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Research Article

PHARMACOGNOSTIC EVALUATION OF ROOT OF MAHANIMBA (*MELIA AZEDARACH* LINN)

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ABSTRACT

Mahanimba(*Meliaazadarach*Linn) belonging to Meliaceae family, is a prominent herb in Ayurveda indicated in the management of sciatica and skin disease. Traditionally, different parts such as leaf, flower, seed, fruit, and young branches are being used for the treatment of malaria, diabetes, cough, skin disease. Till date this plant has been evaluated for activities like antioxidant, antibacterial, hepato protective, anticancer, antifungal activites. In the present study, the root was evaluated for their macroscopic, microscopic including powder characters and histochemical tests. Cortex somewhat reduced made up of parenchyma cells, heavily loaded by oil globules, rosette crystal of calcium oxalate and brownish contain all over the cortex. the root powder showed that tannin content, fibres cut through medullary rays.

Keywords: Mahanimba, Histo-chemical, Pharmacognosy,*Meliaazadarach.*

INTRODUCTION

A family of about 50 genera and about 1400 species, Meliaceae is exclusively a tropical region family of the world. About 20 genera and over 75 species of meliaceae are reported from India. Common Indian species include *Azadirachtaindica, Meliaazedarach and Toona ciliate* whereasSwieteniais a timber-yielding species of tropical America. Xylocarpusis a mangrove genus of Meliaceae.

*Meliaazedarach*is a big tree. Stem: woody, erect, branched,solid. Leaf: alternate,exstipulate, compound, bipinnate and imparipinnate; leaf base pulvinus; pinnate ovate to lanceolate; serrate, unicostate reticulate. Inflorescence: Axillary panicle cyme. Flower: bracteates, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous; contains a nectariferous disc below ovary. Calyx: 5 sepals, fused, valvate. Corolla:5 petals, free, imbricate. Androecium: 10 stamens, monadelphous; filaments form a stamina tube having a ten – toothed els, synapex; dithecous, basifixed, introrse. Gynoecium: 5-8 or many carpels, syncarpous, superior, 5 to 8 or many – loculed, 1 or 2 ovules in each locule, axile placentation; stigma lobed or capitates; a nectariferous disc is present below the ovary. Fruit: drupe.The present study was undertaken to establish certain botanical standards for identification and standardization of *Meliaazedarach*Linn. root.[1]

MATERIAL AND METHODS

Collection and preservation of the sample:

Plant identification was done with the help of Forest flora of Gujarat state.[10] Collection and preservation procedure followed standard methods.[2]

Pharmacognostical evaluation:

Macroscopic Characters:

The following macroscopic characters for the fresh leaves were noted: Size and shape, colour, surfaces, texture, odour and taste[3,4].

Microscopic Characters:

Free hand transverse sections of root were taken and washed with chloral hydrate solution. Sections were first observed in distilled water then stained with phloroglucinol and concentrated HCl[5]. Photomicrographs were taken by Carl zeisstrinocular microscope.[6]

Powder microscopy:

Organoleptic evaluation:

Organoleptic characters i.e. Colour, taste, odour and touch are scientifically observed by sensory organs.[7]

Powder microscopy of shade-dried root powder was also carried out. Photomicrographs were taken by Carl zeisstrinocular microscope.[8]

Histochemical analysis:

Histochemical analysis for starch, tannin, oil, lignin and crystals was also carried out.[9]

RESULTS AND DISSCUSSIONS

Collection and preservation of the sample:

The whole plant of *Meliaazedarach*was collected from Jamnagar, Gujarat (Rakhakhatia forest area) during February 2013 and after authentication by expert taxonomist and sample specimen was deposited in Pharmacognosy museum (Specimen Number: PHM/6063/21/09/2012) for future references. The leaves and root were separated from the collected plant, washed, shade dried, powdered, sieved through 80 meshes and preserved in an air-tight container. Fresh sample of root were preserved for microscopical evaluation, in a solution prepared from 70% ethyl alcohol: glacial acetic acid: formalin (AAF) in the ratio of 90:5:5.

Root Morphology:

Hard externally, dark brown, internalycreamish yellow, some places with dark brown colour content.Externally with longitudinal fissurs, internally with fibres. Cut pieces measures about 8- 10 cm length.

T.S OF ROOT:

Diagrammatic section showed that outer cork cortex, phloem, central stealer region with multiserriate medullary rays.

Detail transverse section showed that cork, made up of 15 -20 layers of tendentiously elongated compactly arranged suberised with tannin content. Some of the cells filled with oil globules and rosette crystal of calcium oxalate.

Cortex somewhat reduced made up of parenchyma cells, heavily loaded by oil globules, 1rosette crystal of calcium oxalate and brownish contain all over the cortex. Isolated 6-8 celled pericyclicfibres circularly in the cortex. Rarely isolated stone cells also present.

Vascular bundle occupies the major part of the root. Phloem situated above the xylem and made up of sieve

elements and phloem fibres. Radially arranged single and two component of xylem occupies up to the central part xylem vessels are made up of mainly border pitted type. Xylem consist xylem parenchyma trachieds and its fibres. Some of the xylem vessels filled with tannin content (Tylosis).

Medullary raysmultiserriate starting from the centre reaches up to inner layers of the cortex zone, simple and compound starch grains and oil globules found all over the medullary rays.

Powder microscopy:

Organoleptic characters of the root powder showed that is possesses creamish brown colour, bitter taste with characteristic odour and rough touch.

Diagnostic characters of the root powder showed that tannin content, fibres cut through medullary rays, simple fibres; fragment of border pitted vessels, cork in surface view, simple and compound starch grains, oil globules, prismatic under rosette crystal of calcium oxalate and pitted stone cells.

Histochemical evaluation:

Sr. no	Reagent	Observation	Characteristics	Results
1.	Phloroglucinol+Conc. HCl	Red	Lignified cells	++
2.	Iodine	Blue	Starch grains	++
3.	Phloroglucinol+Conc. HCl	Dissolved	Calcium oxalate crystals	++
4.	$Fecl_3$ solution	Dark blue to black	Tannin cells	++

Table 1: Histo – chemical test of root of Mahanimba

CONCLUSION

Meliaazedarach Linn. root characters are very specific presence dark brown content in the cork region and rosette crystal of calcium oxalate and formation of tylosis are in Mahanimba root. This can be taken as a reference for any other research works.

Plate 1:

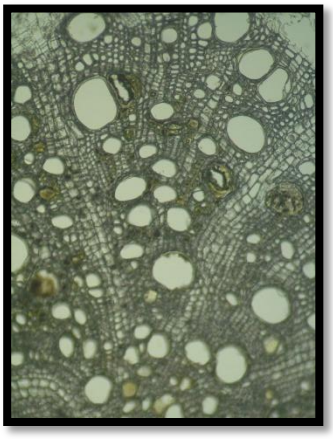
A. Mahanimba Natural Habit

B. Root Morphology

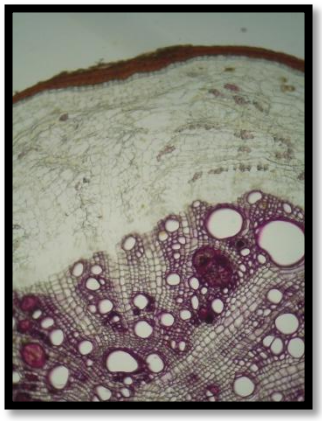
Plate 2:

1. Cork, cortex and stelar region

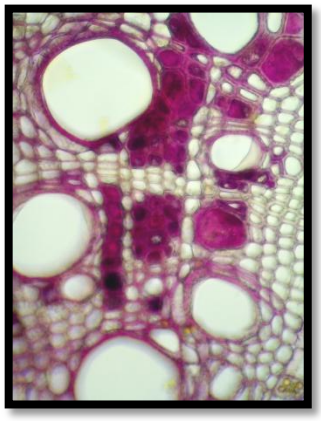
2. Cork with tannin content, rosette crystals



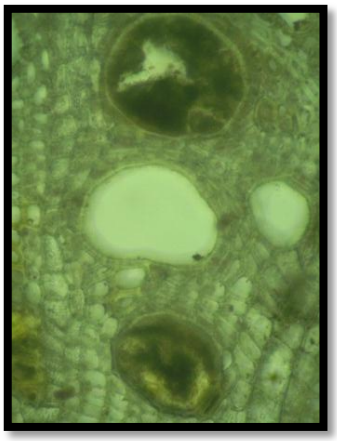
3. Stelar region



4.Phloem, xylem and medullary rays



5.Xylem and xylem parenchyma,fibres



6.Tylosis

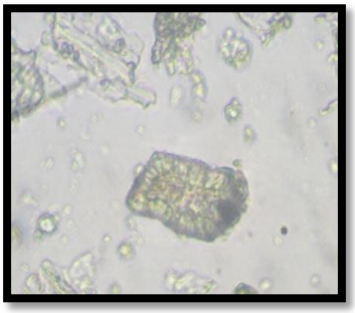
Plate 3:

1. Root powder of Mahanimba

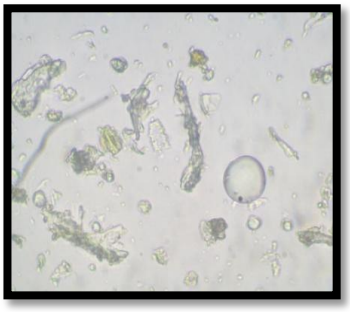
2. Tannin content

3. Simple starch grain with hilum

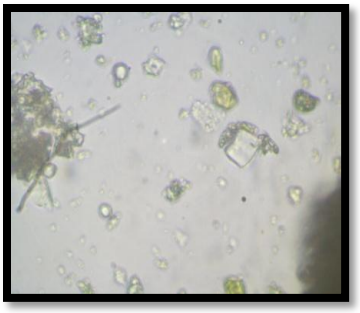
4. Simple fibres



5. Pitted stone cells



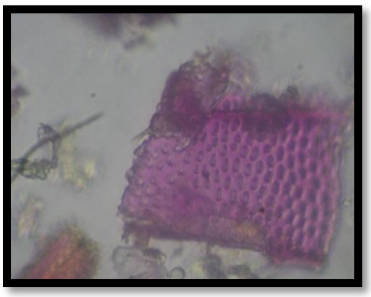
6. Oil globules



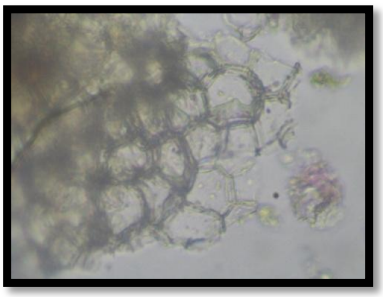
7. Prismatic crystals

8. Lignified fibres

9. Fibres passes through medullary rays



10. Fragment of border pitted vessels.



11. Cork in surface view

12. Compound starch grains

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