PHARMACOGNOSY OF LEAVES OF WRIGHTIA TINCTORIA R. BR.

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Received: 22 January, Accepted: 8 March, 1998

ABSTRACT: Wrightia tinctoria is a tree widely used by the peoples of Tamil Nadu as a traditional medicine for pain and inflammations. Latex form the plant especially from leaves is directly applied on inflammation. This plant is very closely related to other species of Wrightia and hence pharmacognostical and preliminary phytochemical studies of wrightia tinctoria leaves were carried out.

INTRODUCTION

The plant Wrightia tinctoria, R. Br. A tree belongs to the family apocynaceae. It is distributed in the areas of Salem, periyar and combatore districts of Tamil Nadu. Latex from the plant is applied directly on the inflamed area. Pharmacognostical studies were carried out on the leaves which includes detailed microscopy determination of leaf constant, ash value, extractive values and preliminary phytochemical studies.

MATERIALS AND METHODS

Collection and identification of Plant

The leaves of Wrightia tinctoria were collected from mandagapalayam village of Salem District of Tamil Nadu during the month of July. The leaves were cleaned and allowed for shade drying. When the leaves were thoroughly dried, these were powdered and the powder was taken up for preliminary phytochemical studies.

Histological studies of Leaf

A thinnest possible section of leaves, was taken and treated with chloralhydrate solution to make the section clear, the sections were also treated with phloroglucinol and Hydrochloric acid in the ration of 1:1 to study lignified tissues.

Transverse section of leaf

A Transverse section of Wrightia tinctoria leaf sows dorsiventral structure. The following are the important tissue in the lamina and midrib regoin. The T.S. of the leaf is manly differentiated into tree regions.

A. Upper epidermis
B. Lower epidermis
C. Mesophyll

A. Upper Epidermis

It is made up of single layered tangentially elongated compactly arranged cells. But epidermal cell present cell present in the midrib region are small oval shaped and covered by a thick cuticle.

B. Lower Epidermis

It consist of single layered tangentially elongated compactly arranged cells similar to the upper epidermis. Te epidermal cells in the midrib regions are small, oval shaped and covered by a thick cuticle.
C. Mesophyll

Lamina regions is differentiated into palisade and spongy parenchyma. The palisade tissue is extended upto midrib region, the tissue which is present below the palisade is made up of spongy parenchyma.

It is 6-9 layered in structure and consist of vascular strands. The midrib region includes vascular bundles are arranged in a ring. The xylem present towards the centre, the phloem towards the periphery. The vascular tissue are surrounded by a continuous pericyclic fibres. 2-3 layers of collenchymatous tissue present above the lower epidermis in the midrib. A strip of collenchymatous appears blow the upper epidermis of the midrib regions. Rest of the midrib region is filled with loosely arranged parenchymatous cells. Surface preparation shows paracytic type of stomata. Clusters of calcium oxalate are present in the mesophyll region. It sows the presence of uniseriate, multicellular, (upto 9 celled) Covering trichomes in both the surface. The number of trichomes are more in the lower of trichomes are more in the lower surface.
Determination of Leaf constant

The determination of leaf constants like vein islet number, vein termination number, palisade ratio and stomatal index were carried out. Mean value, were calculated and recorded in Table Number 1.

Table No 1
Leaf constants of *Wrightia tinctoria* R. Br.

| S. No | Leaf Constant                  | Values    |
|-------|-------------------------------|-----------|
| 1.    | Vein-Islet Number             | 6-8       |
| 2.    | Vein termination Number       | 8-10      |
| 3.    | Stomatal Index                | 17.6 – 20.5 |
| 4.    | Palisade ratio                | 7-9       |

Determination of Ash Values

Ash values were determined according to Indian pharmacopoeia such as total ash, acid insoluble ash and sulphated ash. Ash values were determined and recorded in Table No.2

Table No 2
Ash values of *Wrightia tinctoria* R. Br.

| S. No | Type of Ash            | Ash Value (%) |
|-------|------------------------|---------------|
| 1.    | Total Ash              | 8.108         |
| 2.    | Acid insoluble Ash     | 0.48          |
| 3.    | Water soluble Ash      | 2.626         |
| 4.    | Sulphated Ash          | 10.4          |

Determination of Extractive Values.

For the determination of extractive values, various solvents such as solvent ether, chloroform, Alcohol 90% and water were used. The extractive values were determined and recorded in Table No 3.

Table No 3
Extractive values of Wrightia tinctoria leaves

| S. No | Solvent used | % Average of Extract |
|-------|--------------|----------------------|
| 1.    | Solvent Ether| 8.25%                |
| 2.    | Chloroform   | 7%                   |
| 3.    | Alcohol      | 32%                  |
| 4.    | Water        | 26%                  |
Extraction

About 100 gms of air dried powder material was taken and extracted successively with different solvents i.e petroleum ether, chloroform, ethyl acetate and methanol in a soxhlet apparatus for 24 hours, each time before extracting with next solvent, the marc was dried in air oven below 50°C the obtained extracts were filtered through the whatman filter paper to remove particles if any. They the extracts were distilled off to reduce the volume of solvents to 1/10th and the remaining solvents were removed by evaporation on a water bath. The colour and consistency of the extract were noted and recorded in Table No 4.

| S. No | Extract          | Colour            | Ash Value (%)       |
|-------|------------------|-------------------|---------------------|
| 1.    | Petroleum Ether  | Yellowish Brown   | Sticky semisolid    |
| 2.    | Chloroform       | Black             | Solid               |
| 3.    | Ethyl acetate    | Brown             | Viscous semisolid   |
| 4.    | Methanolic       | Dark Brown        | Viscous semisolid   |

Qualitative phytochemical analysis

The extracts were subjected to qualitative chemical tests for detection of various plant constituents. The various qualitative chemical test indicate the presence of carbohydrates and glycosides, proteins and amino acids, flavonoids steroids and tannin – phenolic compounds Alkaloids are absent in leaf of Wrightia tinctoria.

RESULTS AND DISCUSSION

The transverse section of leaf shows dorsiventral structure. Vascular tissue surrounded by a pericyclic fibre is an important character of the leaf. Surface preparation shows paracytic stomata. Leaf constants, ash values and extractive values are determined and recorded.

The T.S. of leaf and the above mentioned parameters are helpful for the future identification and authentication of the plant.

ACKNOWLEDGEMENTS

Authors would like to thank Mr. M. Karunanithi, B. Pharm, M.S. Chairman, Swamy Vivekanadha college of pharmacy who provided all the facilities to carry out the work and Dr. B. Suresh, principal, J.S.S College of a pharmacy for his valuable encouragement.

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