PHARMACOGNOSTICAL STUDIES OF ON Cnicus wallichii DC LEAF

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ABSTRACT

Cnicus wallichii DC belonging to the family Asteraceae, was studied to fix the parameters for pharmacognostical standards in order to ensure the use of only genuine and uniform materials of such herbal remedies, work on standardization assumes vital significance. Pharmacognostical study has therefore, been carried out, covering detailed morphological and anatomical characters, features of the powdered drug including leaf constants like Vein islet number, Vein termination number, Stomatal number, Stomatal index, Palisade ratio, Powder microscopy of the leaf and stem. Physical constants like ash values and extractive values.

INTRODUCTION

Cnicus wallichii DC belonging to the family Asteraceae, is an erect, sub-shrub plant. This plant is also called as Indian Thistle (or) Cirsium wallichii DC. This plant is used by the Tribals of Nilgiris in stomach inflammation, cuts, wounds, abscesses and in skin infections1,2,3. It is an important medicinal plant indigenous to Himalayas, Palani and Nilgiri Hills. This plant is widely used in herbal medicine for psoriasis4. Survey of literature showed that no systematic approach has been made to study the Pharmacognostical Parameters of this medicinal plant. The present investigation deals with Macroscopical, Microscopical, Leaf constants, Analytical parameters and powder microscopy of the Cnicus wallichii DC leaf and stem.

COLLECTION AND IDENTIFICATION:

This plant is an erect, sub shrub found throughout India, its aerial parts were collected from Ooty, Nilgiris, Tamilnadu and identified from Medicinal Plants Collection Unit, Ooty. This plant material was cleaned and allowed to dry in shade and powdered. It has then filtered by sieve 60, and the fine powder so obtained was used for determining analytical parameters5,6,7.

(a) Cnicus Wallichii D. C. LEAF

1. MACROSCOPICAL CHARACTERS:

This plant is an erect sub shrub. The branches are ribbed, cottony. The leaves are alternate, sub sessile, clasping the stem, pinnatisect, margins spiny, inflorescence terminal, involucre spiny, inflorescence terminal, involucre several series, spine tipped1,2,3. (Figure -1)

2. MICROSCOPICAL CHARACTERS:

T.S. of Leaf:

The leaf has fairly thick and distinct midrib and uniformly thick lamina. The midrib has a
prominent collateral vascular bundle with adaxial mass of xylem and abaxial cluster of phloem, the vascular bundle is surrounded by a thin parenchymatous sheath. The lamina has a narrow epidermal layers made up of thin cylindrical cells. The mesophyll is not differentiated into palisade and spongy parenchyma tissues and it consists of a aerenchymatous network of small lobed cells. The midrib is 350 um thick and the lamina is 250 um thick. Vein islets are distinct, Vein terminations are single, short, thin and unbranched. Stomata are anomocytic the epidermal cells are rectangular, the anticlinal walls are thick and slightly wavy\textsuperscript{8,9,10}. (Figure-2)

(b) Cnicus wallichi D. C. STEM:

1. MACROSCOPICAL CHARACTERS:

The stem has narrow heterogeneous cortex, wide parenchymatous pith and discrete, ridge shaped. The vascular bundle has radical arrangement of xylem elements and mass of thin walled bundle fibres\textsuperscript{1,2,3}.

2. MICROSCOPICAL CHARACTERS:

T.S. of Stem:

The stem is angular with short ridges and shallow furrows. The ridges have thick masses of collenchyma and the regions in between the ridges have parenchymatous tissue. In a young stem wide parenchymatous pith occupies the centre, a ring of vascular bundles occurs around the pith. The vascular bundles are of different sizes and are radially stretched. Each bundle has ridges of xylem elements and a circular mass of phloem on the outer part. The smaller bundles have a few xylem elements and a small nest of phloem elements. Outside the phloem mass is a wide patch of thin walled, unlignified cells which will mature into sclerenchyma bundle cap in the old stem. The larger vascular bundles have a wide mass of phloem on the inner side of the xylem, this phloem is called inner phloem and the vascular bundle with both inner and outer phloem is called bi-collateral vascular bundle. Fairly old stem has a similar structure as the young stem. The vascular bundles are larger and well developed. No secondary growth is seen. The metaxylem elements are wide, thin walled angular and 60 u m in diameter. The pith is wide, homogenous and parenchymatous. Cortex has collenchyma along the ridges and parenchyma along the inter-ridge zones. The bundle caps have fairly thick walled, lignified wide lumened fibres\textsuperscript{8,9,10}. (Figure-3)

POWDER MICROSCOPY:

(a) Cnicus Leaf Powder:

The characters observed in the powder microscopy of the leaf fragments include upper epidermis leaf fibres and lower epidermis. The upper epidermis has polygonal, thin walled larger cells. The stomata present in anamocytic type. The lower epidermis has smaller cells with thick wavy anticlinal walls. The stomata are abundant they are anamocytic type\textsuperscript{5,6}. (Figure-4)

(b) Cnicus Stem Powder:

The stem powder shows mostly xylem fibres and xylem vessel elements. The xylem fibres are thin, narrow with thick walled, reduced lumen and pointed ends. The fibres are 1.1 – 2.5 mm long and 50 u m wide. The xylem vessel elements are long, narrow and thick walled. The have abundant, circular bordered pits on the lateral walls. The vessels elements ranges from 560 – 680 u m long and 30 – 40 u m wide\textsuperscript{5,6}. (Figure- 5)
LEAF CONSTANTS:

The leaf constants were found to be as follows:

Vein islet number 6.01 – 8.12, vein let termination number 9.26 – 10.15, stomatal number of the upper epidermis 75.62 – 78.75, lower epidermis 152.12 – 155.15, stomatal index of the upper epidermis 24.85 – 27.92, lower epidermis 34.65 - 36.75 and Palisade ration of upper palisade 5.72 – 7.52, lower palisade 3.98 – 5.45\textsuperscript{5,6}.

EXTRACTIVE VALUES:

Extractive values of crude drugs are useful for their evaluation especially when the constituents of a drug cannot be readily estimated by any other means. Further, these values indicate the nature of the constituents present in a crude drug. Here Alcohol soluble extractive values and water soluble extractive values were determined and found to be 2.62\% and 23.5\% respectively\textsuperscript{7}.

RESULTS AND DISCUSSION:

*Cnicus Wallichi DC* is found to be effective in variety of diseases such as stomach inflammation, cuts, wounds, abscesses and in skin infections. Pharmacognostical studies of the aerial parts of this plant was carried out in order to identify the correct species and to differentiate the closely related other species of *Cnicus*. The parameters observed may be useful for the future identification of the plant.

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