

## PHARMACOGNOSTIC STUDIES OF *Dalbergia latifolia* Roxb

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### ABSTRACT

Pharmacognostic investigation was carried out on the The assignment such as macroscopy , anatomical studies and powder microscopy were performed since the species was not noted for its pharmacognosy in part. Macroscopic studies is a technique of qualitative evaluation based on the study of morphological and sensory profiles of roots of *Dalbergia latifolia* Roxb. microscopic studies is a technique of qualitative evaluation and used to confirm the structural details of drugs from the roots of *Dalbergia latifolia* Roxb. The perusal of literature also revealed that no pharmacognostic work had been carried out on the roots of *Dalbergia latifolia* Roxb. For this reason we have investigated the pharmacognostic profiles of roots of *Dalbergia latifolia* Roxb.

**Key words:** *Dalbergia latifolia* Roxb, pharmacognostic studies.

### INTRODUCTION

Evaluation of a crude drug means its identification and determination of its purity and quality. Quality control of a crude drug can be attempted by different methods of evaluation depending upon the morphological and microscopical studies. Standardization of natural products is a complex task due to their heterogeneous composition, which is the form of whole plant. To ensure reproducible quality of herbal medicines, proper control of starting materials is utmost essential. The first step towards ensuring quality of starting material is authentication followed by creating numerical values of standards for comparison. Pharmacognostical parameters for easy identification like root macroscopy, microscopy and powder microscopy analyses are few of the basic

protocol for standardization of herbal drugs.

The macroscopical or morphological description of a crude drug includes size, shape and organoleptic characters like colour, odour, taste etc. The microscopical study is one of the important aspects of its histological evaluation. The arrangement of tissues, types of cells and cell contents are revealed by suitable histological study of crude drug with the aid of a microscope. Certain microscopical characters like cork, medullary rays, calcium oxalate crystals are important anatomical characters.<sup>1-4</sup>

### MATERIALS AND METHODS

#### Collection and Authentication of Plant Material

Roots of *Dalbergia latifolia* Roxb. was collected from Tirupati, Chittoor (dist), Andhra Pradesh, India in the month of

August, 2010. Care was taken to select the healthy plant material (5). The taxonomical identification and authentication of the plant was done by Dr.T.Vijaya, Associate Professor, Department of Botany, SVU College of Sciences, S.V.University,Tirupati, Andhra Pradesh. The voucher specimen SVUCS/2011/18 of the plant was deposited at the college, for further reference.

### Macroscopical studies

The roots of *Dalbergia latifolia* Roxb. was studied for its morphological characters and photographed under original environment.

### Microscopical studies

#### Preparation of specimen

The fresh sample were cut into small pieces and fixed in FAA solution (Formalin 5ml + Galacial acetic acid 5ml + 70% Ethanol 90ml). After fixing, the specimens were dehydrated with graded series of tertiary butyl alcohol (TBA) as per the standard procedure. After complete dehydration, the specimens were embedded in paraffin wax.

#### Sectioning

The paraffin embedded specimens were sectioned with the help of Rotary microtome (thickness 10 - 12 $\mu$ m). Dewaxing and staining of the sections were done by customary procedure. Sections were stained mostly with toluidine blue.

#### Staining

For anatomical studies the following staining schedules were followed

1. **Tannic Acid** – Ferric Chloride counterstained with 0.5% alcoholic safrin. This schedule was found to be quite satisfactory for all young plant tissues in which the primary walls were stained.
2. **Alcoholic Safrin** – (0.5%) counterstained with 0.25% fast green. This schedule gives good result for studying the histology of different tissues of the plant organs especially the cell inclusions.
3. **Toluidine Blue** – O stain was prepared by dissolving 0.25g of the stain in the mixture of benzoic acid 0.25g, sodium benzoate 0.29g and distilled water 200ml with pH of 4.2

– 4.4. Since Toluidine blue is a polychromatic stain, the staining results were remarkably good and the dye render pink colour to the cellulose, walls, blue to the lignified cells, dark green to suberin, violet to the mucilage, blue to the protein bodies, etc., After dewaxing, the slides were stained for 5 – 10 minutes and the dehydrated<sup>6-7</sup>.

### Photomicrograph

All permanent slides, after staining were dehydrated by using graded series of ethanol + Xylol and mounted in DPX. Photomicrograph were done on NIKON-Lab photo-2 microscopic unit. For normal observations, bright field was used. For the study of crystal and oil globule, the sections were photographed under polarized light. Magnifications of the figures are indicated by scale bars. Descriptive terms of various observations are as found in standard anatomy books<sup>8</sup>.

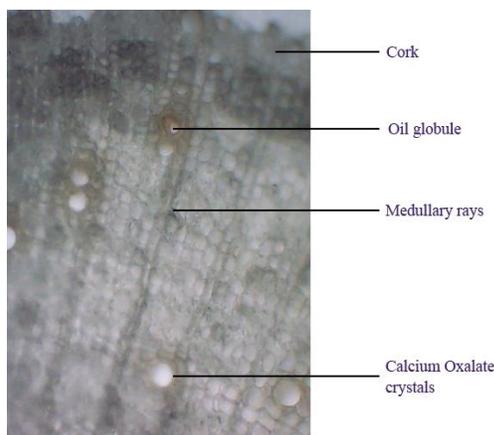
## RESULTS AND DISCUSSION

### Macroscopical Studies of the root



**Fig. 1: Macroscopical Studies of the root**

Shape – cylindrical; Colour – dark brown; odour – characteristic; Taste – characteristic, Size – 7 to 10 cm length, 3 to 5 cm width.

**Microscopical Studies of the root****Fig. 2: Microscopical Studies of the root****Cork**

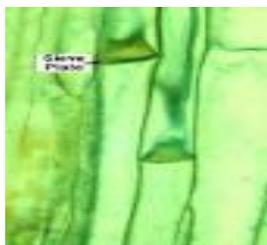
It is made up of compactly arranged with prismatic cells found in radial rows. No intercellular spaces are present.

**Oil globules**

Cortex has parenchyma with oil globules and calcium oxalate crystals.

**Medullary rays**

Thin walled, elongated radial in shape.

**Powder microscopy of the root****Fig. 3.0: Lignified annular xylem****Fig. 3.1: Phloem****Fig. 3.2: Calcium oxalate crystals****Xylem**

Lignified, annular xylem.

**Phloem**

Sieve plates, sieve tubes, companion cells.

**Calcium oxalate crystals**

Conjunctive tissue of pith region contain calcium oxalate crystals. Isolate or cluster of prism of calcium oxalate crystals.

**CONCLUSION**

The results obtained from present investigations may play a major role in setting particular studies of the plant *Dalbergia latifolia* Roxb. (Fabaceae), which might broaden its pharmacological, botanical and economical importance. These parameters may also prove beneficial in identification of the plant. Thus, with the help of these studies it will be a great use for the feature workers in selecting the correct herbal specimen.

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