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Research Article

PHARMACOGNOSTIC STUDY OF *MANSOA ALLIACEA* LEAF

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ABSTRACT

Mansoa alliacea Lam. (Family: Bignoniaceae) is a native plant from Amazonian basin in South America. Plant derivatives are used as anti-inflammatory, antioxidant, antiseptic and antibacterial agents. The study was aimed to determine the pharmacognostic and phytochemicals present in *Mansoa alliacea.* Micro and organoleptic characteristics of fresh and dried leaf samples had been examined. Physicochemical variables had been done by using WHO suggested variables; preliminary phytochemical of leaf sample had been performed to identify the presence of alkaloids, flavonoids, tannins and phenols, and quinones using the ethanolic extract of the leaves of *M. alliacea.*

INTRODUCTION

According to the World Health Organization[1], approximately 65-80% of the population living in developing countries reports to the use of medicinal plants to address their health care benefits. *Mansoa alliacea* belongs to the family Bignoniaceae is widely used by many of the indigenous peoples of the Amazon, with almost all parts of the plant being used. It is commonly called as garlic vine and Ajossacha[2]. So far, phytochemical studies have revealed some structurally diverse chemicals from the plant alkaloids, flavonoids, steroids, tannins and phenols. The plant has also become a popular treatment in modern herbal medicine in S. America. It is widely used for treating arthritis, rheumatism, body aches, pain and muscle aches and injuries. The leaves and flowers contain the known anti-inflammatory, antioxidant[3] and antibacterial plant steroids, beta-sitosterol, stigmasterol, daucosterol and fucosterol[4]. The genus Mansoa (Bignoniaceae) a source of organosulfur compounds[5]. *M.Alliacea* used for the treatment of reproductive organ infections, renal ailments, dizziness, epilepsy, sickle cell disease, depression, metabolic disorders, skin grievance, leprosy, impetigo, helminthic infections, athlete's foot, tumours[6]. In this study, we make an effort for standardization of *M. alliacea* leaf to analyze the morphological, anatomical, physicochemical and preliminary analysis of leaf was performed.

MATERIALS AND METHODS

Collection of plant materials

The fresh leaves were collected, authenticated and identified by the Department of Botany, Hindu College, Machilipatnam, Andhra Pradesh.

Pharmacognostic evaluation, organoleptic evaluation

Organoleptic characteristics of *Mansoa alliacea* leaf was evaluated by noticing colour, smell, taste, shape, and size as outlined by WHO quality control techniques for herbal medicine[7].

Microscopic evaluation, preparation of sections

Free handed sections of the leaf were cut into thin sections manually with the sharp cutting edge of the blade. After that it is transferred on the slide, cleared by heating with chloral hydrate, stained by way of phloroglucinol and concentrated HCL and mounted in glycerine. The lignified tissues had been identified by using distinct staining approaches[8].

Physicochemical analysis

Physicochemical parameters had been established based on the methods described in WHO quality control methods for herbal materials.

Phytochemical analysis

Various extracts of *Mansoa alliacea* had been subjected to qualitative chemical evaluation of various phytoconstituents[9].

Preparation of extract

The leaves of *Mansoa alliacea* were shade dried and powdered. 100 g of the leaf powder was subjected to maceration by various solvents. After 24 hrs, the extracts were filtered with Whatman filter paper and concentrated with the help of rotary evaporator.

RESULTS

Pharmacognostic evaluation

Organoleptic and microscopic evaluation

The organoleptic features of leaf demonstrated in Table 1. Transverse section of Lamina shows an upper epidermis covered by thin cuticle and covering trichome. Covering trichomes are single-celled, blunted, thick-walled and unicellular. The endodermis revealed the existence of phloem and xylem. The xylem region was the same as the phloem region, which includes xylem vessels, xylem fibres, and xylem parenchyma, as shown in Figure 1 to 3.

Physicochemical evaluation

The various physicochemical parameters of leaf and leaf powder, i.e. loss on drying, ash value, and extractive value were determined and shown in Table 2.

Preliminary phytochemical screening

The initial phytochemical screening of the extracts from non-polar to polar viz., chloroform, alcohol, and water was carried out and the results obtained shown in Table 3.

DISCUSSION

To produce the reproducible quality of natural medicine, the starting material plays a vital role. Most of the research in pharmacognosy has been done in identifying controversial species of plants, authentication of commonly used traditional medicinal plants through morphological, phytochemical and physicochemical analysis[10]. The critical stride towards ensuring starting substances is authentication. Therefore, recently there is an instant embrace the standardization of therapeutic vegetation. Although contemporary methods can be found, nonetheless recognition of therapeutic plants is more dependable on pharmacognostic studies[11]. Microscopical evaluation of the herb sample unveiled the existence of single-celled, blunted, thick-walled covering trichomes, lignified sclerenchyma, lignified xylem vessels and phloem fibres.

Studies of physicochemical parameters are an essential source to gauge the purity and quality of primitive drugs. The extractive values give the estimated measure of their particular chemical constituents, and from the study, the extractive values of water were best followed by alcohol. The ash value implies the earthy matter or inorganic components, and various impurities present together with the herb. The phytochemical investigation of different solvent extracts, viz., chloroform, alcohol, and water were examined, and it revealed the presence of alkaloids, flavonoids, tannins, phenols, saponins, carbohydrates, proteins, and glycosides.

CONCLUSION

The information produced from the present research help to authenticate the medicinally significant herb *Mansoa alliacea*. Morphology and in addition various pharmacognostic standards of the leaf of *Mansoa allia*nce was studied and mentioned using phytochemical and physicochemical parameters which may be useful in further isolation and purification of medicinally active ingredients.

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Table 1: Organoleptic characteristics of *M. alliacea*

Organoleptic characters	Leaf
Colour	Green
Odour	Characteristic
Taste	Characteristic
Texture	Smooth

Table 2: Physicochemical parameters of *Mansoa alliacea* leaf powder

Parameters	Values %w/w
Moisture content (Loss on drying)	7.25 ± 0.22
Total ash	8.15 ± 0.92
Acid-insoluble ash	3.45 ± 0.18
Water-soluble ash	2.12 ± 0.72
Petroleum ether soluble extractive values	0.92 ± 0.02
Chloroform soluble extractive value	4.25 ± 0.32
Ethyl acetate soluble extractive value	6.89 ± 0.03
Alcohol soluble extractive value	10.25 ± 2.02
Water-soluble extractive value	13.54 ± 0.01

Table 3: Phytoconstituents of *Mansoa alliacea* leaf powder

Phytoconstituents	Chemical test	Aqueous extract	Alcohol extract	Chloroform extract
Flavonoids	Shinoda Test	+	+	-
	Zn + HCl Test	+	+	-
	Lead acetate Test	+	+	-
Alkaloids	Dragandroff's test	+	+	+
	Wagner Test	-	-	-
	Hager's Test	-	-	-
Tannins and Phenols	$FeCl_3$ Test	+	+	-
Saponins	Foaming Test	-	-	-
Steroids	Salkowski test	+	-	+
Carbohydrates	Molisch test	+	+	-
Glycoside	Keller-Killani Test	+	+	-
Amino acids	Ninhydrin Test	+	+	-
Proteins	Biuret Test	+	+	-

"+" – Present and "-"- Absent

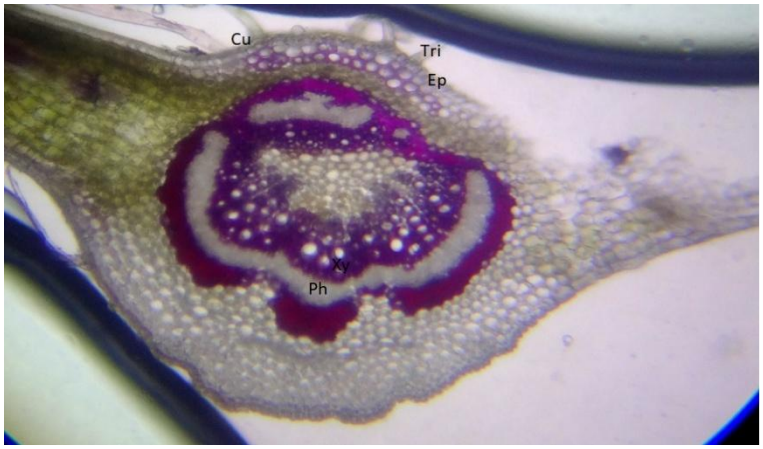

Figure 1: Transverse section of a leaf of *Mansoa alliacea*
Cu: Cuticle; Epi: Epidermis; Par: Parenchyma cells; Ph: Phloem; Mx: Meta Xylem; PX: Proto Xylem; Xy: Xylem

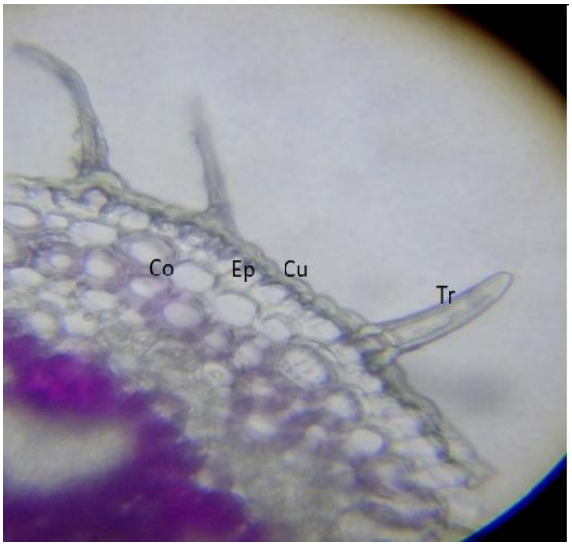

Figure 2: Epidermal cells showed that are single-celled, blunted, thick-walled covering trichomes. Tr: Covering Trichomes, Cu: Cuticle, Ep: Epidermis, Co: Collenchyma

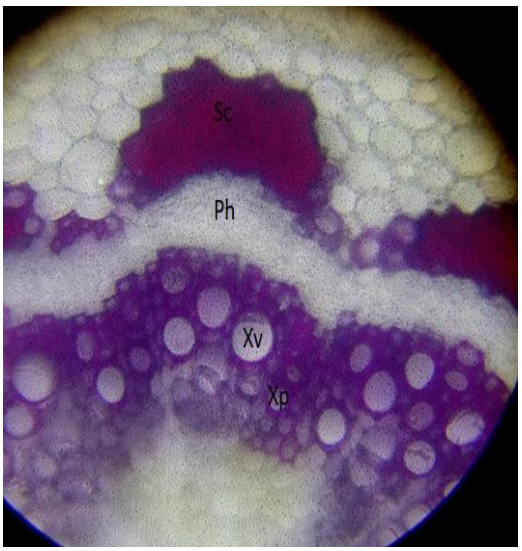

Figure 3: TS of a leaf portion of *Mansoa alliacea* showed vascular bundles. Ph: Phloem; XV: Xylem Vessels; XP: Xylem Parenchyma

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