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PHARMACOGNOSTICAL INVESTIGATIONS ON *ACACIA LEUCOPHLOEA* STEM BARK

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ABSTRACT

The plant *Acacia leucophloea Roxb* is reported to have great medicinal value in Indian medicine. The present study deals with the pharmacognostical investigation on stem bark of *Acacia leucophloea*. Pharmacognostical evaluation such as macroscopical and microscopical characters, ash value, moisture content and extractive values were carried out.

INTRODUCTION: *Acacia leucophloea Roxb* also called *reonja*, is a moderate sized tree and it attains a height of about 20 to 30 ft and a girth of 2 to 3 ft [1], belongs to the family *Fabaceae* under the subfamily Mimosoideae [2]. *Acacia leucophloea's* native range through South and Southeast Asia is non-contiguous. Its largest continuous distribution is arid India through Sri Lanka, Bangladesh, Burma and much of Thailand [3]. The chemical constituents found are n-Hexacosanol, beta- Amyrin, beta-Sitosterol and Tannin [4]. Traditionally the bark is used as astringent, bitter, thermogenic, styptic, alexeteric, antihelmintic, vulnerary, demulcent, constipating, expectorant and antipyretic, vulnerary, demulcent, constipating, bronchitis, cough, vomiting, wounds, ulcers, diarrhoea, dysentery, internal and external haemorrhages, dental caries, oral ulcers, proctoptosis, stomatitis and intermittent fevers. The literature survey also revealed that there are no reports on correlation between chemical constituents and their pharmacological properties. Pharmacognostic studies also have not been reported for the stem bark of this plant. The present study is therefore undertaken, to study the pharmacognostic characteristics of the stem bark of *Acacia leucophloea*.

MATERIALS AND METHODS:

Materials: Dried stem bark of *Acacia leucophloea* was collected and were authenticated by Dr. S.N. Sharma, Technical Officer, Department of plant Sciences, Indian Institute of Integrative medicine, Jammu. A voucher specimen (specimen No. 21852) was deposited in the herbarium of Indian Institute of Integrative medicine, Jammu.

Methods: Morphological studies were done using simple microscope. The shape, size, surface, taste and odor of stem bark were determined. Microscopically preparing a thin hand section of the stem bark did studies and the average thickness of the sections was 10-13µm. The section was cleared, stained with phloroglucinol and hydrochloric acid, and mounted in glycerin and observed under microscope. Powder (# 60) of the dried stem bark was used for the observation of powder microscopical characters. The powdered drug was separately treated with phloroglucinol-HCl solution and mounted in glycerin for microscopical evaluation. Physicochemical parameters such as ash values (total ash, acid insoluble ash, and water soluble ash), extractive values (alcohol and water soluble extractive values) and loss on drying were determined as per Indian Pharmacopoeia[7]. Standard procedures were followed for all the evaluations.[5, 6, 7] all the chemicals and solvents used in experiment was of analytical grade.

RESULTS AND DISCUSSIONS:

Pharmacognostical Characteristics of the Stem bark:

Macroscopical Characteristics: The morphological evaluation revealed the shape of the bark as, incurved, exfoliating in irregular scales thick, hard, rough, 0.5-1 cm externally yellowish-grey or almost black and longitudinally fissured, internally light brown to reddish-brown, internal surface longitudinally striated and fibrous, fracture, fibrous; odor and taste, not distinct.

FIG.1 MACROSCOPY

Transverse Section: Stem Bark consisting of cork cells, thin-walled cortical cells, phellogen, phelloderm, phloem cells, cortex, pericycle, traversed by medullary rays; cork consisting of 4-8 layers of thin-walled, square to rectangular cells, secondary phloem wide, consisting of sieve elements, parenchyma, fibers, all traversed by medullary rays, xylem parenchyma thin-walled some cells contain prismatic crystals of calcium oxalate; phloem fibers thin-walled, with tapering ends, crystal fibers elongated, thick-walled having numerous chambers containing a prismatic crystals of calcium oxalate in each chamber; medullary rays multiseriate composed of thin-walled, radially elongated cells. Pith is also present.

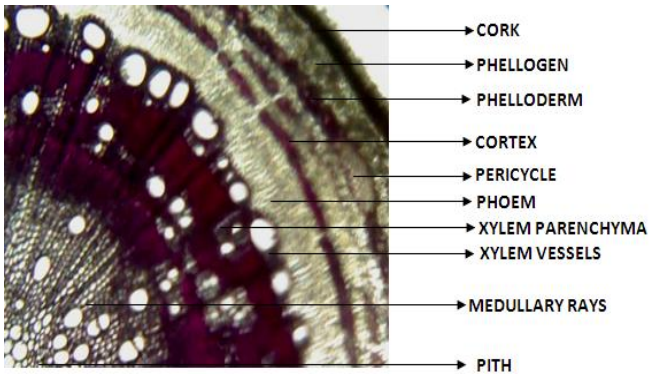
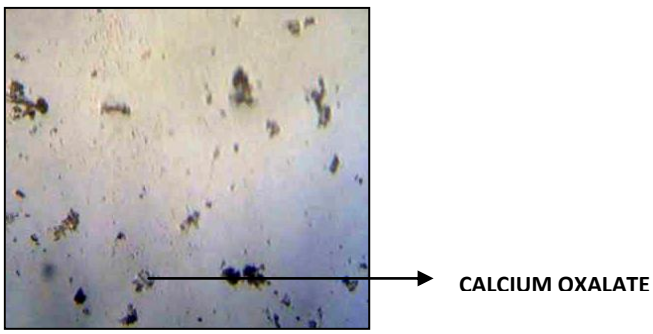


FIG. 2: T. S.OF THE STEM BARK

Powder microscopy: The powder revealed the presence of small prismatic of calcium oxalate crystals, cork cells, xylem parenchyma, and different fragments of fibers (**Fig. 3**).



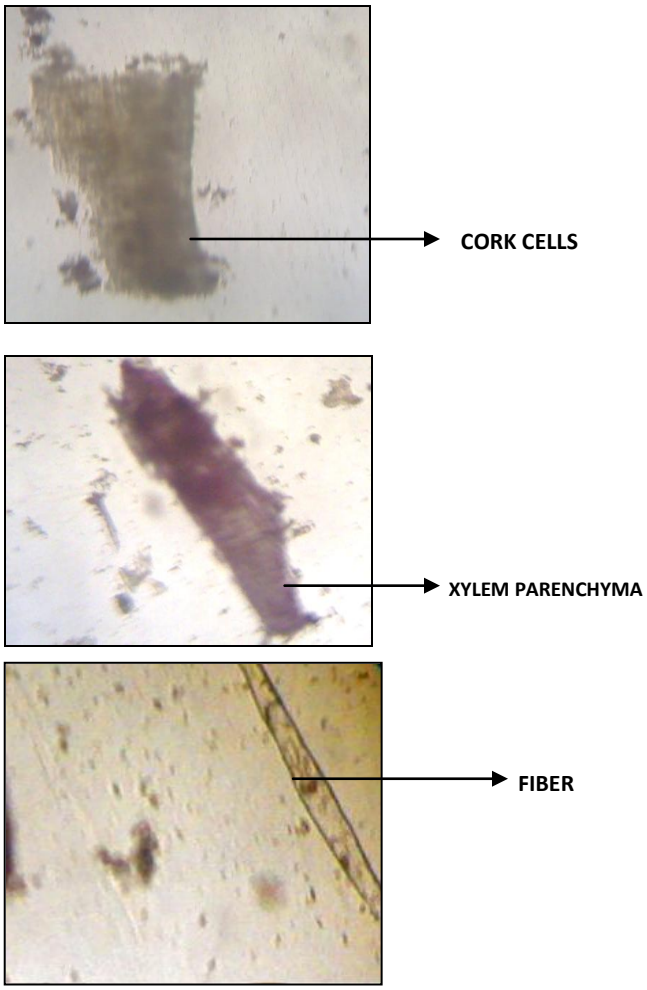


FIG. 3: POWDER MICROSCOPY OF BARK OF *ACACIA LEUCOPHLOEA*

Physico-chemical Parameters: Physicochemical parameters includes extractive value, ash value and loss on drying are tabulated in Table 1.

TABLE 1: PHYSICOCHEMICAL PARAMETERS OF *ACACIA LEUCOPHLOEA*

Physical parameters	Constant value
Alcohol soluble extractive value	16.8%w/w
Water soluble extractive value	12.0% w/w
Loss on drying	3.4% w/w
Total ash	9.0% w/w
Water soluble ash	1.5% w/w
Acid insoluble ash	2.3% w/w

DISCUSSION: *Acacia leucophloea* is used extensively in the Traditional System of Medicine for the treatment of number of ailments. As there is no work on record on its macroscopically and microscopically standards of this traditionally much valued drug, the present work was taken up with a view to lay down pharmacognostical standards, which could be used in authenticating the drug.

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REFERENCES

1. Kaul RN. Need for afforestation in the acrid zone of India: Layaaran; 1963, Vol.13.
2. http://en.wikipedia.org/wiki/ Acacia leucophloea.
3. Nielsen IC. Flora Malesiana: *Mimosaceae*.1992, Vol.1, 45.
4. Department of Indian System of Medicine and Homoeopathy. The Ayurvedic Pharmacopoeia of India: The Controller of Publications, Vol. 2(I), 1999.
5. Kokate CK: Practical Pharmacognosy. Vallabh Prakashan, New Delhi, 4th Edition 2004: 123. .
6. Khandelwal KR: Practical Pharmacognosy, Techniques and experiments. Nirali Prakashan, 12th Edition. 2004:157.
7. Pharmacopoeia of India. Controller of Publication, Ministry of Health and Family Welfare, Govt. of India, Delhi,vol.II,1996:A-53.

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