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Research Article

KASAMARDA (*CASSIA OCCIDENTALIS* LINN.), MACRO/MICROSCOPIC PROFILE

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*Correspondence	ABSTRACT
<p>Dr. Mallya Suma V. M.D.(Ayu) (PhD- Thesis submitted) Associate professor, PG Studies in Department of Dravyaguna, S.D.M. College of Ayurveda, Kuthpady, Udupi, India</p> <p>DOI: 10.7897/2321-6328.02118</p> <p>Article Received on: 07/01/14 Accepted on: 18/02/14</p>	<p>Kasamarda (<i>Cassia occidentalis</i> Linn.) is a popular medicinal plant for the treatment of Kasa (cough) mentioned in almost all texts of Ayurveda. It is an erect, foetid annual herb, the leaves and stem parts of which are used in most of the medicinal preparations. Though a commonly available herb and popular medicinal plant, deliberate attempt to record its standard macro-microscopic features lacking. Pharmacognostic standards are the first and foremost part of any researches related to a drug. The present study comprises macroscopic and microscopic recordings on stem and leaf parts of Kasamarda. It shows the presence of paracytic stomata on both surface of a leaf and prismatic crystals of calcium oxalate in cortical cells stem. The observed characters may find useful for its standardization.</p> <p>Keywords: Ayurveda, <i>Cassia occidentalis</i>, Kasamarda, Macro-microscopy, Pharmacognostic</p>

INTRODUCTION

The term Kasamarda literally suggests a remedy against Kasa (cough)¹. The synonyms Kasamardah and Kasaari indicate, this is often recommended against cough, asthma, and other respiratory ailments. Though Charaka has not mentioned it among any groups, Sushruta and Vagbhata² have included it under Surasaadi Gana³. It is an erect, foetid, annual herb or under shrub, 60-150 cm in height, found throughout India up to an altitude of 1500 meter. Bark, roots, leaves and seeds are used in medicine⁴. The herb is reported to be used as condiment and in perfumery. The young leaves are eaten alone as potherb or cooked along with unripe pods and eaten with rice⁵. The roasted seeds are widely recognized as a substitute for coffee in Africa, but contain no caffeine and tannin⁵. The chemical constituents are sennosides and anthraquinones (whole pods); polysaccharides and galactomannan (seeds); dianthronic heteroside (leaves); apigenin (pericarp); emodol (roots); emodin and beta-sitosterol (flowers)⁶. The volatile oil obtained from the leaves, roots and seeds showed antibacterial and antifungal activity⁶. The seeds when fed to animals resulted in weight loss and also were found to be toxic to experimental animals⁷. A paste made out of roots is considered as a specific remedy for ringworm, eczema and other skin ailments⁶. The drug is an ingredient of Surasaadi Tailam⁴. Though the plant is popular in Ayurvedic practice very little work done on its pharmacognostical studies. It is an accepted fact that, authentication should be the primary criteria of any research using plants⁹, which will help to ensure the quality of any medicinal product. WHO recommends macroscopic and microscopic studies of the herbs should be the first step to identify the botanical source before doing any research on plants⁸. As the aerial parts like leaves and stem are used

mainly in medicinal preparations, these parts have been exposed in detail with regard to their macro and microscopic features.

MATERIALS AND METHODS

Collection of plant material

Aerial parts of the plants were collected from its natural habitat. It was authenticated through botanist. Herbarium was prepared and voucher specimen was deposited in Pharmacognosy department of SDM Centre for Research in Ayurveda and Allied Sciences, Udupi, India (Voucher no.391/14021301). These plant parts (leaf and stem) were cleaned and preserved in fixative solution FAA (Formalin-5 ml + Acetic acid-5 ml + 70 % Ethyl alcohol- 90 ml) for more than 48 hours. The preserved samples were cut into thin transverse section using sharp blade. The sections were stained with safranin as per standard methodology. The selected diagnostic characters of the transverse section were photographed under suitable magnification using camera attached to trinocular microscope and the micro-measurements were taken using the pre-calibrated scale. Slides observed under microscope and diagnostic characters were observed and photographed using Zeiss AXIO trinocular microscope.

RESULTS

Macroscopy

Stem

Stem erect, 1-2 m long, 0.5- 1.5 cm thick, branching at nodes spirally, young stem green in color and furrowed, while the mature stem is light brown to dark in color, branches many, ascending, flexuose, smooth, Internodes 2 to 4 cm long.



Figure 1: a. & b. Showing flowering twig of *Kasamarda*.

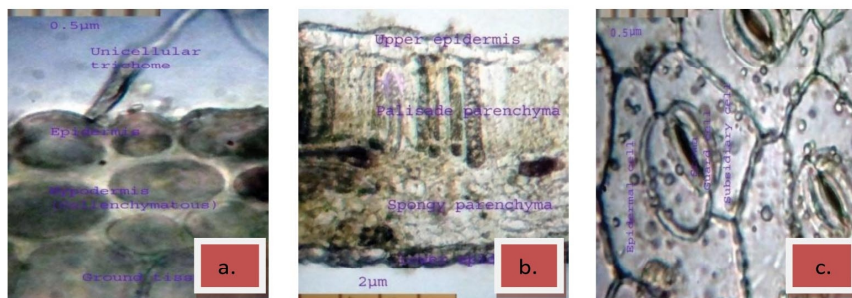


Figure 2: a. Showing epidermis, hypodermis and ground tissue of a leaf; b. Lamina portion of a leaf; c. Paracytic stomata on lower surface of a leaf.

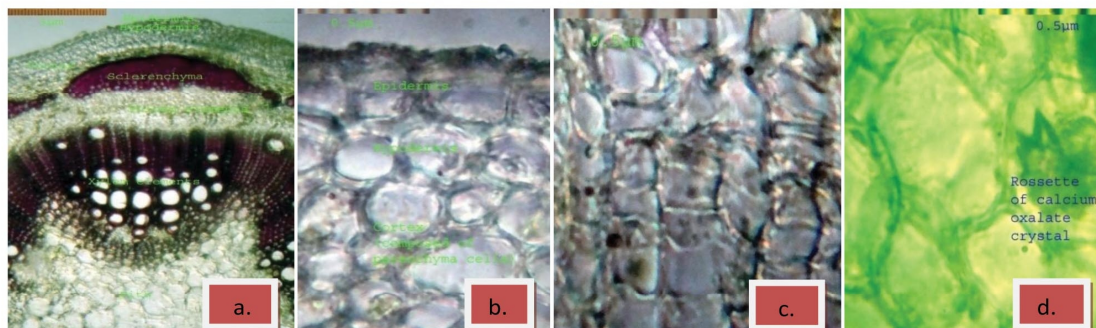


Figure 3: a. Outline of T. S. of stem; b. Epidermis and hypodermis of stem; c. Phloem elements; d. Rosette calcium oxalate crystal in the ground tissue.

Leaf

The leaves are compound, pinnate, leaflets 3-5 pairs, opposite, unequal, glabrous above and pubescent beneath. The leaves possess a very foetid odor.

Microscopy

Stem

Transverse section of the stem shows a single layered epidermis composed of thin-walled cells covered externally by a thin cuticle. The cortex is composed of 8 to 14 layers of collenchymatous cells followed by 2 to 6 layers of parenchymatous cells. Endodermis is single layered, parenchymatous and found encircling the pericycle. Prismatic as well as rosette crystals of calcium oxalate are present in many cortical cells including endodermis, which shows the presence of only prismatic crystals. Each vascular bundle is capped by pericycle, which is represented in early stages by parenchymatous cells. Later many of these cells become thick walled and lignified and give rise to fibers and stone cells.

Leaf

The leaflet is dorsiventral in structure, the mesophyll being differentiated into palisade and spongy tissue. The upper epidermis is covered externally with moderately thick cuticle having horn like unicellular trichomes. The cells of the lower epidermis are somewhat rectangular in shape and arched outside and smaller than those of the upper epidermis. Stomata of paracytic type are present on both surfaces, but they are less abundant on the upper surface than the lower one. Chloroplasts are present in abundance in the mesophyll cells.

CONCLUSION

Kasamarda (*Cassia occidentalis* Linn.) is a very popular medicinal plant in Kasa chikitsa since the time of Charaka samhita. It is available in almost all parts of India. Stem and leaves are used in most of the medicinal preparations. Macroscopic study results have given a complete configuration of the stem and leaf. Microscopic study of leaf revealed paracytic stomata on both surfaces. Whereas transverse section of stem shown the presence of prismatic crystals of calcium oxalate in cortical cells of endodermis. This study will serve as a reference for identification and distinguish from other species of *Cassia* used as substitute or adulterants. Detailed study on chemical analysis will be essential to acquire significant results.

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