

Red Sanders in Rayalaseema Region of Andhra Pradesh: Importance to Commercial & Medicinal Value

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Pterocarpus santalinus, with the common names Red Sanders, Red Sandalwood, and Saunders wood, is a species of *Pterocarpus* endemic to the southern Eastern Ghats mountain range of South India. This tree is valued for the rich red color of its wood. The wood is not aromatic. The tree is not to be confused with the aromatic *Santalum* Sandalwood trees that grow natively in South India.

Red Sander (RS) is an endangered timber tree species, endemic to southern India. It grows in approximately 5160 km² of fragmented forest landscape of southern Andhra Pradesh, and in a few sporadic patches in Tamil Nadu and Karnataka states. The wood is primarily used for making musical instruments and luxury furniture. It also yields Santa line dye which finds use in coloring foodstuff and pharmaceutical Preparations.¹

CLASSIFICATION

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| Genus | Pterocarpus |
| Species | Pterocarpus Santalinus |
| Kingdom | Plantae |
| (unranked) | Angiosperms |
| (unranked) | Eudicots |
| (unranked) | Rosids |
| Order | Fabales |
| Family | Fabaceae |
| Subfamily | Faboideae |
| Tribe | Dalbergieae |
| Other Names | Red sanders, Red Sandalwood, Ruby wood |
| Hindi Names | Lal Chandan, Rakta Chandan |

It is a light-demanding moderate sized tree growing up to 8 m tall with a trunk 50–150 cm diameter. It is fast-growing when young, reaching 5 m tall in three years even on degraded soils. It is not frost tolerant, being killed by temperatures of -1 °C but stays well at semi-arid climatic conditions. The leaves are alternate, 3–9 cm long, trifoliate with three leaflets. The flowers are produced in short racemes. In Hinduism, this wood has been traditionally used as a sacred wood. The priests and higher class casts such as Brahmin extensively use this wood on many of their rituals. It is found mainly in South India, Sri Lanka, and some parts of Nepal and Pakistan.

It is observed that the red sanders grown on the shale type of subsoil, at an altitude of 750 meters above sea level. Red sanders with wavy grain margin fetch a higher price than the non-wavy wood. This species is listed as Endangered by the IUCN, because of overexploitation for its timber.² Red sandalwood grown on the shale subsoil, at altitudes around 750 meters (2,460 ft), and in semi-arid climatic conditions gives a distinctive wavy grain margin. Lumber pieces with the wavy grain margin are graded as "A" grade. Red sandalwood with wavy grain margins sells at higher prices than the standard wood.

HISTORICAL IMPORTANCE IN ASIA RITUALS

In Hinduism, this wood has been traditionally used as a sacred wood. The priests and higher class castes such as Brahmin extensively use this wood on many of their rituals. Sandalwood paste is integral to rituals and ceremonies, to mark religious utensils and to decorate the icons of the deities. It is also distributed to devotees, who apply it to the forehead or the neck and chest. Preparation of the paste is a duty fit only for the pure, and is therefore entrusted in temples and during ceremonies only to priests.

The paste is prepared by grinding wood by hand upon granite slabs, which is mixed with saffron or other such pigments to make Chandan. Chandan further mixed with herbs, perfumes, pigments and some other compounds result in Javadhu. Kalabham, Chandan and Javadhu are dried and used as Kalabham powder,

Chandan powder and Javadhu powder respectively. Chandan powder is very popular in North India and is also used in Nepal. In Tirupati after religious tonsure, Sandal paste is applied to protect the skin. Sandalwood is considered in Hinduism and Ayurveda to bring one closer to the divine. Thus Sandal is one of the most used holy elements in the Hindu and Vedic society. Sandalwood, along with agar wood, is the most commonly used incense material by the Chinese and Japanese in worship and various ceremonies. Chinese people believed red sandalwood furniture is lucky at home.

The wood has historically been valued in China, particularly during the Ming Dynasty and Qing Dynasty periods, and is referred to in Chinese as *zitan* (紫檀) and spelt tzu-t'an by earlier western authors such as Gustav Ecke, who introduced classical Chinese furniture to the west. Between the 17th and 19th centuries in China the rarity of this wood led to the reservation of zitan furniture for the Qing dynasty imperial household. *Chandan*, the Indian word for Red Sandalwood which is Tzu-t'an, are linked by etymology. The Sanskrit *chandan* is in turn etymologically derived from Dravidian *caandu*. The word *tan* in Chinese is a perfect homonym of "tan", meaning cinnabar, vermilion and the cognition is suggested by the interchange of Chan for oriflamme, the vermilion ensign of the ancients. Chinese traders would have been familiar with Chandan. Tzu-t'an then is the ancient Chinese interpretation for the Indian word *chandan* for red sandalwood. In India sandalwood is one main and lucrative market for smugglers, as a high price is paid for this wood in China. Since, the exporting of sandalwood in India, the underground market is growing and there are a number of arrests every year of those trying to smuggle this wood to China.

The other form of *zitan* is from the species *Dalbergia luovellii*, *Dalbergia maritima*, and *Dalbergia normandi*, all similar species named in trade as bois de rose or violet rosewood which when cut are bright crimson purple changing to dark purple again. It has a fragrant scent when worked.³

COMMERCIAL & MEDICINAL IMPORTANCE

Additionally, the extracts obtained from the tree bark and wood are known to have several medicinal properties. The tree can grow only in dry plains of India like Eastern Ghats and eastern plains of Karnataka like Kolar, Tumkur and Chitradurga. It grows in parts of Tirupati hills and Srisailem in Andhra Pradesh. Andhra Pradesh is the fifth largest State in Geographical area and the third largest State in Forest area in the Indian Union.

Since last one decade most of the degraded areas have been rescrubbed with the implementation of Community forest management programme through more than 7100 Vana Samrakshana Samithis. Red Sanders (pride of Andhra Pradesh) is growing in the Cuddapah and Chittoor in large extents and in limited extent in the Nellore District. This species of wood is found, only in the A.P. State.

Red sander had the prominent importance in the business. Research initiatives are under way to exploit its potential application in soaps, dyes, toys etc. Despite a ban on exploitation and sale, good quality red sanders fetched any price between Rs 3 lakh and Rs 4 lakh per ton in the global market, while the inferior type was sold as fuel wood like other timbers red sanders, unique to the forest areas of Cuddapah, Chittoor and Nellore districts in Andhra Pradesh, has been the much sought after wood by illegal traders, who smuggled it to distant lands, especially Japan. Now through the sustained efforts of the Andhra Pradesh State Forest Department, there is hope of it being raised as a plantation species. The confident of sizable earnings as red sanders have good demand in foreign countries like China, Japan, and Myanmar, where they are used for medicinal purposes. In the State they are being raised on five acres in Cuddapah, Chittoor, and Nellore and Kurnool districts.

The demand for red sanders is very high in China and Japan...the smuggling of the crop, mostly confined to south Indian states, has increased by leaps and bounds Though red sander is "very little used" in India, in China and Japan these are used to make medicines, facial creams, furniture and perfumes, Increased demand for the wood in the global market is the reason for its large scale smuggling.⁴

The wavy grained wood has a huge demand in the international market and is primarily exported to Japan for manufacturing a special musical instrument called as 'Shamisen' a three stringed lute used in classical music as the wavy grained wood is supposed to have superior acoustic qualities. The neck of this instrument is primarily made by Red Sanders wood. It is also used to make name seals, frames, carving and traditional dishes. The musical instruments and other objects made out of this wood have been considered as an essential dowry given in a traditional Japanese wedding.⁵

Historically, Red Sanders is used in China for the highly valued furniture being manufactured since tenth century. In China it is categorized under group of hardwood species designated as rosewood (*Hong mu*). The rosewood furniture was used by Ming and early Qing dynasties and had special cultural significance. The two groups of Rosewood *Zitan* and *Huali* are represented by *Pterocarpus santalinus* and *Dalbergia odorifera*, respectively.⁶ Buddhists prefer this wood while cremating.⁷ The straight grained wood is used for carving idols and toys. The timber is also used for house posts, agricultural implements, poles, shafts and bent rims of carts, boxes and picture frames. The leaf is used as a good fodder.

MEDICINAL VALUE

The wood at the center of the trunk (heartwood) is used as medicine. Red sandalwood is used for treating digestive tract problems, fluid retention, and coughs and for “blood purification.” Red sandalwood might increase the loss of body water through the urine (diuretic effect). It might also have drying effects that may help reduce diarrhea and break up mucus to make it easier to cough up.

It is used in diseases like cough, vomiting, fever, hyperdipsia, helminthiasis, diseases of the blood and eye, wounds etc. The heartwood and fruits of Rakta chandana have great medicinal value. It reduces the burning sensation, arrests bleeding, alleviates edema and ameliorates various skin disorders, hence, is an effective external application as a paste, in burning sensation, headache, dermatomes and ophthalmopathies. It's been extensively used in Ayurveda to treat fever, digestive problem, treating high blood pressure and lowering the Sugar level of diabetic patients.

IN FOLKLORE/TRIBAL MEDICINE

The heartwood has various uses in traditional medicines and is popular for the treatment of diabetes apart from other ailments. The wood paste is applied externally specially for healing various skin diseases and blemishes. Yerukula and Irula tribes of Chittoor district in Andhra Pradesh use whole plant of *P. santalinus* for ulcer treatment.⁸ For treating acute jaundice, about one hundred grams of powdered stem bark is boiled in 500 ml of water for 3-4 hours till the volume is reduced to half the original content. The solution is cooled and then ten grams of jaggery is added and made into pills, two to three pills is administered every day for ten days.⁹ Malamalar tribe of Perambikulam wildlife sanctuary in Kerala considers wood paste as a blood purifier, for curing skin diseases and poisonous affections.¹⁰ Various tribes in coastal Karnataka use Red Sanders as an anti-inflammatory for the treatment of Herpes.¹¹

Also known as *Rakta Chandana Powder/ Pterocarpus santalinus* is a variety of sandalwood powder. It is dark maroon in color and doesn't have any fragrance to it. It is different from sandalwood powder.

- It is an antiseptic, wound healing agent.
- It is an age old effective remedy to fight acne, skin rashes, sunburn, blemishes and premature aging.
- It works equally well for skin and health care.
- Use sandalwood powder and green tea mask to **get rid of wrinkles** and sun induced aging.
- **get rid of scars and pigmentation** by using a paste of dried lemon peel powder, sandalwood powder, pinch of turmeric, curd and lemon juice. Excellent for **removing tan** too.
- Make a paste of red sandalwood powder and rose water. Work well to **calm down skin rashes** and angry ripe pimples. Works well with cystic acne too.

COSMETIC REMEDIES

FACE PACK FOR DRY SKIN:

Dried out skinned men and women can mix red sandalwood using milk and honey to be able to pack that over confront. Spread this kind of cream in excess of you confront and fret board and wash off using cold mineral water after 20 min's.

REGULAR FACE PACK:

Add two-three pinches of red sandalwood powder to any regular homemade/store acquired face pack. There you're done adding some sensational ingredient to improve your face pack results!

ACNE & BLACK SPOTS:

Sandalwood powder should be mixed with tomato juice and used as a face pack to take out tan and lighten skin tone naturally. This particular face pack also helps in getting rid of acne and dark spots effectively, if used regularly.

BLACKHEADS REMOVER:

Mix this red sandal lumber powder using rice powdered with required water to use as a facial exfoliating clean. After making use of the stick over your epidermis gently clean in spherical motion using finger guidelines. Wash off of. It allows clearing out there even those stubborn blackheads you could have.

IMPROVE SKIN TONE:

Red sandalwood powder can be mixed with your bath therapeutic massage oil to improve the firmness and texture of your skin.

BODY SPRAY:

Dilute red sandalwood with water and spray this all over your body to minimize excess body heat. This process not just helps in balancing the body's heat, but also stops skin transmissions.

TRADE OF RED SANDERS

Observing the way it was being exploited TA Whitehead, a Forest Officer in Cuddapah wrote during the first decade of twentieth century that “not only the stems and branches but even the roots were extracted and is to be wondered at, that the tree has survived total extinction”. This observation has relevance even in the present days too. As mentioned earlier, the demand for the wood is more in international market. Initially, in sixteenth century it was exported to European countries as a source for the natural dye which subsequently reduced as the synthetic dye came into the market, but Japanese merchant in 1931 approached the Forest Department of Andhra Pradesh, rekindling the wood value in the international market. Even though, *P. santalinus* has been documented in China by the Jin dynasty scholar Cui Bao (265-340 AD), it was regarded as a rare and precious lignum as expensive as gold. Presently, it costs around US\$ 150,000 per m³.¹²

The heavy demand in international market for many centuries suggests why Red Sanders has been over exploited through illegal harvest. In its native state of Andhra Pradesh, during 2012-13, 1,488 forest offence cases have been booked for Red Sanders alone. Along with it, 1002 vehicles accounting to 1,390 tons of wood have been seized.¹³

Considering the wood demand, restricted distribution, slow regeneration, illegal harvest, trade and habitat destruction, the species has been categorized as endangered by IUCN and has been listed in Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The CITES aims at ensuring the survival of wild animals and plants being traded internationally and there by safeguarding the species being over exploited. On the basis of a proposal from India, *Pterocarpus santalinus* is the only species of *Pterocarpus* that has been listed in Appendix II of CITES on 16th February 1995. In Andhra Pradesh, It is protected under the Red Sanders and Sandalwood Transit Rules of the Andhra Pradesh Forest Act, 1967 and is also classified as a “reserved tree” under the Andhra Pradesh Preservation of Private Forest Rules, 1978.

FUTURE OF RED SANDERS

P. santalinus is a resilient species and its survival amidst over exploitation from the past few centuries indicates that it is necessary to seriously think about its revival strategies. One of the best ways of conserving Red Sanders is not only to raise large scale seedling based plantations in its natural habitats but also in far away regions having similar growing conditions which would ensure that genetic material is safe for posterity. These plantations can also act as a source of plant material for initiating further tree improvement strategies. While growing Red Sanders outside the forest area, it is paramount to educate the tree growers to consider the gestation of the crop. Usually, it is a tendency among growers to compare tree growing with agricultural crops, but on a long term basis the yield and the monetary benefits accrued by growing such valuable trees are definitely high. The Government agencies must take a lead role to encourage the farmers and entrepreneurs to grow Red Sanders, suggested that, it is imminent to have a sustainable wood trade policy formulated by strongly incorporating stakeholder’s perceptions. Therefore, to revive the past glory of this valuable species to mankind, Government agencies, farmers, entrepreneurs and policy makers have to join hands together in protecting, conserving and sustainably utilizing Red Sanders.¹⁴

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