

**PHARMACOGNOSTICAL STUDIES ON LEAVES OF
ATALANTIA MONOPHYLLA CORREA**

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ABSTRACT: *Leaves of Atalantia monophylla are used in chronic rheumatism and paralysis. The Pharmacognostical studies like histological characters, leaf constants, ash values and extractive values of leaves of Atalantia monophylla Corr were carried out. The preliminary phytochemical analysis were also carried out.*

INTRODUCTION¹⁻⁴

The plant *Atalantia monophylla* Correa is a shrub, belongs to family Rutaceae. It is found in Salem, Perambalur and Pudukkottai Districts of Tamil Nadu. The berries are used in chronic rheumatism and paralysis. The leaves are used for the treatment of snake-bite. Root is used as antiseptic, antispasmodic and stimulant. The leaves are subjected to pharmacognostical studies such as detailed microscopy, determination of leaf constant, ash values, extractive values and preliminary phytochemical studies.

MATERIALS AND METHODS

Collection and identification of Plant

The leaf material of *Atalantia monophylla* was collected from Nartha hills, Pudukkottai district during the month of July, identified, confirmed and authenticated by Dr. V. Nanthagopal, Botanist, National College, Trichy. The leaves were cleaned and allowed for shade drying and then powdered. The powdered material was used for preliminary phytochemical studies.

Histological Studies of Leaf

Free hand section of leaf material was taken and treated with chloral hydrate solution to

make the section clear. The sections were also treated with Phloroglucinol and Hydrochloric acid in the ratio of 1:1 to study the lignified tissues.

Transverse section of leaf

Transverse section of *Atalantia monophylla* leaf shows dorsiventral structure. The T.S. of the leaf is mainly differentiated into three regions.

- A. Upper epidermis
- B. Lower epidermis
- C. Mesophyll region

A. Upper epidermis:

It is made up of single layered, thick walled quaterangular cells with palisade parenchyma. It shows very thick cuticle and oil glands. The stomata is present in the epidermal layer.

B. Lower epidermis:

Lower portion of the leaf is made up of single layered thick walled cells with spongy parenchyma. The outer layer of epidermis is covered with thin cuticle and stomata is also present in the lower epidermis.

C. Mesophyll region:

Lamina region 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.

Regarding the photosynthetic parenchyma cells, palisade have plenty of chloroplasts and they are slightly pushed towards margin of the cells. The spongy parenchyma occupy the major area of internal leaf and cells are loosely arranged. In this species spongy parenchyma cells occupy approximately 5-6 layers in the lower portion of the leaf. They have sufficient interspace in between them, helping easy circulation of essential gases. The middle portion or midrib region is fully occupied by vascular tissues. The Xylem is differentiated into protoxylem and metaxylem. The primary phloem cells located very nearer to xylem elements. The secondary phloem is fully modified into phloem fibers (scleroids). The midrib region further elongated in both directions as in the form of lamina. The lamina region contain number of smaller vascular bundles. The vascular bundles have very limited xylem and phloem cells.

Determination of Leaf constant:

The determination of leaf constants like vein islet number, vein termination number, palisade ratio and stomatal index were carried

out^{5,6}. Mean value, were calculated and recorded in Table Number-1.

Determination of Ash Values^{6,7}:

Ash values such as total ash, acid insoluble ash, sulphated ash and water soluble ash were determined and recorded in Table No.2.

Determination of Extractive Values⁶:

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

Preliminary Phytochemical Analysis⁸:

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, lipids, flavonoids and alkaloids.

RESULTS AND DISCUSSION

The transverse section of leaf shows dorsiventral character. Oil glands present in upper epidermis is an important character of the leaf. Leaf constants, ash values, extractive values and preliminary phytochemical analysis gives useful information about the plant. The T.S. of leaf and the above mentioned parameters are helpful for the future identification and authentication of the plant.

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Table No.1
Leaf constants of *Atalantia monophylla* Corr.

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

Table No.2
Ash values *Atalantia monophylla* Corr.

S.No.	Type of Ash	Ash Values (%)
1	Total Ash	9.65
2	Acid insoluble Ash	0.51
3	Water soluble Ash	4.06
4	Sulphated Ash	6.66

Table No.3
Extractive values *Atalantia monophylla* Corr.

S.No.	Solvent used	Ash Values (%)
1	Solvent ether	1.59
2	Alcohol	0.95
3	Water	6.74

Transverse section of Leaf of *Atalantia monophylla* Carr.

