IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A BRIEF REVIEW ON ANCIENT TREES

Prerana Dodha Sonawane

Dr. N. J. Paulbudhe College of Pharmacy,

Ahmednagar 414003, Maharashtra

ABSTRACT: Ancient trees are defined by their age, particularly when compared to other trees of the same species. There is no set age for a tree to be considered ancient, as different species age at different rates. Birch trees, for example, are fast-growing, and could be classed as ancient at 150 years old, while a yew tree might receive the same accolade at 800 years of age. An ancient tree is a tree which is remarkably old for its species and this can vary dramatically depending on the species. All ancient trees are also known as veterans. These features include missing branches, hollow trunks and habitat features more commonly associated with ancient trees.

KEYWORDS: - Conservation, Dead wood, Ecosystem.

What do we mean by ancient tree?

Think of an ancient tree and words that might come to mind are gnarled, knobbly, huge, bent and hollow. These sorts of characteristics are just as important as the actual age of the tree, but the term ancient is applied specifically to trees that are ancient in years. Ancient trees are those which have reached a great age in comparison with others of the same species.

What does an ancient tree look like?

Characteristics of an ancient tree depend on the species, and on factors such as the site and conditions under which they have grown.

However, they have three key features:

A low, fat and squat shape because the crown has retrenched (reduced in size) through age.

A wide trunk compared with others of the same species

Hollowing of the trunk (not always visible)

Diagram of Ancient tress:

How old is an ancient tree?

The exact age at which you call a tree ancient depends on the species of tree and other factors including the type of site where its growing. A birch tree could be considered as ancient at 150 years old, for example, but an oak tree would not be thought of as ancient until it's at least 400 years old. Yew trees can live for thousands of years, so are not defined as ancient until they are 800 years old. It is often difficult to estimate how old an ancient tree is, but one method that is used, alongside considering the ancient characteristics, is to measure the girth of the trunk (see further information below)

SANDALWOOD AND ITS SIGNIFICANCE:

Sandalwood is a class of woods from trees in the genus Santalum.

The woods are heavy, yellow, and fine-grained, and, unlike many other aromatic woods, they retain their fragrance for decades. Sandalwood oil is extracted from the woods for use.

Sandalwood is often cited as one of the most expensive woods in the world. Both the wood and the oil produce a distinctive fragrance that has been highly valued for centuries. Consequently, some species of these slow-growing trees have suffered over-harvesting in the past.

The sandalwood or Chandan is a class of slow-growing trees, famous for its quality wood with a distinctive smell! The woods of chandan are very costly infact, the second most expensive in the world.

They are aromatic and can retain their aroma for many years, which many other kinds of wood cannot do. They have a yellow, fine-grain, and dense structure, and are the source for the making of sandalwood oil, which serves many purposes, especially in perfume or cosmetic industries. Four Types of Chandan available in India!

The tree holds significant importance in India. It is held sacred in almost all religions, may it be Hinduism, Jainism, Buddhism, Sufism, or Zoroastrianism.

The tree is believed to be the abode of goddess Laxmi, and the paste of sandalwood is used in various ceremonies and rituals. In Buddhism, the sandalwood paste is believed to help keep you alert during meditation. While the Buddhists offer the sandal incense to the Buddha and the guru, in Jainism, it is used in the worshiping of the Tirthankara deities. It is also considered a critical medicine in Ayurveda.

CHANDAN ARE OF FOUR TYPES IN INDIA

Chandan wood is the second most expensive in the world and sells for an excellent price. Thus, the commercial production of it can be very fruitful.

However, you cannot grow these trees individually, and you need to have the state governments permission to cut the tree and sell the wood. There are many types of chandan in India

- Indian Chandan
- Red chandan
- Sweet chandan
- Malayagiri Chandan

History of sandalwood

SANDALWOOD (Santalum alhum L.) is a prized gift of the Juan Fernandez Islands (Chile) in the west and from plant kingdom woven into the culture and heritage of India. It is one of the most valuable trees in the world (Figure la). The natural distribution of sandalwood extends from 30°N to 40°S from Indonesia in the east to Hawaiian Archipelago in the north to New Zealand in the south.

It is a small to medium-sized hemiparasitic tree, distributed rather widely in India. The populations are more concentrated in the southern region, especially Karnataka, Tamil Nadu and Kerala.

For more than 5000 years, India has been the traditional leader of sandalwood oil production for perfumery and pharmaceuticals. The aroma of the oil and the wood is esteemed by people belonging to three major religions of the world- Hinduism, Buddhism and Islam, according to Vamana Purana, the wood is recommended for worshipping God Shiva, Goddess Lakshmi believed to reside in the san- dalwood tree (Brahma Vaivarta Purana). The ancient

Egyptians imported the wood and used it in medicine, for embalming the dead and in ritual burning to venerate the gods'. Rabindranath Tagore wrote "as if to prove that love would conquer hate, the sandalwood perfumes the very axe that lays it low'. Long before the reorganization of states in India, B. M. Srikantaiah (former professor of English and Kannada in Mysore University/Maharaja's College, Mysore), the champion of the 'navodaya move- ment' (renaissance).

Princely State of Mysore entitled Children of Mysore. He wrote: "Chinnada nadadu mysuru, Gandhada gudiyadu mysuru, Veeneya bedagadu mysuru, Nalumadi Kris- hanana mysuru' (the English rendering would be broadly: A land of gold that's Mysore, A sandalwood shrine that's Mysore, The clegance of Veena music that's Mysore, Nalmadi Krishna's Mysore).

It is customary in certain communities among the Hindus to put a piece of sandal- wood in the funeral pyre. The beige-coloured paste of sandalwood is applied on the forehead and other body parts, especially by devotees of God Krishna (Vaishna- vites) and for ritual bathing of Hindu gods. Any semiparasitic plant of the genus Santalum (family Santalaceae), especially the fragrant wood of the true, or white, sandalwood, Santalum album. The approximately 10 species of Santalum are distributed throughout southeastern Asia and the islands of the South Pacific.

Many other woods are used as substitutes for true sandalwood. Red sandalwood is obtained from the reddish-coloured wood of Pterocarpus santalinus, a Southeast Asian tree of the pea family (Fabaceae). This species may have been the source of the sandalwood used in King Solomons temple.

A true sandalwood tree grows to a height of about 10 metres (33 feet); has leathery leaves in pairs, each opposite the other on the branch

DAIGRAM OF SANDALWOOD AND SANDALWOOD POWDER:

Both tree and roots contain a yellow aromatic oil, called sandalwood oil, the odour of which persists for years in such articles as ornamental boxes, furniture, and fans made of the white sapwood. The oil is obtained by steam distillation of the wood and is used in perfumes, soaps, candles, incense, and folk medicines. Powdered sandalwood is used in the paste applied to make Brahman caste marks and in sachets for scenting clothes. Sandalwood trees have been cultivated since antiquity for their yellowish heartwood, which plays a major role in many Oriental funeral ceremonies and religious rites. The trees are slow growing, usually taking about 30 years for the heartwood to reach an economically useful thickness.

Benefits of sandalwood:

Mental alertness. Early research suggests that inhaling fragrance from white sandalwood oil for 20 minutes or applying white sandalwood oil to the skin does not improve mental alertness or attentiveness in healthy individuals.

- Urinary tract infections (UTIs).
- Common cold.
- Cough.
- Bronchitis.
- Fevers.
- Sore mouth and throat.
- Headache.
- Heatstroke.
- Liver and gallbladder problems.
- Other conditions.

TULSI AND ITS SIGNIFICANCE:

Tulsi, Tulasi or Vrinda (Holy Basil) is a sacred plant in Hindu belief. Hindus regard it as an earthly manifestation of the goddess Tulsi; she is regarded as the avatar of Lakshmi, and thus the consort of the god Vishnu. In the story, she married Jalandhara. The offering of its leaves is recommended in ritualistic worship of Vishnu and his avatars like Krishna and Vithoba.

Many Hindus have tulsi plants growing in front of or near their home, often in special pots or a special masonry structure known as Tulsi Vrindavan as this is related to their culture. Traditionally, Tulsi is planted in the center of the central courtyard of Hindu houses. The plant is cultivated for religious purposes, and for its essential oil.

Hindi Name: Tulsi

Sanskrit Name: Tulasi

English Name: Holy Basil

An annual delicate herb cultivated extensively in tropical climate of the country. It is also planted in kitchen garden and as an indoor plant since it is kept sacred in Hindu philosophy. Medicinally the leaves are used for various kind of classical and homemade preparations.

Benefits of tulsi:

Indian mythology attaches a great significance to Basil by recognizing it as a holy herb. Perhaps, such significance comes from the actual health applications of the herb. Its use is recommended as a first aid in the treatment of respiratory, digestive and skin diseases. Apart from these common ailments, Ayurveda also recognizes its use for the diseases ranging up to tumerous growths. Experimental studies identify it to be a highly promising immunomodulator, cytoprotective and anticancer agent.

Ayurvedic Home Remedies

- Natural remedies for cough
- Home remedies for fever
- Natural remedies for loss of appetite

NEEM AND ITS SIGNIFICANCE:

Neem is one of the important ingredients that many traditional Indian medicines, toothpaste, mouthwashes, skin and hair products have.

Neem, also known by its botanical name, Azadirachta indica, has been used as an ancient remedy for a number of health problems because of its ability to fight and treat various diseases and conditions primarily due to the presence of Nimbidin, Azadirachtin and nimbinin.

It is not just neem leaves, even its barks and twigs are popularly used. Different medical formulations are made with neem and its various parts. Neem oil is also popular for its powerful antibacterial properties. Neem is known for its immeasurable medicinal properties and is used as a main ingredient in many home remedies.

Commending the medicinal properties of neem, numerous sanskrit names have been coined by our ayurveda acharyas.

Few of them are mentioned below.

It is known as Nimba as it boosts healthIt is praised as Pichumarda as it destroys skin diseases. As it is used to ward off evil powers that harm our body,it is known as Arishta. It grows in tropical and semi tropical regions and is widely found in Burma, India and Pakistan. This is a very fast growing, ever green tree which reaches the height of 15 to 20 meters

Diagram of Neem:

Family: Meliaceae

Botanical name: Azadirachta Indica.

Benifits of neem:

The neem is proved to be beneficial in treating skin diseases because of its antibiotic, antifungal and blood purifying properties. According to ayurveda principles vitiated Kapha and pitta cause skin diseases.

Neem pacifies vitiated kapha and pitta, thus helps to cure skin ailments.

It promotes wound healing as it is antibacterial and astringent.

In psoriasis it reduces itching, irritation, roughness of skin and heals the psoriatic patches. In same way it heals eczema too. It reduces infection and inflammation of acne. Neem helps to maintain the health of scalp skin and prevents dandruff

LITERATURE REVIW:

In the literature review / literature Survey, we found that....,

Sandalwood (Santalum album L.) is a valuable tree associated with Indian culture. It is the second most expensive wood in the world.

The heartwood of the tree is treasured for its aroma and is one of the finest natural materials for carving. Sandalwood oil is used in perfumes, cosmetics, aromatherapy and pharmaceuticals. The monopoly of sandalwood trade by the Governments of Karnataka, Tamil Nadu and Kerala and its consequences have resulted in severe exploitation, pushing S. album into the vulnerable category of the IUCN Red List.

Extensive research has shown that sandalwood exhibits considerable genetic diversity for different traits. However, information pertaining to heartwood and oil content is meagre mainly because of non-availability of sandalwood plantations. Carrying out further research on these two important traits is difficult as natural populations have dwindled rapidly.

We strongly urge that it is essential to encourage the establishment of community/corporate sandalwood plantations in different parts of India with appropriate incentives and adequate protective measures. These plantations can form the base population sources to regain the leadership of India in the sandalwood industry for perfumery and the precious art.

Genus: Santalum
Species: S. album
Family: Santalaceae
Taxonomic classification
Kingdom: Plantae
Sub Kingdom: Phanerogams
Class: Dicotyledonae
Division: Monochlamydae
Series: Achlamydosporae
Order: Santalales

Family: Santalaceaes
Common Name: Santalum album
Genus: Santalum
Species: S. album
Binomial name: Santalum album

Sr no.	Scientific name	Vernacular name	Natural distribution
1	S. Album	Indian	Indian , Indonesia , Sri Lanka
2	S. Yasi		Fiji niue , Tonga
3	S. Asutrocaledonicum	Vanuatu	New Caledonia , Vanuatu
4	S. Macgregorri		Papua New Guinea , Indonesia
5	S. Spicatum	Austrian	Australia
6	S. Lanceolactum	Northern	Australia

Sandalwood part used

S. album has been the primary source of sandalwood and the derived oil. These often hold an important place within the societies of its naturalised distribution range. The central part of the tree, the heartwood, is the only part of the tree that is used for its fragrance.

Genus: Santalum

Species: S. album

Traditional medicinal uses of sandalwood

Sandalwood and its oil is extensively used in the Unani and other traditional systems of medicine as it has blood purifier, anti-inflammatory, analgesic, exhilarant, cardiotonic, antiseptic, nervine tonic and expectorant properties. It is used in skin, cardiac, liver, gastrointestinal, respiratory, integument and urogenital disorders. These uses are supported and proven by many in vitro or in vivo studies. The proven pharmacological activities of S. album are antimicrobial, anti-oxidant, anti-inflammatory, antimutagenic and anti-fatigue. The research has proven that sandal oil or its constituents have anti-microbial activity. Sandalwood oil showed skin cancer preventive effect in mice and its constituent alpha santalol showed the anticancer property. The methanolic extract of wood was confirmed for antioxidant, free radical scavenging, analgesic and anti-inflammatory activities.

α and β santalols present in sandal oil showed sedative effects. Sandalwood tea had a significant effect on heart muscles of frog and showed increased myocardial contractility. Its oil showed significant changes in hepatic xenobiotic metabolizing enzymes. Sandalwood oil and its major constituents showed less acute oral and dermal toxicity in laboratory animals. Hence, the aforementioned studies justify the uses of sandalwood and its oil mentioned in the classical Unani literature. However, further clinical trials are suggested to confirm its efficacy and safety in humans.

Botanical description of sandalwood

The height of the evergreen tree is between 4 and 9 metres. They may live to one hundred years of age. The tree is variable in habit, usually upright to sprawling, and may intertwine with other species. The plant parasitises the roots of other tree species, with a haustorium adaptation on its own roots, but without major detriment to its hosts. An individual will form a non-obligate relationship with a number of other plants. Up to 300 species (including its own) can host the tree's development - supplying macronutrients phosphorus, nitrogen and potassium, and shade - especially during early phases of development. It may propagate itself through wood suckering during its early development, establishing small stands.

The reddish or brown bark can be almost black and is smooth in young trees, becoming cracked with a red reveal. The heartwood is pale green to white as the common name indicates. The leaves are thin, opposite and ovate to lanceolate in shape. Glabrous surface is shiny and bright green, with a glaucous pale reverse. Fruit is produced after three years, viable seeds after five. These seeds are distributed by birds.

Climate Requirement for Sandalwood Cultivation: -

Sandalwood crop requires and grows well in hot and humid climatic conditions. The ideal temperature for sandalwood tree growth is between 12° and 35°C.

Soil Requirement of Sandalwood Cultivation: -

Sandalwood trees can be grown in any well-drained soils having good organic matter. However, red sandy loam soils are best for their growth and yield. If you are planning for commercial cultivation of sandalwood, it is advised to go for a soil test and fulfill the nutrient requirements in the soil based on soil test results. Sandalwood grows better in slightly alkaline soils with a pH range of 6.5 to 7.5.

Land Preparation for Sandalwood Cultivation: -

Give a couple of ploughings to bring the soil to fine tilth stage and weed free. Prepare the soil or beds in such a way that excess water will drain out quickly in case of heavy rains or floods.

Propagation in Sandalwood Cultivation: -

Sandalwood can be propagated by means of seeds and vegetatively through tissue culture

Planting and Spacing in Sandalwood Cultivation: -

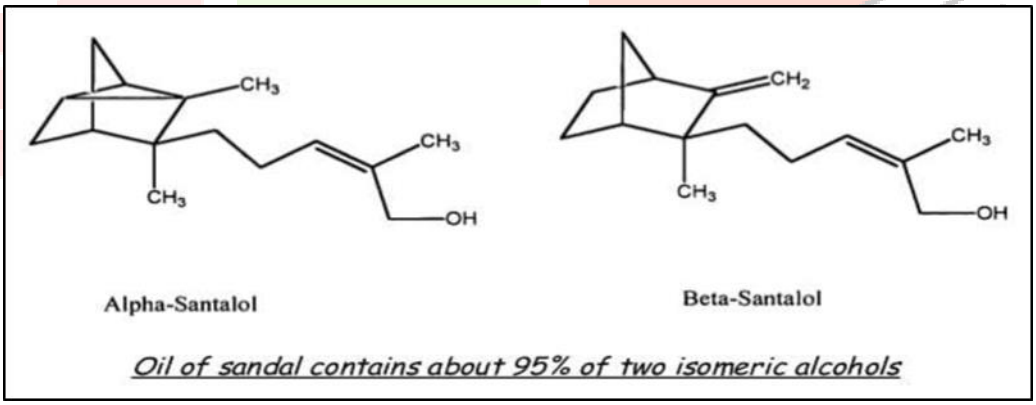
Usually seeds collected from plants age of 15 to 20 years in August to March is best for its growth and yield. These collected plants should be dried up and well- treated before sowing on nursery beds. Generally, 7 to 8 months old well-branched seedlings of 30 to 35 cm height raised on nursery beds are used for transplanting in the main field. Two types of seedbeds such as "sunken" and "raised beds" are used to raise the sandalwood seedlings

The pits size of 45 x 45 x 45 cm should be dug during soil/land preparation. The plant- to-plant distance should be 10 feet. Make sure there will not be any stagnated water in pits before planting. Expose pits for sun for a couple of days to dry up the pits any pests will be destroyed. Sandalwood will start flowering after 4 years planting and need to make sure to remove the weeds and dried/diseased branches on regular basis to make the field weed free. Prefer to use Bio- fertilizers in sandalwood cultivation.

Chemical constituents:

Sandal wood oil

- Sandal wood oil contains 95% two isomeric
- sesquiterpene alcohols, a-santalol and B santalol
- An aldehyde santalol C15H220, Santene, Santenone



The main ingredient of sandalwood oil is α-santalol that has many therapeutic properties. ... α-Santalol and β-santalol and santenone are main constituents of the sandalwood oil [18,19]. It has been found to enhance the activity of glutathione S-transferase, increasing the level of acid-soluble sulfhydryl groups.

NEED OF WORK

According to literature Review

Get sandalwood powder or chips from stores use a mortar pestle to crush the chips. In a glass jar blend the powder with a cup of virgin olive oil and allow it to stay for a week, keep shaking it occasionally. Strain the mixture and extract the oil by pressing the sandalwood powder as much as possible.

Store sandalwood essential oil in a glass bottler in dark cool place. The sandalwood home-made oil is as effective as the one you buy from the store and may cause allergic reactions, so do a patch test before using it.

Sr.No	Chemicals	Source
1.	Ethanol	Laboratory reagent
2.	Stearic acid	Laboratory reagent
3.	Soft paraffin	Laboratory reagent
4.	Orange oil	Laboratory reagent

Formulation of herbal soap

To obtain extract of Azadiracta indica, Ocimum tenuiflorum, Sapindus mukorossi and Acacia concinna powder was incorporated into a soap formulated with basic glycerin soap and which contain 1 gm stearic acid, 0.70gm soft paraffin. Weighed 1gm of stearic acid, 0.70gm soft paraffin, 5ml ethanol was taken. Glycerin basic soap was melted first and to it 1gm stearic acid, 0.70gm soft paraffin, 5ml ethanol were added.

SR.NO	HERBAL PLANT	SOURCE
1.	sandalwood	Plant
2.	Neem	Plant
3.	Shikekai	Plant
4.	Reetha	Plant
5.	Tulsi	Plant

Will now look at standardized example of Prescription given in various pharmaceutical books and literature. Here we have mentioned the standardized prescription given in the pharmaceutical book for the purpose of study: -

PRESCRIPTION: -

℞

SR NO	INGREDIENT	QUANTITY	USES
1.	Stearic acid	1 gm	Hardening
2.	Soft paraffin	0.7	Hardening
3.	Ethanol	5ml	Solvent
4.	Neem powder	2g	Anti-bacterial
5.	Sandalwood powder	2g	Fragrance
6.	Reetha	3g	Surfactant
7.	Shikekai	2g	Cleanser
8.	Tulsi	1g	Antiviral
9.	Orange oil	q.s	Perfum

For the purpose of the study, we have mentioned here the standard method of making Sandalwood soap in the pharmaceutical book.

Advantages of Sandalwood

- It has anti-ageing properties. ...
- A cure for pimples and acne. ...
- It removes scars and softens the skin. ...
- It has anti-tanning properties.

- It can save your skin from prickly heat.
- Sandalwood can treat eczema

CONCLUSION

Commercial cultivation of sandalwood has been gaining mpetus in India since liberalization of rules regarding sandalwood cultivation in 2001 and 2002 in traditional sandalwood growing states of Karnataka and Tamil Nadu. Initially sandalwood farming took off in a big way in non-traditional sandalwood areas in states like Gujarat, Rajasthan, and Madhya Pradesh. In recent times there has been a spurt in sandalwood farming in states like Maharashtra, Telengana, and Andhra Pradesh. Among the south Indian states cultivation has picked up in Northern Karnataka and drier tracts of Tamil Nadu while Kerala is nowhere in the picture despite the last remaining vestige of natural sandalwood forest reserve being located in Maryoor, Kerala.

Survey on sandalwood plantations raised in private lands and forest lands in Northern, Central, Eastern and Western parts of the country have showed that heartwood initiation happens generally between 6-9 years of age and the rate of heartwood formation and oil content per cent does not vary much when compared to sandalwood growing in traditional growing areas. Sandalwood farming especially sandalwood based agro-forestry practices has immense potential in terms of revenue generation and optimal utilization of land and resources. Available information suggests this may indeed be the way forward provided quality planting stock is made available, sound scientific silvicultural and management principles followed and smart e- protection of trees practiced.

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