

EVALUATION OF CLINICAL PROPERTY AND SIDE EFFECT OF SANDALWOOD

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ABSTRACTS

Sandalwoods are a essential oil that are obtained by the wood of sandalwood. The bark and oil of sandalwood are used. The other name of Sandalwood, Chandan, Srigandha, Gandhachakoda, Sandal and Safavid. In which found many properties like a perfumes, flavor, preservative & used in Indian medicine system like as demulcent, diuretics, mild stimulant, skin disease, Hair dandruff, diabetes, Cancer, antiseptic, uler & used as a cosmetics.



INTRODUCTION

In India, sandalwood is also called “Chandan” and “Srigandha”.

“Sandalwood is a heartwood may be class of tree species and their family “Santalaceae” and genus “Santalum”^[1] The sandalwood tree has characteristeristics of aromatic fragrance. Many species of tree produce sandalwood in this genus, mainly two species that are essential

to produce sandalwood are – *Santalum Album* (East Indian sandalwood) and *Santalum Spicatum* (Australian sandalwood). The high of Indian sandalwood is up to 30 feet and their flower's yellow to maroon, oval leaves, dark red to black fruit".^[3]

Sandalwoods are tropical and found all over the country but found in a majority in Karnataka and Tamil Nadu. It is found and grows in other states like Maharashtra, Rajasthan, Manipur, Kerala, Andhra Pradesh, Orissa, Uttar Pradesh, Madhya Pradesh, and Bihar.^[1]

Sandalwood plays an important role in sending any material to another country and its widely used in the food, perfume and pharmaceuticals industries. Sandalwood oil is used in a food as a flavor component, including alcoholic and non-alcoholic beverages, frozen farm desserts, candy, foods and gelatin and puddings at use levels usually below 0.001% (10 ppm) except in hard candy.^[12]

In the Indian system of medicine, sandalwood oil is widely used as a demulcent, diuretic and mild stimulant. The daily required dosage of sandalwood oil per the German Commission E review is 1–1.5 g for not more than six weeks Imdorf et al. reported on (1999) sandalwood oil acts as a repellent of the pest *Varroa jacobsoni* Oud., in honey bee colonies and has been used as an acaricide. Choi et al, (2006) reported modest activity against *Lycoriella mali* (the mushroom fly).^[12]

Synonyms

- Chandan, Srigandha
- Gandhachakoda in Marathi
- Sandal and Safavid in Urdu
- Anukkam, asam and Sandhanam in Tamil, etc.^[1]

Family

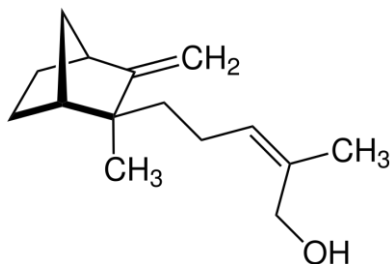
- Santalaceae.

Biological source

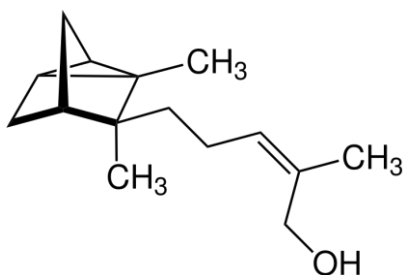
Sandalwood comes from the roots woods of the *Santalum album*, or the east Indian sandalwood tree.

Chemical constituents

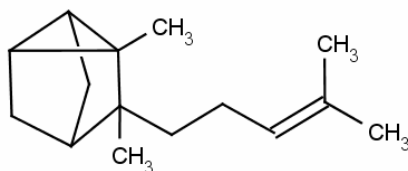
- Beta-Santalol



- alpha-Santalol



- cis- α -santalene

**CULTIVATION**

Sandalwoods are origin in India but it is found in Australia and Hawaii. Sandalwood has been used for over 4,000 years ago, making it the oldest known material and used for foreign perfume. Sandalwood is also used in cosmetics, Fragrances, and Personal care products and it is also used in spiritual meditation. Sandalwood is extra-cted by steam distillation, pieces of wood from sandalwood trees that are 40-80 years old.^[2]

Parts of used

- Bark
- oil

**Dosages**

- Powder – 3-4 gram
- Oil – 5-10 drops

Clinical properties of Sandalwood

Various properties of sandalwood are listed below-

- Antipyretic
- Antiseptic
- Antiscabetic
- Diuretic properties
- Inhibits undesirable cell growth
- In the treatment of bronchitis
- It is used for treating the common cold, cough, etc.^[4]



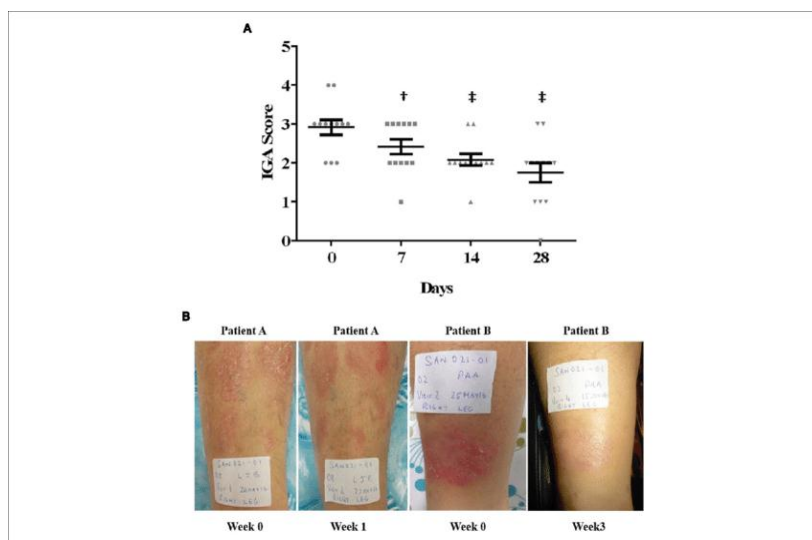
General use of sandalwood

Sandalwood oil has been reported to use in diuretic and urinary antiseptic properties, but clinical trial data are not available. The oil has been mainly used as a perfume enhancer.

In traditional medicine system, sandalwood oils have been used as an antiseptic and astringent, and for the treatment of headache, stomachache, and urinary and genital disorders. In India, the essential oil of sandalwood, emulsion, or paste is used in the treatment of inflammatory and eruptive skin diseases. It has been used in the traditional Ayurvedic medicinal system as a diuretic and mild stimulant, and for smoothing the skin. The leaves and bark were used by early Hawaiians to treat hair dandruff, lice, skin inflammation, and sexually transmitted diseases.

Sandalwood oil's used in psoriasis

Psoriasis is a skin disease in this condition the skin developed red, itchy, scaly patches. It is commonly observed in the knee, elbows, trunk, and scalp. Sandalwood is applied topically on the sites where the psoriasis plaques are present, and then sandalwood has reduced the severity of the disease in the studies. This action of sandalwood is due to its anti-inflammatory properties.^[1,5]



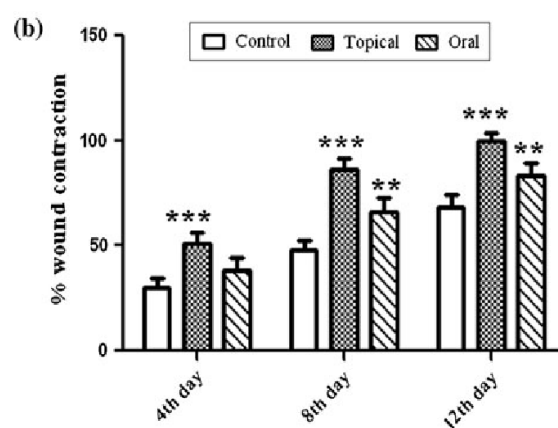
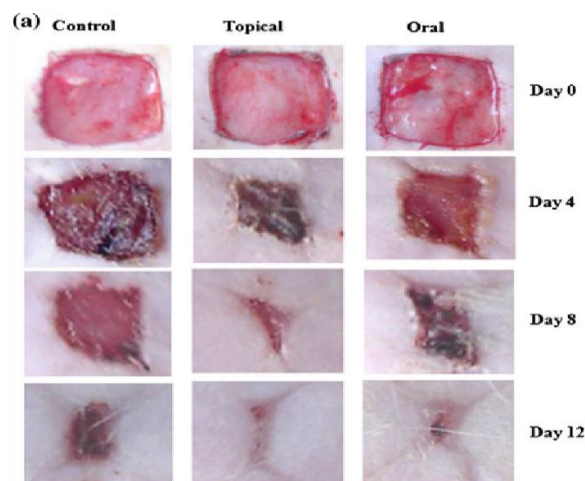
Sandalwood used in liver disease

Their powder also helps in the management of liver problems due to its hepatoprotective proper. The presence of an anti-oxidant in it, and helps to fight against free radicals & prevent liver cell damage. It also helps in manage of gallbladder-associated problems & thus easy removal of stones from the gallbladder.^[6]

Sandalwood use in wounds

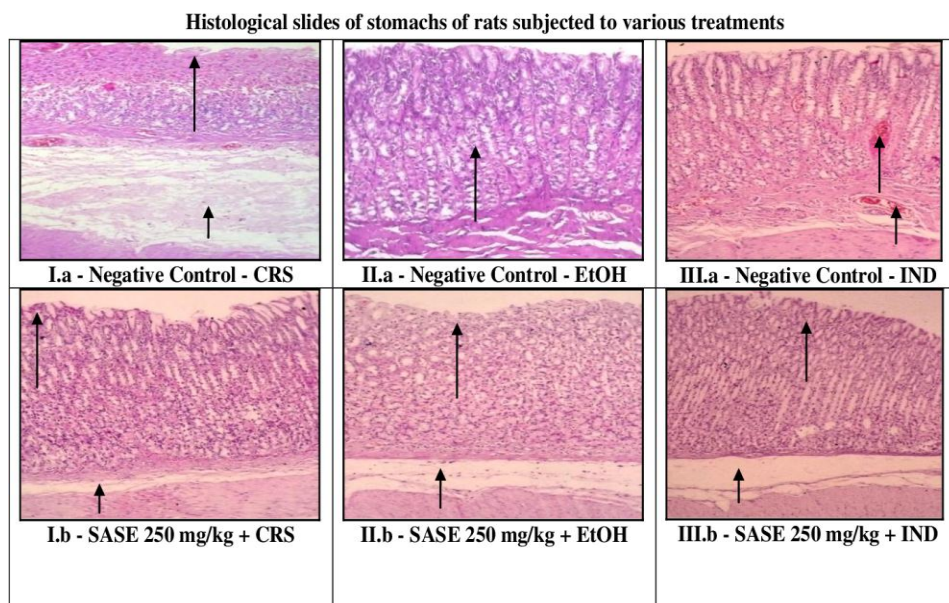
Sandalwood has antiseptic, and antimicrobial property & help in wound and healing. In India rose water, and the power of sandalwood is often combined to create a calming curative paste.^[7] Sandalwood oil also use in epidermal wound healing *in vivo* compared to vehicle control.^[13]

Research from Ruhr- University Bochum in Germany found that skin cells contain fat receptors for sandalwood. When they activated those receptors, it show to stimulate of skin cell growth.^[14]



Treatment of ulcer

An ulcer is defined as the development of a sore in the stomach or intestine. To studies, sandalwood has anti-inflammatory & anti-bacterial properties. The sandalwood may be effective against *H. pylori*. Bacteria are responsible for the development of gastric ulcers. So the extract of sandalwood may be used in the treatment of stomach & intestine ulcers. An ulcer is a serious case of disease and must be properly treated by a doctor.^[1]



Sandalwood treats viral fungal infection

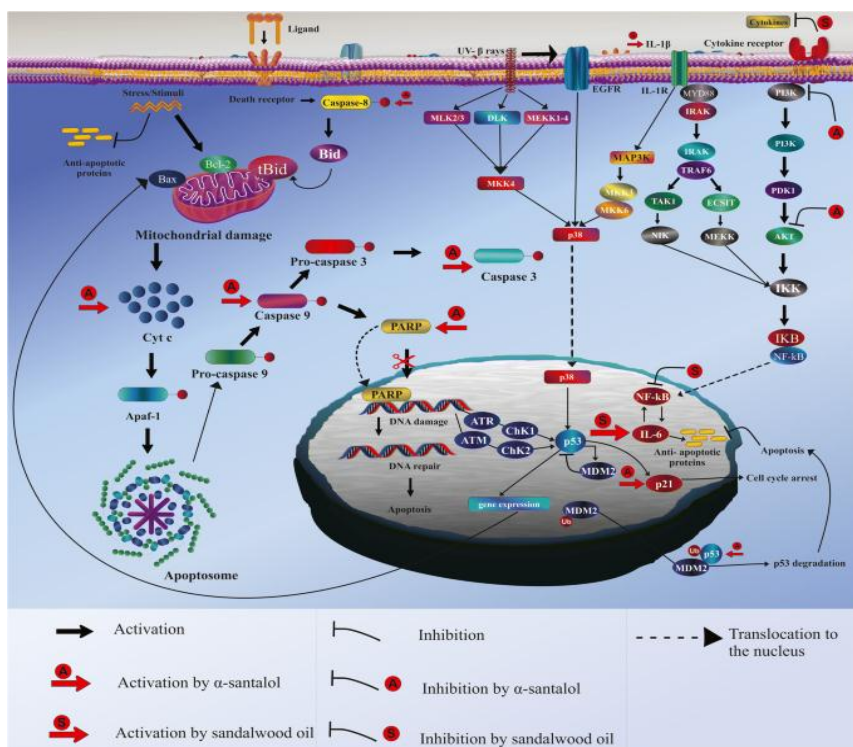
Sandalwood oil acts as an expectorant and it is effective in treating cough. Sandalwood is also effective in viral infection caused by the flu, mumps, cold, or other viral infection. Sandalwood gives relief in inflammation resulting from viral infection and fever due to its antiphlogistic nature.^[2]

Sandalwood used in the treatment of cancer

Laboratory studies should chemically induce digestion in CD-01 mice. Skin cancer chemopreventive effect of sandalwood oil in carcinogenesis has been shown.

The anti-cancer effects of sandalwood oil and its major constituents have also been demonstrated in bladder cancer and oral cancer cells. A common mechanistic feature in these studies seems to be the ability of the oil to cause cell cycle arrest at G2/M and to induce apoptosis and subsequent cell death. SAO was also shown to induce autophagy and cell death in proliferating keratinocytes, suggesting that sandalwood oil are also able to prevent the growth of precancerous conditions, such as actinic keratosis, to skin cancers.^[13]

Studies on J. 82 human bladder cancer cells show that sandalwood oil induced cellmediated growth arrest and proapoptotic genes through DNA damage and cell cycle arrest in this study.^[8]



Sandalwood used in the management of diabetes

Diabetes is a type of disease, in which the glucose level of the blood is too high.

A study provides that red sandalwood and bark are used for managing blood sugar, due to its have oxidant and anti-inflammatory properties. It prevents damage to the pancreatic cell and enhances the secretion of insulin.^[9]

Sandalwood use in hair health

Sandalwood oil is help to treating of hair problems like dandruff and prevent hair fall. It is also effective in stopping the secretion of excess sebum in the scalp due to strong astringent. Sandalwood oil mixed with an essential oil like sesame, cypress, and lavender, is rubbed on the scalp and then helps to prevent dandruff.^[10]



Side effect of sandalwood

Sandalwood oil is safe when taken with the food through the mouth. But it is unsafe when used to prolong or taken with medicine. Common side effects of sandalwood are as follows-

- Blood in urine
- Allergic skin reactions due to contact of skin surface
- Itching of the skin.

If any above mention reaction is noticed on using sandalwood then you should be contact to the Ayurveda physician immediate who has prescribed to it you. The physicians are able to identify the case & treated it.^[1,11]

When applied to the skin

It not sufficient information of sandalwood is safe, if greater amounts than those contains in cosmetics. Sandalwood is because allergy with contact of skin of some people.^[1,11]

Safety precautions

Sandalwood oil is generally considered safe for most people.

If you have sensitive skin, a 2017 study by Trusted Source notes that Indian sandalwood oil may be more softer than Australian sandalwood because it doesn't contain farnesol, a skin irritant found in Australian sandalwood.

Pregnancy and breast-feeding

Sandalwoods are LIKELY UNSAFE when to take white sandalwood by mouth in greater than food amounts if you are pregnant. You have been face to miscarriages.

If you are breastfeeding, There is not enough reliable information about the safety of taking white sandalwood. Then you are Stay on the safe zone and avoid use.

Kidney disease

In kidney problems if you are use of white sandalwood, then it is increase the strength of kidney disease.

CONCLUSION

The Sandalwood oil that are obtained by the naturally sources of woods. The bark and oil of sandalwood are used. In which found many properties like a perfumes, flavor, preservative & used in Indian medicine system like as demulcent, diuretics, mild stimulant, skin disease, Hair dandruff, diabetes, Cancer, antiseptic, ulcer & used as a cosmetics. But it is unsafe when used to long long or taken with any medicine like as- Blood in urine, Allergic skin reactions due to contact of skin surface, Itching of the skin.

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