

# Pharmacognostical Study on the seed of *Santalum album* Linn.

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**Abstract:** Pharmacognostical parameters for the seed of *Santalum album* Linn. were studied with the aim of drawing the pharmacopoeial standards for this species. Macroscopical and microscopical characters with some of its physical constants like moisture content, total ash, water soluble and acid insoluble ash, alcohol soluble and water soluble extractives were carried out on the seed of *Santalum album* Linn.

**Keywords:** *Santalum album* Linn., Seed, Pharmacognostical.

## INTRODUCTION

Drugs must be marketed as safe and therapeutically active formulations whose performance is consistent and predictable. In order to make sure the safe use of these medicines, a necessary first step is the establishment of standards of quality, safety and efficacy. So considering this fact here, we tried to establish physiochemical standards for the plant *Santalum album* Linn. belonging to family Santalaceae.<sup>1</sup>

*Santalum album* Linn occurs naturally in India, Sri Lanka and the Malay Archipelago (Indonesia and surrounding islands). In India it is found in the drier regions in the south of the country, especially the states of Karnataka and Tamil Nadu, up to 1400 m.

*Santalum album* Linn. is a small evergreen tree, a partial root parasite, attaining a height of 12 to 13 meters and girth of 1 to 2.4 meters with slender drooping as well as erect branching. Medicinally *Santalum album* Linn. is useful in biliousness, fever and thirst. Also, use in skin eruption, hemicranias and skin diseases. It is commonly used in cosmetic and hair oil. Sandalwood oil relieves itching, heat, pruritus, inflammation of the skin. *Santalum album* Linn. is bitter, cooling, sedative diuretic, expectorant, stimulant and astringent.<sup>2-3</sup>

The major classes of chemical constituent present in this plant are essential oil, dark resin, and tannic acid<sup>3</sup>. It also contains sesquiterpene alcohols, hydrocarbons aldehydes, ketones<sup>2</sup>. The seed oil of *Santalum album* Linn. yield dark red viscid fixed oil containing stearolic acid and santalbic acid.<sup>4</sup>

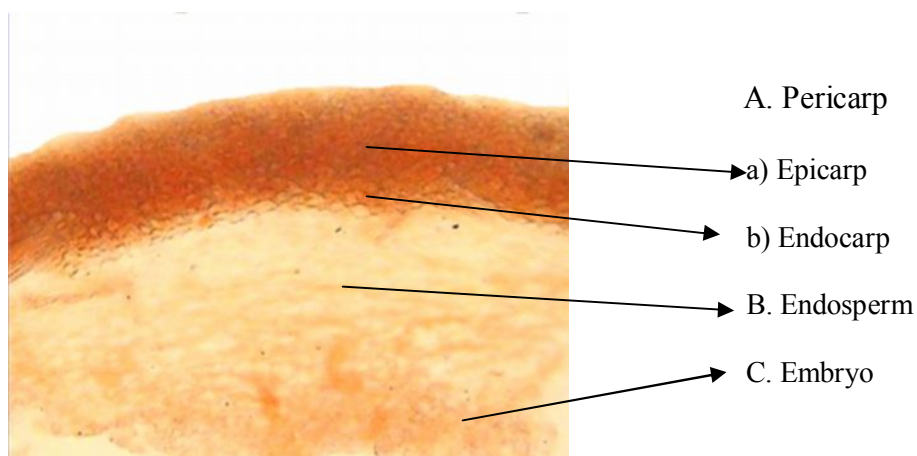
In the present communication we have tried to study some of the pharmacognostical and phytochemical parameters such as macroscopic, microscopic, ash value, extractive value, moisture content of the seed of *Santalum album* Linn.

## EXPERIMENTAL

The seeds of the plant were indentified with help of local botanist and collected properly in the month of August 2009, from Indore (MP), India and were dried under shed and stored. The plant was indentified and authenticated by Botanical Survey of India (BSI), Pune, Maharashtra, India. A voucher specimen (No.VAISA4) was deposited at B.S.I., Pune, India. Macroscopical studies on the seed give the knowledge of external feature<sup>5</sup>. Free hand section of seed were cut, cleared and stained with staining reagent according to the prescribed method. Physiochemical studies such as moisture content, ash value, extractive values were performed according to official procedure<sup>6</sup>.

**Table 1: Results of total ash and extractive value of seed of *Santalum album* Linn.**

Physical constant	
Moisture (%)	14.5%
Ash (%)	3.05%
Acid insoluble (%)	2.5%
Water soluble (%)	3.4%
Extractive value	
Alcohol (%)	16.8%
Water (%)	22.72%

**Photograph 1: Transverse section of Seed of *Santalum album* Linn. seed**

## **RESULT AND DISCUSSION**

Macroscopically, dried seed of *Santalum album* are naked, lacking in testa. Seeds are endospermic. It is light brown-yellowish, globous or ovoid with 3-5 mm in diameter having weight around 0.16 gm.

Microscopical character was studied by using motic microscope. The transverse sections of seed was taken and stained with Phloroglucinol: Conc. HCl (1:1) and Sudan red III. Observed under microscope (Motic) and further photo documentation were reported was shown in Photograph no 1. The fully mature seed shows hilum and radical. Hilum makes the place of an attachment of the seed stalk to the seed. Radicle is the lower portion of the hypocotyls which grows into primary root of a seedling. Transverse Section of mature seed shows:

**1. Pericarp:** a) Epicarp: This is outermost hard and thick layer which contain single layer of polygonal tabular cells. b) Endocarp: It is innermost softer layer which protect endosperm of seed. It consists of multi

layer of flattened polygonal cells with reddish brown content.

**2. Endosperm:** *Santalum album* Linn. seed consist of massive endosperm. It the major portion of seed. These are cellulosic polyhedral parenchymatous cells containing oil globules and aleurone grains.

**3. Embryo:** An elongated dicotyledonous embryo was seen. These are condensed cells in which cell content is similar to endosperm.

The result of physico-chemical analysis and extractive value are given in Table 1.

Since the plant *Santalum album* Linn. is useful in traditional medicine for the treatment of various ailments and it is important to standardize it for use as a drug. The pharmacognostic constants for the seed of this plant, the diagnostic microscopic features and the numerical standards reported in this work could be useful for the compilation of a suitable monograph for it proper identification.

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