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PHARMACOLOGICAL ACTIVITY OF *JASMINUM AURICULATUM VAHL*. A REVIEW

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ABSTRACT
Plant of genus *Jasminum* (oleaceae) is *Jasminum auriculatum vahl* is widely used in traditional medicine to cure many diseases such as skin conditions particularly ringworm, burning sensation, ulcers, leprosy. Antilithiatic activity, diuretic, anti bacterial, antioxidant, immunostimulatory, wound healing and anti microbial activities are reported in the extracts of this plant. An overview and details of the chemical constituents, ethanobotanical uses and pharmacological activities on the *Jasminum auriculatum* species is presented in this review.

KEYWORDS: *Jasminum auriculatum*, Pharmacological activity, Antioxidant, Classification, Chemical constituents, Wound healing.

1. INTRODUCTION

Since prehistoric times Plants, animals, microbes, and marine organisms have been employed in medicine to alleviate and treat ailments. Plants have been used as medicines by humans for at least 60,000 years, according to fossil records.[1,2]

Traditional Medicine is the world's oldest type of health care, and it's used to prevent and treat physical and mental disorders. WHO estimates that a considerable number of people around the world still rely on TMs for health care.[3]

The climbing shrub *Jasminum auriculatum* is tiny and evergreen. The plant is collected in the wild for its essential oil and therapeutic properties in the area. It is widely grown, particularly in India and Thailand, for the essential oil found in the blossoms. It is a lovely flowering plant with a strong gardenia-like aroma. It is not particularly common, although it's occasionally planted as an ornamental in gardens.[4] Phytochemical analysis of leaf, stem, bark and root extracts of *Jasminum auriculatum Vahl* revealed the presence of glycosides, carbohydrates, tannins[5], alkaloids, flavonoids, phenol, steroids and terpenoids.[6] Pharmacological studies revealed that the plant *Jasminum auriculatum* excerted diuretic, antilithiatic, anti-oxidant, anti bacterial, immunostimulatory and wound healing effects.

2. VERNACULAR NAME IN INDIA[7]

Telugu - Adavimolla
Tamil - Usimalli
Sanskrit - Yoothika
Hindi - Juhi
Kannada - Soojimallige

3. SCIENTIFIC CLASSIFICATION[5,7]

Kingdom Plantae
Subkingdom Tracheobionta – Vascular plants
Superdivision Spermatophyta – Seed plant
Division Magnoliophyta – Flowering plants
Phylum Spermatophyta
Class Magnoliopsida- Dicotyledons
Subclass Asteridae
Order Scrophulariales
Family Oleaceae
Genus *Jasminum- jasmine*
Species *auriculatum uahl*

4. OTHER SCIENTIFIC NAMES[5,8]

- *Jasminum affine* Wight
- *Jasminum auriculatum* Var. glabrior Haines
- *Jasminum mucronatum*Rchb. Ex Baker
- *Jasminum ovalifolium* Wight
- *Jasminum trifoliatum* (Lam.) Pers.
- *Mogoriumtrifoliatum* Lam.

5. GEOGRAPHICAL DISTRIBUTION

Jasminum auriculatum is an evergreen shrub; native to Deccan Peninsula, Circars and Carnatic extending south wards to Travancore. It is commercially cultivated for its

fragrant flowers mainly in Ghazipur, Jaunpur, Farrukhabad and Kanauj districts of U.P, Bihar and Bengal. It is also found in Nepal, Srilanka, E.Asia, Thailand. In India it is also cultivated in Karnataka, Tamilnadu, Andhra Pradesh.[9]

6. MORPHOLOGICAL FEATURES

Juhi is a lovely flower with a strong gardenia-like aroma. Although this species is uncommon, it deserves special attention. It's a lovely tiny climber bushy shrub with basic ovaldark green small leaves and powdered white blossoms. Leaves are opposite, ashy-velvety, hairless, simpleor trifoliolate, and opposite, The lateral leaflets are much smaller, seldom exceeding 4 mm in diameter, with the central one being up to 3.5 cm long and 1.5 cm wide, oval, and pointy at the end. The lowest oblique has a small number of nerves. Bracts are 4 mmlong and linear. Flowersin many-flowered cymes are aromatic. Flower stalks can be as long as5 mm. The calyx is 3 mmlong, hairy, and the teeth are quite little. Flowers are white, with a tube that is 1.5 cm long and elliptic lobes that are up to 8 mm long. Berry is globose, black, and5 mm in diameter.[10]

7. CHEMICAL CONSTITUENTS

Benzyl acetate, jasmone, resin, glycoside, phenols, salicylic acid, terpenoids, jasminine, tannins, saponins, and flavonoids were found in the plant. Lupeol, aliphatic hydrocarbons (C20- C34), aliphatic alcohols (C21-C32), hentriacontane, n-tricantanol, fatty acids, jasminol, D-mannitol, inositol, sorbitol, xylitol, malvalic acid, and jasmine were all found in the leaves. Indole, benzyl acetate, and methyl anthranilate were found in the flower buds. Essential oils, indole, and jasminol are abundant in jasmine flowers.[11,12,13] 17-pentatriacontene, 22-tricosenoic acid, 1- hexacosene, propyl oleate, 1,54-dibromotetrapentacontane, octadecane, 4- methyl-2-propyl 11- pentanol, 3,5-dimethyl 1-hexene, 3,4-dimethyl 1-hexene, 1-butoxy 2-pentene, 3,5,5-trimethyl 1- hexane.[14]

8. ETHANOBOTANICAL USES

Jasminum auriculatum Vahl is a shrub used in Ayurveda, Siddha, and Unani medicine. According to a comprehensive literature review, 'Juhi' has a lengthy history of traditional usesfor a variety of ailments. *Jasminum auriculatum's* root, leaves, and flowers are commonly usedto treat a variety of ailments. The roots are beneficial for skin conditions, particularly ringworm. Flowers have a pleasant scent, but they can help with a burning sensation. Stomatopathy, antibacterial, emollient, anthelmintic, ulcers, leprosy, skin ailments, and wounds can all benefitfrom the leaves, roots, and flowers.[15]

9. PHARMACOLOGICAL ACTIVITIES

9.1 ANTILITHIATIC ACTIVITY[16]

Shade dried *Jasminum auriculatum vahl* flowers were pulverised into a coarse powder (40 mesh size). The aqueous extract (AqE, 10% w/v) of dried flowers was prepared usingchloroform water I.P. by maceration method for 7 days at room temperature (yield 8.6%, w/w), and the alcohol extract (AlcE, 10% w/v) of dried flowers was prepared using 70% (v/v) alcoholby soxhlet method at 60- 70°C (yield 5.4 percent, w/w). After that, the extracts were filtered, vaccum-concentrated, and freeze dried.

The results show that giving aqueous and alcohol extracts of *J. auriculatum* flowers to rats with ethylene glycol-induced lithiasis reduced and avoided the production of urinary stones, confirming folklore about the plant's antiurolithiatic properties.

9.2 DIURETIC ACTIVITY[17]

Fresh *J. auriculatum* flowers were dried in the shade, and pulverised into a coarse powder (40 mesh size). The aqueous extract (AqE, 10%, w/v) of flowers was made with distilled water and macerated for 7 days at room temperature (yield 8.6 percent, w/w), while the alcoholic extract (AlcE, 10%, w/v) was made using 70% (v/v) alcohol and soxhlet technique at 60-70℃ (yield 5.4 percent, w/w). The extracts were concentrated under vacuum and dried in a desiccator with anhydrous sodium sulphate. According to preliminary pharmacological testing the alcoholic and aqueous extracts both have diuretic action.

Among the test groups, alcohol extract had the most diuretic efficacy. Using Frusemide as a control, the two extracts had diuretic activity of 94.81 percent for alcohol and 91.81 percent for aqueous. As a result of the aforesaid findings, we may conclude that both alcoholic and aqueous extracts have diuretic activity, increasing

total urine output and sodium and potassium salt excretion, similar to the conventional medication Frusemide.

9.3 ANTI BACTERIAL AND ANTIOXIDANT ACTIVITY[18]

The plants were harvested, shade dried, and pulverised to form powder. Plant material was then soaked for 24 hours in three different solvents: ethyl acetate, acetone, and methanol. Under low pressure, the extracts were concentrated.

The positive results of *J. auriculatum* stem in several antioxidant tests demonstrated the plant'sability toact as a reducing agent and scavenger of free radicals. Thus, explains the bioactive components responsible for the antioxidant activity. The extracts of Jasminum auriculatum stem are antimicrobial and antioxidant, and they are efficient against the pathogens examined.

9.4 Antibacterial activity of silver nanoparticle using j. auriculatum stem extraction[19]

The antibacterial activity of silver nanoparticles was investigated using *J.auriculatum* stem extract. The creation of silver nanoparticles was validated by the colour change and absorbanceat 355 nm in UV-visible spectra. The silver nanoparticles are a highly crystalline face centred cubic shape of metallic silver, according to the XRD study. The stable silver nanoparticles arespherical in shape and 10–20 nm in size, according to the SEM image. Antibacterial activity tests revealed that silver nanoparticles have a greater antibacterial capability against human infections.

9.5 IMMUNOSTIMULATORY ACTIVITY[20]

Jasminum auriculatum plant leaves were collected, washed, and chopped into little pieces before being dried in a shady area. The plant leaves were weighed and macerated with liquid nitrogen to make a fine powder, which was then used to make an aqueous extract for immunological testing.

The immune stimulatory effect of aqueous extract of *Jasminum auriculatum* leaves against a specific antigen, hepatitis B vaccine antigen, was determined using human whole blood containing lymphocytes, monocytes, and granulocytes count, forward and side scatter, as wellas its hemolytic activity, using human whole blood containing lymphocytes, monocytes, and granulocytes.

The number of monocytes and granulocytes count in human whole blood treated with variabledoses of aqueous extract increased, which was confirmed through flow cytometric analysis, and the results showed that the leaves aqueous extract of Jasminum auriculatum showed immune stimulatory activity when compared to control and standard.

9.6 ANTI OXIDANT, WOUND HEALING, ANTI MICROBIAL ACTIVITY[21]

The wound healing activity of albino rats was assessed using excision and incision wound models. The antioxidant activity was measured using the DPPH method (2, 2-diphenyl-1- picrylhydrazyl). The antibacterial activity was tested using the agar well diffusion method and the serial dilution method to obtain the minimum inhibitory concentration. Topical applicationof ointment containing successive ethanolic extract (S.E.E) of *J. auriculatum* leaves has the most potent wound healing ability in both the models studied, witha higher rate of wound contraction (83.660.50% on 15th day), decrease in the period of epithelialization (17.831.6 days), higher skin breaking strength (170.711.522g), higher collagen content, and favourable histopathological changes. The activity of consecutive ethanolic extracts in scavenging DPPH radicals was determined to be 33.39g/ml. The most efficient ethanolic extract against Pseudomonas auregenosa was found to have a zone of inhibition of 16.650.6mmand a minimum inhibitory concentration of 0.78mg/ml.

10. CONCLUSION

The plant *J.auriculatum* is used traditionally due to its enormous medicinal ability to treat/cure a variety of ailments, as shown by the following manifestations based on this thorough literaturereview. It is rich source of bioactive compounds like, flavonoids, phenol, terpenoids are presentin plant and exhibit with wide range of health benefits. Many studies demonstrated significant Antilithiatic activity, diuretic, antibacterial, antioxidant, immunostimulatory, wound healing and anti microbial activities. These pharmacological activities provide solid evidence for someof the traditional therapeutical claims of *Jasminum auriculatum.*

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