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Pharmacognostical Investigations on *Acacia Leucophloea* Leaf

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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 leaf of *Acacia leucophloea*. . Pharmacognostical evaluation such as macroscopical and microscopical characters, determination of leaf constants, ash value, moisture content and extractive values were carried out.

Keywords: *Acacia leucophloea*, Pharmacognosy, physicochemical parameter, leaf constant

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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, anthelmintic, 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 leaf of this plant. The present study is therefore undertaken, to study the pharmacognostic characteristics of the leaf of *Acacia leucophloea*.

MATERIALS AND METHODS

Materials

Dried leaf of *Acacia leucophloea* was collected and was 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 odour of leaf were determined. Microscopically studies were done by preparing a thin hand section of the leaf 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 leaf was used for the observation of powder microscopical characters. The powdered drug was separately treated with phloroglucinol-HCl solution and mounted in glycerine 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 [5-7] all the chemicals and solvents used in experiment was of analytical grade.

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RESULTS

Pharmacognostical Characteristics of the Leaf

Macroscopical Characteristics

The leaves are pinnately compound. The morphological evaluation revealed the shape of the leaves as oblong with entire margin, acute apex, and truncate base. Venation is running parallel and petiole of length 2 mm. Its surface is smooth. Leaves are 1.0-1.5 cm in length and 2 mm in width. It is having green colour with agreeable odour and bitter taste (fig.1).

Transverse Section (T.S.)

T.S. of the leaf shows epidermis and is single layered, stomata, simple unicellular elongated trichomes and vascular bundles (fig.2).

Powder microscopy

The powder revealed the presence of fragments of elongated unicellular trichomes, solitary crystals of calcium oxalate**,** epidermal cells, rubiaceous stomata and leaf veins. (Fig 3)

Physico-chemical Parameters

Physicochemical parameters includes extractive value, ash value and loss on drying are tabulated in Table No.1.

Leaf Constants

Leaf constant includes Stomatal index, palisade ratio, vein islet number, vein termination number are tabulated in Table No. 2.

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 macroscopical and microscopical 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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Fig: 1 MACROSCOPY

Fig: 2 TRANSVERSE SECTION (T.S.)

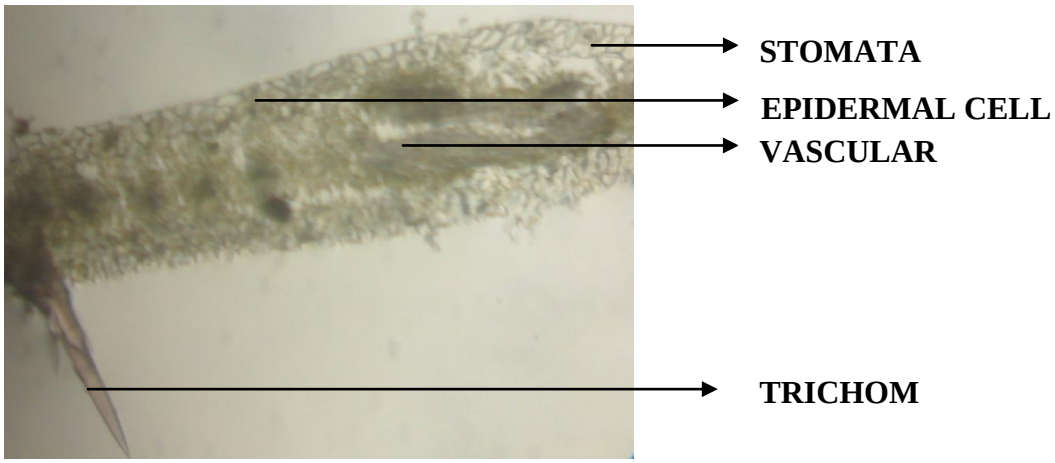
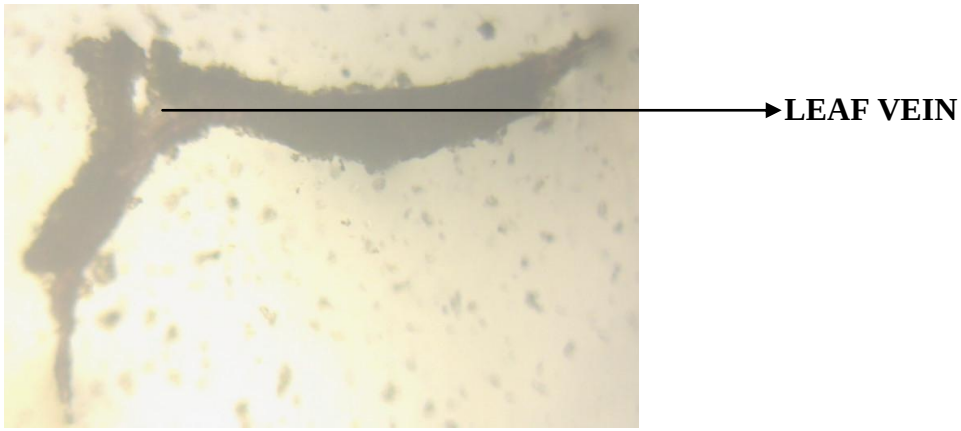


Fig: 3 POWDER MICROSCOPY



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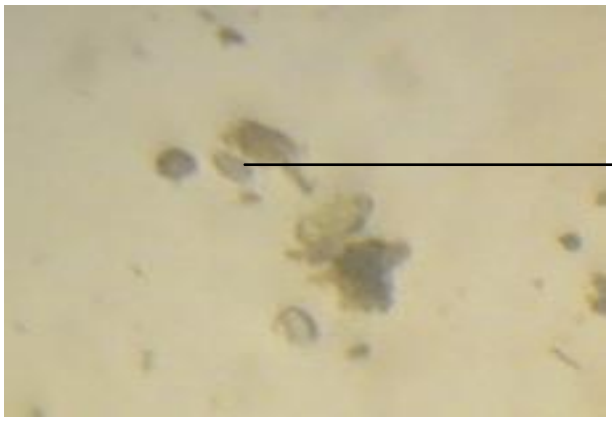
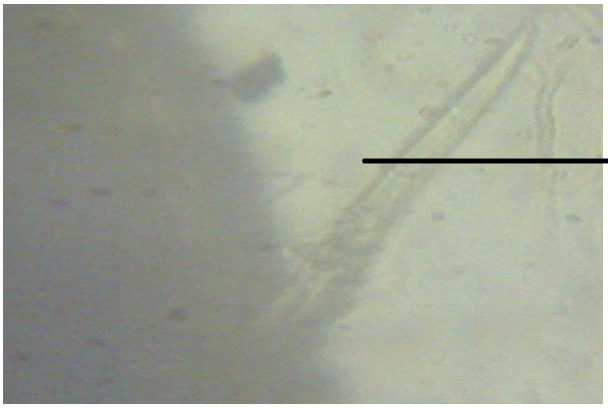
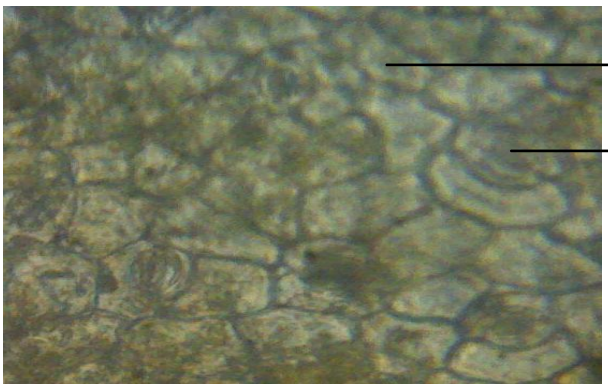


SOLITARY CRYSTALS OF CALCIUM OXALATE



TRICHOME



EPIDERMAL CELLS

STOMATA

TABLE NO. I: PHYSICOCHEMICAL PARAMETERS OF *ACACIA LEUCOPHLOEA* LEAF.

Sl.No.	Physical parameters	Constant value
1	Alcohol soluble extractive value	11.2%w/w
2	Water soluble extractive value	12.8% w/w
3	Loss on drying	7.0% w/w
4	Total ash	14.0% w/w
5	Water soluble ash	3.0% w/w
6	Acid insoluble ash	2.5% w/w

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TABLE NO.2: LEAF CONSTANTS OF *ACACIA LEUCOPHLOEA* LEAF.

Leaf	Stomatal No.	Stomatal index	Palisade ratio	Vein-islet No.	Vein termination No.
Acacia leucophloea	200	9.09	9.25	3	1

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