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Unveiling the Secrets of Jasminum Sambac in Herbal Remedies.

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ABSTRACT:

Jasminum sambac, commonly known as Arabian jasmine, is a species of jasmine native to southeast Asia. Renownned for its intensely fragrant flowers, it has been extensively cultivated in tropical and subtropical regions around the world. The plant holds significant cultural, ornamental and medical value. It is widely used in perfumery, traditional medicines and religious ceremonies. Phytochemical studies reveal the presence of essential oil, flavonoids and saponins, which contribute to its therapeutic properties, such as antioxidant, anti-inflammatory, anticancer and antimicrobial activities. This review aims to summarize the botany, ethanopharmacology, and potential applications of jasminum sambac in modern medicine and industry.

Key Words: Jasmine, Jasmine flower, Jasminum Sambac, Genome, Description.

INTRODUCTION:

Jasmine is a flowering plant native to tropical and subtropical regions, particularly in Asia, Africa, Europe, China, and Persia (modern-day Iran). The name "jasmine" is derived from the Persian word 'yasmin,' which translates to "gift from God" or "fragrance." Throughout various cultures and eras, jasmine has come to symbolize love, beauty, and spirituality. The flowers are generally small, with individual blossoms measuring between 1 to 2.5 cm (0.4 to 1 inch) in diameter, depending on the species.

Jasminum sambac can grow as a vine, shrub, or bush. When trained or supported by trellises, it can reach heights of 10 to 11 feet (3.45 meters) as a vine. As a shrub, it typically grows to heights of 3 to 6 feet (0.9 to 1.8 meters). Jasmine flowers are renowned for their small, oval-shaped blooms, which can be white, yellow, or pale pink, and are celebrated for their powerful, sweet fragrance. This delightful aroma makes jasmine a popular choice in gardens, perfumes, and teas. The genus comprises around 200 species native to tropical and warm temperate regions of Eurasia, Africa, and Oceania."

Scientific classification:

Common Names: Climbing plant, Summer jasmine, White jasmine.

Botanical Name: Jasminum sambac Linn.

Family: Oleaceae.

Kingdom: Plantae.

Infrakingdom: Streptophyta.

Superdivision: Embryophyta.

Division: Tracheophyta.

Order: Lamiales.

Genus: Jasminum.

Biological Source: The biological source comprises the entire plant of Jasminum sambac Linn, which belongs to the Oleaceae family.

Geographical souce:-

Jasminum sambac, commonly referred to as Arabian jasmine, is indigenous to the eastern Himalayas, encompassing regions of India and Bhutan. It is thought to have been introduced to Arabian and Persian gardens from Asia before making its way to Europe.

Jasminum grandiflorum in different languages

1. Scientific name – Jasminum spp
2. Local name – Jasmine
3. Hindi name – Juhi, Chameli
4. English – Arabian jasmine, Arabischer jasmine
5. Chinese – Mo li hua
6. Spanish – Jazmin de Arabia
7. English: Spanish Jasmine or Common Jasmine
8. Arabic: Yasmin

9. Bengali: Chameli

10. Gujarati: Chabeli

11. Kannada: Mallige

12. Persian (Parsi): Saman

13. Tamil: Malligai

14. Telugu: Jai Puvvu"

Morphological description:

Color: While jasmine flowers are predominantly white, some species may also yield yellow or pink blooms.

Fragrance: Jasmine flowers are famous for their powerful, sweet scent, particularly in the evening and at night."

Type: Jasmine produces small berries that turn black when they ripen.

Growth Form: Jasmine plants generally grow as shrubs or small to medium-sized climbers. Some species develop as erect or semi-erect shrubs, while others have long, trailing, or vining growth habits that can extend up to 1.5 meters.

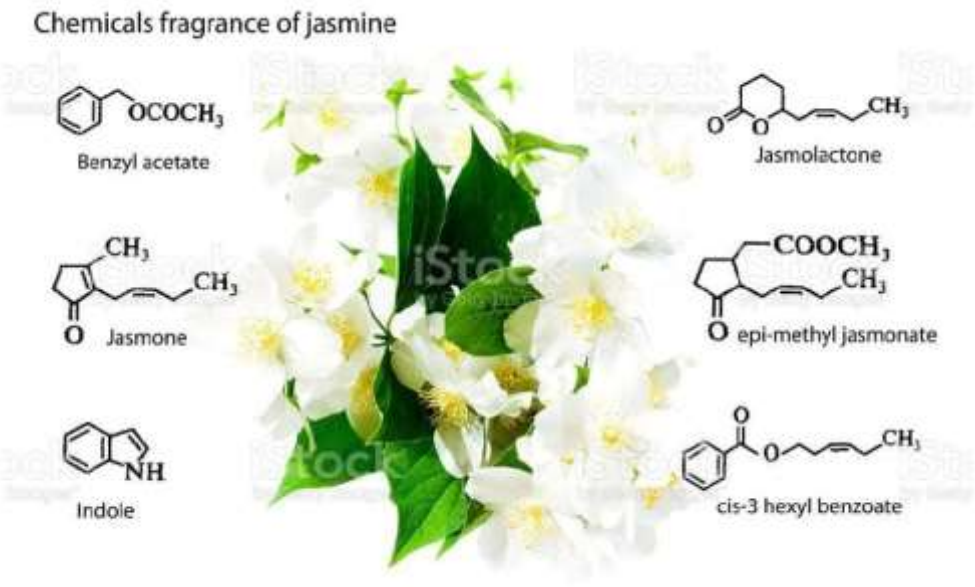
Leaves: The leaves are dark green and glossy on the upper surface, with a lighter green color underneath. In the case of Jasminum sambac, the leaves are simple, ovate in shape, and measure between 4 to 12.5 cm in length.

Height: The plant typically reaches a height of about 6 to 9 feet."

Chemical Constituents:

Here are the key chemical constituents found in the jasmine plant i.e,

1. Alkaloids – Alkaloids in jasmine flowers and leaves contribute to their medicinal properties including their calming and sedative effects.
2. Volatile oil (Essential oil) – Benzyl acetate (1.24%), Linalool (4.92%), Benzyl alcohol, Methyl jasmonate, Indole (0.11%), Eugenol (0.15%), Farnesene, Nerolidol, etc.
3. Flavonoids – Quercetin and Kaempferol are also gives anti-inflammatory, antioxidant, anti cancer effects.
4. Saponins – It is also found in leaves and roots they contribute to the plant anti-inflammatory and immune modulating properties.
5. Tannins – Tannic acid contributes to the astringent and antimicrobial properties of jasmine leaves and flowers.
6. Coumarins – Compound that may provide blood thinning, anti-inflammatory and antimicrobial properties.
7. Glycosides – Compounds that may contribute to the plant's antioxidant and anti-inflammatory activities.
8. Sterols – Phytosterols like B-Sitosterol have anti-inflammatory and cholesterol lowering properties.
9. Carotenoids – A pigment contributing to the flower's color and providing antioxidant protection.
10. Fatty acid – Small amounts of fatty acid such as linoleic acid and oleic acid are found in essential oils and contribute to the plant's skin soothing properties.
11. Anthocyanins – Present in flowers, contributing to the plant's antioxidant and anti-inflammatory activities.
12. Triterpenoids – Known for their antimicrobial and anti-inflammatory properties, these compounds are found in various parts of the plant.



Life span of Jasminum sambac :-

Jasminum sambac, also known as Arabian Jasmine, typically has an average lifespan of about **15 years**.

CULTIVATION

Jasmine is grown commercially in Coimbatore, Madurai, and Dindigul (Tamil Nadu); Bangalore, Bellary, Mysore, and Kolar (Karnataka); Knnauj, Jaunpur, and Gazipur (Utter Pradesh): Udaipur. Jaipur. Ajmer, and Kota (Rajasthan); Ranaghat, Kolaghat, and Pancskura (West Bengal).

1. Soil and Climate:

Jasmine may be grown in a variety of soil types. Their cultivation requires well-drained, rich loamy soil with a pH range of 6.5-7.5.

Jasmine grows well in a warm, tropical climate. In India, jasmine is grown in open fields for commercial purposes. Mild winters, warm summers, light rainfall, and bright days are optimal conditions for jasmine cultivation. Jasmines thrive at altitudes of up to 1200 metres. For growth and development, a well-distributed yearly rainfall of 8000 to 1000 mm is ideal.

2. Propagation: Cuttings, layering, suckering, grafting, budding, and tissue culture are all methods for propagating jasmine.

2.1. Layering: Layering is done in North India from June to July and in South India from June to December. Layers are prepared by selecting well-matured, one-year-old shoots and burying them 10-15 cm deep in the soil after cutting a shallow, slanting cut in the area to be buried. It takes 90- 120 days for the roots to form.

2.2. Cutting: Cutting is the most straightforward way to propagate jasmine. Apical cuttings work well for J.grandiflorum and J.sambac, whereas semi hardwood cuttings work best for Jauriculatum. Cuttings that are 22-25 cm long and have 3-4 nodes are usually put in rooting media. Cuttings obtained from April to September had the highest percentage of rooting, with June planted cuttings having the most rooting. Before planting, the basal section of softwood cuttings is treated with growth regulators (IBA 400ppm and IAA @ 1000ppm). The cuttings are submerged in the rooting media more than 5 cm deep and spaced 7 cm apart. After 4 to 5 months on the rooting media, the cuttings are ready to be transplanted into the main field.

3. Planting:

3.1. Planting Season: The optimum time to plant jasmine in most regions of India is during the monsoon season, however in places like Bangalore, it may be planted virtually all year. The jasmine stays in the field for 10-15 years after it is planted. Planting is best done in North India during July-August and from the end of January to February, while planting in South India can be done at any time between July and December.

3.2. Planting distances: For J. auriculatum and J. sambac, TNAU, Coimbatore recommends a planting distance of 1.5 x 1.5m, and for J. grandiflorum, a spacing of 2.0 x 1.5m..

3.3. Pit Digging: Before planting, the earth is pulverised and weeds are removed from the pit. One month before to planting, 45 cm3 pits are made and exposed to sunshine. Pits are filled with FYM, new soil, and coarse sand in a 2:1:1 ratio a few days before planting. The addition of BHC (10g/pit) to the soil in the pit helps to keep termites away. To settle the soil compost mixture, the pits are irrigated.

3.4. Planting Method: Each pit is planted with well-rooted, robust, and vigorous seedlings obtained through cutting/layering. In most parts of India, the greatest time to plant jasmine is during the monsoon, although in places like Bangalore, it may be planted virtually all year. The jasmine stays in the field for 10 to 15 years after it is planted. In the centre of the pit, a hole large enough to accommodate the seedling's soil ball is dug. The seedlings are firmly

pressed into the soil ball, which is placed in the centre of the pit. The plants are then watered right away.

3.5. Irrigation: Jasmines require sufficient soil moisture for healthy growth and flowering. During the summer, plants are irrigated by flooding once a week. Irrigation is usually not necessary after flowering until after the next trimming and manuring.

Ayurvedic Condition :

Shiroroga: Conditions affecting the head, including headaches.

Akshiroga: Disorders related to the eyes.

Mukharoga: Oral health issues.

Dantaroga: Dental disorders.

Visha: Toxic conditions and poisoning.

Kushta: Skin diseases.

Vrana: Ulcers and wounds.

Asra: Blood-related disorders, such as abscesses and bleeding issues (e.g., menorrhagia, nasal bleeding).

Visphota: The presence of boils and blisters.

Asyapaka: Mouth ulcers.

Putikarna: Pus discharge from the ears.

Properties, part used :

"Taste (Rasa): Bitter (Tikta),

Astringent (Kashaya)

Qualities (Guna): Light for digestion (Laghu), Oily/Unctuous (Snigdha)

Post-Digestive Taste (Vipaka): Pungent (Katu) after digestion

Potency (Veerya): Heating (Ushna)

Actions (Karma): Balances all three doshas (Tridoshahara)

Therapeutical Uses:-

Jasminum sambac, commonly known as Arabian jasmine, has a variety of therapeutic uses:

1. **Aromatherapy:** The essential oil extracted from its flowers is used in aromatherapy to reduce stress, anxiety, and depression. It is known to improve mood and increase alertness.

2**. Cardiovascular Health**: Research indicates that Jasminum sambac has cardioprotective properties. It can help in reducing oxidative stress and inflammation, which are beneficial for heart health.

3. **Skin Care:** The oil is also used in skincare products for its anti-aging properties. It helps in promoting healthy, smooth skin by improving blood flow and oxygen levels.

4. **Antimicrobial and Antioxidant:** The plant exhibits antimicrobial and antioxidant activities, making it useful in treating infections and protecting cells from damage.

5**. Traditional Medicine:** In Ayurvedic medicine, the roots and leaves are used for their antiamoebic, astringent, and febriuge properties. Change wording

Pharmacological Actions:

Jasminum sambac, commonly known as Arabian jasmine, has a variety of pharmacological actions. Here are some of the key effects:

1. **Anticancer:** Studies have shown that the essential oil of Jasminum sambac exhibits significant anticancer activity, particularly against human breast cancer cells.
2. **Antimicrobial:** It has been found to possess antimicrobial properties, making it effective against various bacterial and fungal infections.
3. **Analgesic and Antipyretic:** The plant extracts have demonstrated pain-relieving and fever-reducing effects.
4. **Anti-inflammatory:** Jasminum sambac has anti-inflammatory properties, which can help in reducing inflammation and related conditions.
5. **Antioxidant:** The plant exhibits strong antioxidant activity, which helps in protecting cells from oxidative stress.
6. **Cardiovascular:** The plant has cardioprotective effects, including vasorelaxant and hypotensive actions, which can help in managing cardiovascular diseases.
7. **Gastroprotective:** It has been found to have protective effects on the gastrointestinal tract, helping in conditions like ulcers**.**

Medicinal Uses :-

Jasminum sambac, also known as Arabian jasmine, has a variety of medicinal uses. Here are some of its notable benefits:

1. **Aromatherapy:** The essential oil extracted from Jasminum sambac is used in aromatherapy to reduce stress, anxiety, and depression. Its fragrance is known to have a calming effect and can improve mood and alertness.

2. **Skin Care:** The oil and extracts from the flowers are used in skincare products for their anti-aging properties. They help promote smooth, healthy skin by improving blood flow and reducing stress.
3. **Wound Healing:** In traditional medicine, the leaves and flowers are used to treat wounds and skin diseases. They have anti-inflammatory and antiseptic properties that aid in faster healing.
4. **Oral Health:** The leaves can be chewed to relieve pain from dental caries and mouth ulcers. A decoction of the leaves is also used for gargling to treat gingivitis.
5. **Digestive Health:** The flowers and leaves have been used to treat various digestive issues, including diarrhea and abdominal pain.
6. **Respiratory Health:** The plant has been used as a decongestant and to treat coughs and colds.
7. **Pain Relief:** The roots are used in traditional Chinese medicine to treat headaches, insomnia, and pain from dislocated joints and broken bones.

Traditional Uses:-

Jasminum sambac, commonly known as Arabian jasmine, has a rich history of traditional uses across various cultures. Here are some of its notable applications:

- **Analgesic and Anti-inflammatory:** Used to alleviate pain and reduce inflammation.
- **Antiseptic:** Applied to treat wounds and prevent infections.
- **Antidepressant and Sedative:** Helps in reducing stress and promoting relaxation.
- **Expectorant:** Assists in clearing mucus from the respiratory tract.
- **Antipyretic:** Used to reduce fever.
- **Decongestant:** Helps in relieving nasal congestion.
- **Aphrodisiac:** Believed to enhance libido.

Culture and ornamental uses :-

Decorative Use: Commonly grown for its beautiful and aromatic flowers.

Cultural Importance: Recognized as the national flower of the Philippines (referred to as sampaguita) and one of Indonesia's national flowers (known as melati putih"

Culinary uses :-

Beverages and Flavoring: The flowers are used to prepare jasmine tea and to enhance the flavor of syrups and scented waters.

Phytochemistry Jasminum sambac :-

It as commonly known as Arabian jasmine, has been extensively studied for its phytochemical properties.

Phytochemical Constituents:

1. Leaves and Roots: Contain flavonoids, saponins, carbohydrates, proteins, steroids, and terpenoids.
2. Flowers: Rich in tannins, flavonoids, saponins, and phenolic compounds.
3. Stem and Leaf Extracts: Include tannins, saponins, flavonoids, alkaloids, and reducing sugars.

Cultural and symbolic significance :-

1. **Philippines**: Jasminum sambac is the national flower of the Philippines, known locally as sampaguita. It symbolizes purity, simplicity, humility, and strength. The flower is often used in religious ceremonies, weddings, and as offerings in churches.
2. **Indonesia**: In Indonesia, it is one of the three national flowers and is called melati putih. It represents purity, sacredness, and sincerity. The flower is commonly used in traditional ceremonies, including weddings and religious events.
3. **India**: Known as mogra, it is widely used in garlands and as an offering in temples. The flower symbolizes love, beauty, and sensuality.
4. **China**: Referred to as Mo Li Hua, it is a symbol of purity and is often associated with feminine beauty and grace. The flower is also used in traditional Chinese medicine and tea.
5. **Hawaii**: Known as pikake, it is used in making leis, which are symbols of affection, respect, and hospitality.

Overall, Jasminum sambac is cherished for its fragrance and beauty, making it a popular choice for perfumes, essential oils, and ornamental purposes.

ADVERSE EFFECTS

Jasmine plants are not toxic plants. Jasmine plants produce fragrant flowers. The jasmine plant is safe for gardens and yards because it is a nontoxic plant. Jasmine products are generally considered safe and non-irritating. The reports of skin irritation are very rare. Like any plant, there is always the risk of an allergic reaction.

CONCLUSION:-

significant potential for modern applications. Its diverse phytochemical profile, including essential oils, flavonoids, and other bioactive compounds, supports its wide-ranging pharmacological properties, such as antimicrobial, antioxidant, anti-inflammatory, and anticancer activities. While traditional uses have been well-documented, recent scientific studies have further highlighted its potential therapeutic benefits. However, more in-depth clinical research is needed to fully validate its efficacy and safety for broader medicinal use. In conclusion, Jasminum sambac holds promise not only in traditional medicine but also as a source of bioactive compounds for pharmaceutical, cosmetic, and therapeutic industries. Future research should focus on detailed mechanistic studies and the development of standardized extracts to harness its full potential in modern healthcare.

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