITY **:**

EhretialaevisRoxb could possess antioxidant activity, according to several research. Antioxidants are substances with the ability to slow down or stop the oxidation process when exposed to reactive oxygen.Ascorbic acid, phenolic acid, flavonoids, carotenoids, and polyphenolic acids are among the components found in EhretiaLaevis that have the ability to scavenge free radicals such hydroperoxide, lipid peroxide, and peroxide, hence reducing the risk of developing degenerative illness. The antioxidant capacity of Ehretialaevis is supported by numerous vitro investigations (Antioxidant impact of bark extract of EhretialaevisRoxb). Natural antioxidants can shield the body from free radical damage, halt the progression of many chronic illnesses, and slow down the rancidification of lipids in food items.In Ehretiaserrata, 1-butanolic, chloroform, and ethyl acetate fractions of the leaves and fruits all had notable efficacy against free radicals. 12 compounds including six phenolic acids and six flavonoids, rosmarinic acid, cinnamic acid, icariside E5, ferulic acid, α hydroxydihydrocaffeic acid, lithospermic acid B, isoquercitrin, hyperoside, trifolin, astragalin, kaempferol 3-O-arabinosylgalactoside, and quercetin 3-O-arabinosylgalactoside were first isolated from Ehretiathyrsiflora and have a significant response of antioxidant .

Table :Ehretia species for Antioxidant activity .

Sr .No	Species
1.	Ehretiaserrata
2.	Ehretiathysiflora
3.	Ehretiatinifolia
4.	Ehretiamicrophylla
5.	EhretialaevisRoxb

4 .ANTIMICROBIAL ACTIVITY :

For the treatment of a variety of infectious disorders, including those with viral, fungal, protozoal, and bacterial origins, ehretialaevis has been used traditionally. The antibacterial potential of Ehretialaevis has been verified by a number of experiments in recent years.

Tests have been done on the plant against several Gramm+ and Gram-ve bacterial strains. Staphylococcus aureus, pseudomonas aeruginosa, Bacillus subtilis, and Escherichia coli strain were inhibited by chloroform, methanol, and an aqueous extract of EhretialaevisRoxb when used on agar plates.Amoxicillin should be the standard. Zone of inhibition was evaluated after plates were incubated for 24 hours at room temperature. The zone of inhibition's diameter was measured. The diameter of the test sample should be compared to various concentrations of standard amoxicillin.

Amoxicillin, the standard drug, exhibits the maximum zone of inhibition against both of the chosen microorganism species, according to the observation made above. The zone of inhibition that ethanolic extract produced on S. aureus was significant at lower concentrations, but it did not significantly increase with extract concentration. At whatever concentration of extract, this substance is ineffective against E. coli. When compared to

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Amoxicillin, water or crude extract demonstrated antibacterial action at all concentrations against E. coli.

5 .ANTI-DIABETIC ACTIVITY :

Diabetic prevention Due to undesirable pathological conditions, such as the side effect of metformin being gastrointestinal discomfort, the adverse effects of pioglitazone being bladder cancer and heart failure, and the side effects of sulfonylureas being hypoglycemia and weight gain, diabetes mellitus, one of the fastest-growing health problems, is concerned about the use of antihyperglycemic drugs. Numerous nations have conducted ethnobotanical investigations on the therapeutic herbs used to treat diabetes mellitus. There have been numerous reports of effective anti-diabetic potential in genus, however only a few species of the genus Ehretia have received such reports as of yet. When electrochemical measurements are made with a multiwalled carbon nanotube paste electrode, a species of E. laevis exhibits potential for reducing blood sugar.

6 .DENTAL CARIES :

The stem of EhretiaLaevis was used as a brush by the residents of the Dhule area of Maharashtra to treat mouth ulcers and gum disorders. Similarly, people in rural Rajasthan chewed on the leaves of Ehretialaevis to heal mouth blisters.

Dental caries is becoming more common in developed nations like India. The best course of action is primary prevention due to the high cost and labour requirements of therapy. According to estimates, 80% of people worldwide are either completely or partially dependent on plant-based medications.

7 .ANTIALLERGIC ACTIVITY :

The most prevalent cause of illness in people is an allergic disorder, including rhinitis, sinusitis, atopic dermatitis, asthma, pollenosis, and food allergies. We also focus on antiallergic activity as a crucial step to the creation of an efficient antiallergic agent. There are many pharmacological medicines available for the treatment of allergic disorders such as asthma and allergy rhinitis. Some Ehretia species include substances that have anti-allergic properties, such as dimericprenylbenzoquinones, nitrileglucosides, and rosmarinic acid.

8 .ANTITUBERCULAR ACTIVITY :

In human being, tuberculosis is a contagious infectious disease primarily caused by Mycobacterium tuberculosis. Although regimens exist for treating tuberculosis, they are far from ideal. Development of efficient strategies for the treatment of human tuberculosis has posed a challenge, considering the increase in infections associated with the human immunodeficiency virus and immunocompromised patients. Phytoconstituents have been used in traditional treatment of many diseases; however, careful investigation of these constituents has not been undertaken with respect to treatments of tuberculosis. Two compounds ehretiolide and prenylhydroquinone have extracted from root of Ehretialongiflora are responsible for antitubercular activity

9.ANTI -SNAKE VENOM ACTIVITY :

One of the main health issues in India and other Asian nations, snakebites are a significant cause of illness and mortality. According to legend, Ehretiabuxifolia can help treat snake poison. The current study assessed the Ehretia genus's potential antivenom impact. E. buxifoliaMeOH extract contains a substance called ehretianone that has been found to have anti-snake venom action.

10 . ANTI-TRYPANOSOMAL AND ANTI-PROTOZOAL ACTIVITY

The search for new antitrypanosomal and antiprotozoal agents in this study is based on ethnomedicine. E. amoena show weak antitrypanosomal potential with ethanol extract of leaves, bark, and root. E. acuminata show antiprotozoal activity with methanol extract of leaves

11.CARDIOTONIC ACTIVITY :

E. microphylla's Carmona retusa has a strong potential for inhibiting the development and division of cancer cells. The use of this plant for cardiotonic activity, however, is not supported by scientific research. In order to determine the impact of different aerial portions of C. retusa's aqueous extract on an isolated frog's heart, this study was conducted. It was found that the aqueous extract's action was effective.

II. CONCLUSION AND FUTURE PROSPECTS :

The Ehretia genus has a wide range of substances with wide-ranging biological and

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pharmacological effects, such as anti-arthritic, antibacterial, and aniallergicaction.NumerousEhretia species have been the subject of extensive research in the fields of chemistry and pharmacology because they have long been utilised as traditional medicines in Australia, North America, and Asia.

If the researchers and enterprises take use of this potential for highly pharmacological application by conducting additional study to support earlier findings, plants of this genus that are native to India might become a significant source of money for the country. Ehretia is a sizable genus with discernible variations in their primary secondary metabolites.

E. laevis used as masticatories by the ethnic communities in India .Unexplored wound healing property has shown by E. laevis. The best part is its leaves are effective, and hence, plenty of material is available without requirement of uprooting of plant Manyresearches have done by Indian scientists to improve the germination of multipurpose trees like E. laevis. Molecular study has also done on some species to better understand the properties of genus Ehretia. Recently, a research has done on Ehretiatinifolia which show positive responseagainst diabetic complications, atherosclerosis, and cardiovascular diseases

These features have produced a sense of plant cultivation and conservation reservation. Since just paste needs to be made in an aseptic environment, the treatment is also very cost-effective. The study found that no antibiotic work was necessary, which meant that the patient's ability to undergo immunological testing was unaffected. Additionally, there were significant medical cost savings, which is crucial in a developing nation like India. These findings suggest the use of E. laevis as a preventive treatment for a variety of microbial illnesses affecting the hard tissues of the oral cavity.

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