

## IN-SITU CONSERVATION AND PHARMACOGNOSTIC STUDIES OF *MONOCHORIA VAGINALIS* ( BURM.F) C. PRESL

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**Abstract:** The conservation of plants that provide us food, shelter, medicines and many others which are part of our daily life is one of the most important issues for humankind today. In addition the changing climate resulting from various biotic factors may very likely disturb our habitat and force us to modify our agriculture practices. *Monochoria vaginalis* (Burm.f) c.presl of family pontederiaceae, has been reported to have potential use in folklore medicine. This plant is considered as a functional food. Pharmacognosy is a tool to identify the plant by the extracted phytochemicals. Macroscopic, microscopic and also dry powder analysis, behavior of the powder in different solvents or reagents facilitates the correct identification. It is therefore of paramount importance that every effort is made to conserve economically important plants like *Monochoria vaginalis*, so that they remain available for future breeding programmes.

**Key words:** *Monochoria vaginalis*, Pharmacognosy, Phytochemicals, Folklore medicine

### INTRODUCTION

*Monochoria vaginalis* of family pontederiaceae consists of wide spread perennial or annual aquatic, floating herb. It is commonly known as heartleaf pickerel weed or oval leafed pond weed. Roots and rhizome is used in traditional medicine. The plant is used as an alternative tonic and has cooling properties. The juice of leaf is taken for cough and that of root for stomach and liver complaints, asthma and toothache. The whole plant was used for pharmacognostic studies

### MATERIALS AND METHODS

The studies were executed in plants collected from paddy fields and the sides of ponds of Kollam and Trivandrum districts, Kerala, India. The authenticity of the plant was confirmed with 'The Flora of presidency of Madras (Gamble, 1935)'. The root, rhizome, petiole and leaf were subjected for pharmacognostic studies. The external morphology of plant parts and other structural peculiarities were studied in the macroscopic observation. Anatomical characters of petiole, rhizome, leaf, stomatal characters were included in the microscopic investigations. The leaf and rhizome powder characteristics, microscopic characters and behavior of the powder with different solvents, were also studied (Evans, 1996)

Physicochemical parameters were determined as per Ayurvedic pharmacopodia of India

and reported as total ash, acid insoluble ash, water soluble ash, alcohol soluble extractive, water soluble extractive and moisture content. Preliminary phytochemical tests were carried on extracts successively using different solvents.

### RESULTS

**Pharmacognostic studies:** Macroscopic studies: *Monochoria* is an annual or perennial herb growing from a small rhizome. The shiny green leaves are upto about 12 cm long and 10 cm wide and are borne on rigid, hollow petioles. The inflorescence is spikeate, bears 3 to 5 flowers, 4-5 cm long. The flowers are blue. The fruit is a capsule which contains many tiny winged seeds.

**Microscopic studies:** The petiole consists of outer cuticle followed by single layered barrel shaped parenchymatous epidermis composed of parenchymatous thin walled cells. The cortex is aerenchymatous with large air spaces. The calcium oxalate form a number of needle like crystals in the petiole. They are associated in bundles called raphides. Lack of mechanical tissues indicates hydrophytic character. The vascular bundle is surrounded by single layered bundle sheath. Vascular bundle is conjoint, collateral and closed.

T.S. of rhizome and root shows the presence of epidermis, cortex, xylem, phloem, pith etc. The

diagnostic features of rhizome and root are the presence of fibres associated with vessels, calcium oxalated and xylem vessels which will help in the identification and authentication process of the drug. for studying stomatal morphology and for index calculation, epidermal peelings were prepared. The stomatal type was found to be paracytic; .The stomatal indexes were calculated by counting the number of stomatal cell as well as upper and lower epidermal cells. According to the prescribed calculation method the stomatal index was found to be 17.15. The decrease in the stomatal index indicates its hydrophytic character.

**Physicochemical Parameters:** Physical constant values like extractive values ash and moisture content are tabulated in table 1. Preliminary phytochemical analyses for alkaloids, Phenols, glycosides, carbohydrates, tannins, flavonoids, are tabulated in table 2.

**Preliminary Phytochemical Studies:** Preliminary Phytochemical test were performed and the chemical constituents detected were alkaloids, Phenols, carbohydrates, flavonoids, tannins and glycosides.

**Table 1** Extractive values, B. Moisture content and C. Ash values of *Monochoria vaginalis* roots

Sl.No.	Parameter	Determined Value %
A	Extractive values	
1	Alcohol soluble extractive value	6.9
2	Water soluble extractive value	15.9
B	Moisture content	11.8
C	Ash Values	
1	Total ash	8.66
2	Water soluble ash	4.59
3	Acid insoluble ash	2.30
4	Sulfated ash	7.21

## CONCLUSIONS

*Monochoria vaginalis* of family pontederiaceae have been reported to have potential use in various diseases. To supplement the necessary to supplement the necessary information for the systematic identification and authentication of this particular species, pharmacognostic standardization of various part of this plant as per WHO guidelines and phytochemical studies

**Table 2.** Qualitative chemical analysis of extracts and fraction of *Monochoria vaginalis* P. roots

Sl. No.	Phytoconstituents	Methanol Extract
1	Alkaloids	+
2	Flavonoids	+
3	Glycosides	+
4	Cardiac Glycosides	-
5	Tannins	+
6	Terpenoids	-
7	Carbohydrates	+
8	Saponins	-
9	Coumarins	-
10	Phenols	+

out to widen the scope of further study, and to know more about various phytochemicals present in them, Its hoped that study would help to widen the scope for further studies and to know more about phytochemical and pharmacological importance of this plant.

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