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Research Article

Pharmacognostical and Physiochemical Properties of *Hypericum hookerinum* Wight & Arn

*Murugesan Senthil kumar[1,2]. S.Kavimani [3]

[1]Dept of Pharmacognosy, KMCH college of Pharmacy, Tamilnadu, India
[2]Mewar University, Gangrar, Chittorgarh, India
[3]Dept of Pharmacology, Mother Theresa P.G. and Research Institute of Health Sciences, Puducherry, India.

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ABSTRACT

The plant of the genus of *Hpericum* consists of more than 400species out of that *Hypericum hookerianum* has selected and carried out Pharmacognostical and Physiochemical studies. The plant *Hypericum hookerianum*. Family Hypericaceae , popular herb which posses anti bacteria, anti cancer, wound healing, anti inflammatory and hepatoprotective activities. Hence the aim and objectives of the present study was to evaluate the Pharmacognostical and Physiochemical properties from the aerial parts of the plant. The important histological features of leaves and stem reveled that presence of anamocytic stomata, epidermal cells, oil cells, palisade cells, crushed cortex and secondary xylem. The physiochemical studies includes ash values, extractive values, and fluorescence analysis were studied.

INTRODUCTION

The use of plants for healing purposes predates human history and long been used as a resource of therapeutic agents worldwide also can claim those are origin of much modern medicine.

Plants are utilized in native medicines to treat several diseases and are one of the main sources for active molecules in the discovery of new drugs in the modern era. Plants are invaluable sources of pharmaceutical products[1] and plants are recognized for their ability to produce a wealth of secondary metabolites and mankind has used many species for centuries to treat a variety of diseases[2].

Natural bioactive compounds are the ultimate source for innovative therapeutic agents

Ethno pharmacologists, botanists, microbiologists and natural product chemists are searching novel bioactive metabolites which could be developed as new pro-drugs for treatment of infectious diseases and other biomedical challenges including drug resistance among various infectious microbes[3].

The increasing demand for herbal medicines, both in the developing and developed countries, has inevitably led to maintaining the quality and purity of herbal raw materials and finished products. WHO, therefore, acknowledged that Pharmacognostical standards should be proposed as a protocol for the authentication and quality assurance of herbal drugs[7].

Hypericum *hookerianum* belongs to family Hypericaceae is a small tree or shrubs with posses many Phytoconstituents such as hypericin,pseudohypericin, flavanoids, flavones etc. The most popular plant of this genus is the *Hypericum perfotatum* L. (Saint John's Wort)[9]

MATERIALS AND METHOD

Collection and authentication: The plant *Hypericum hookerianum* Wight&Arn was collected in and around the Nilgiri district, Tamilnadu. The taxonomical identification of plant was authenticated by Dr.Rajan, Field Botanist, Bandishola, Ooty, Tamilnadu.

Desscription of plants botanical information:

Botanical name *Hypericum hookerianum* Wight&Arn
Synonym *Hypericum leschenaultii*
Family Hypericacea

Reagents and Chemicals: All reagents and chemicals used for testing were analytical grade obtained from Fisher Chemicals Ltd., Mumbai, SD Fine Chemicals Limited, Mumbai and Qualigens Chemicals, Mumbai.

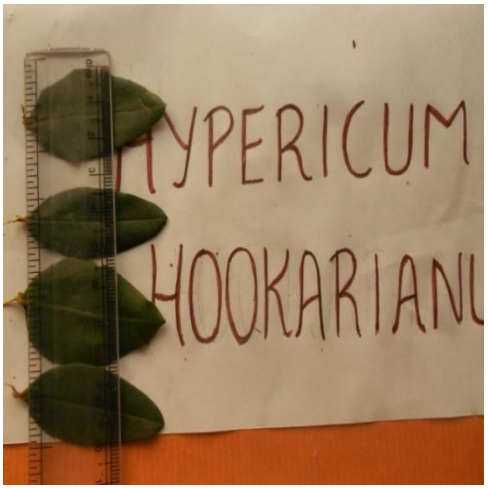
Pharmacognostical studies: Phrmacognostical studies are includes organoleptic characters and microscopical features of the plant. Morphology description includes size, shape, colour, odour, taste, features of the plant and the microscopical studies include transverse section and powder analysis of leaves and stem were carried out.

The fresh and dried leaves and stems of *Hypericum hookerianum* were used for the same.

Morphological studies: The morphological studies used find the closely related species and use to study the external texture and sensory characters such as colour, odor, taste, size, shape etc. The fresh leaves and stems of *Hypericum hookerianum* was used for the morphological studies and reported.[4,5]

Microscopical Studies: The leaves and stems of *Hypericum hookerianum* was boiled and fixed in F.A.A.(Formaldehyde: Acetic acid: Alcohol) and processed for microtomy (Paraffin Method) and sectioned, stained of slides prepared following by Johnson method[6].The leaves were cleared in chloral hydrate, stained with phloroglucinol and concentrated HCl and

*Author for correspondence



T.S of *Hypericum Hookerianum*

Table 1: Flurescense Analysis

Reagent	Colour/ Precipitate	
	Leaf	Stem
Conc. Sulphuric acid	Reddish	Brownish
Aqueous ferric chloride (5%)	Blackish	Reddish
Iodine solution	Blue	Blue
Picric acid solution	Yellowish	Strong yellow
Aqueous mercuric chloride solution	Brownish	Brownish white
Magnesium hydrochloric acid	No changes	Light blue
Aqueous silver nitrate solution	No changes	white
Ammonia cal solution	No changes	Light yellow
Aqueous potassium hydroxide	No changes	No changes

Table 2: Determination of Moisture Content

Loss on drying	7.6582%$^{w}/_{w}$

mounted with glycerin and observed under a compound microscope and the findings were reported.[7,8]

The dried fine powdered materials of leaves and stems were used to evaluate the powder analysis by Brain and Turner and Kokate methods and the present characters were found and reported.

Physiochemical studies: Physicochemical values such as percentage of ash values, extractive values and moisture content were determined according to the official methods prescribed in Indian Pharmacopoeia.[10] Fluorescence analysis was carried out by the method of Kokoski and Sharma.[11]

RESULTS AND DISCUSSION

Macroscopy: Leaves are simple alternate stipulate petiolate. Leaves with petiole 1-4 mm; blade narrowly lanceolate to oblong-lanceolate or broadly ovate, main lateral veins 2 ,3 or 4 paired, apex acute to rounded with entire margin . Inflorescence 1-5-flowered, nearly round-topped, Pedicels 3-16 mm. The leaves are dark to light greenish in colour with slight odour and the taste characteristic in taste, size 2.5 – 3.5 cm (w) and 3.5 – 5.5cm (L) .

The bark is externally brownish and internally light reddish brown in color. It occurs in the curved or sometimes flat

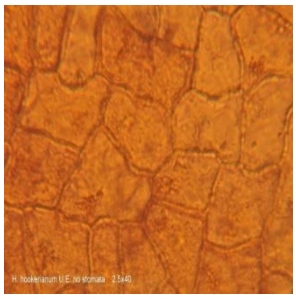


Fig.1(a): Anamocytic stomata

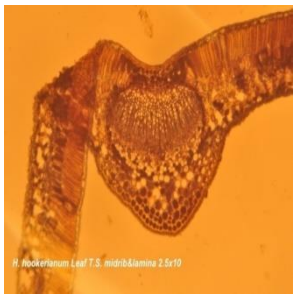


Fig. 1(b): TS of Leaf

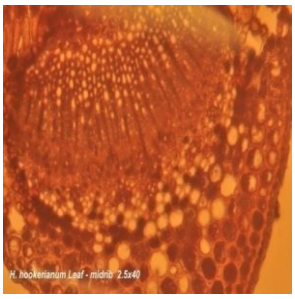


Fig.1(c): Leaf-midrib

Fig. 1(d): Leaf - Midrib & Lamina

Fig. 2(a): TS of Stem

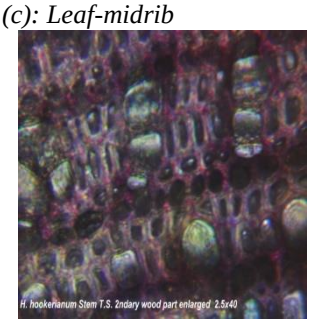


Fig. 2(b): TS of stem Phlu.glucinol

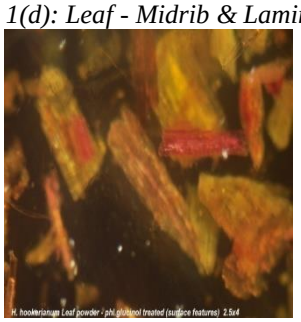


Fig. 3(a): Leaf powder phol.glucinol

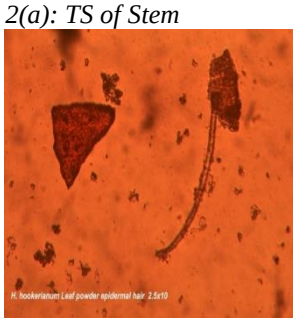


Fig. 3(b): Leaf powder epidermal hair

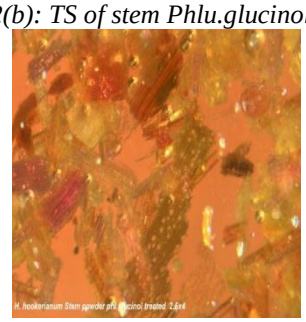


Fig. 4(a): Stem powder

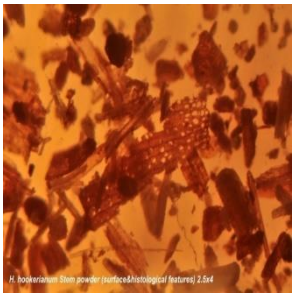


Fig. 4(b): Stem powder

pieces. It has mucilaginous taste which is followed by bitter sensation, odor is characteristic with fibrous fracture available in various size and shape.

Microscopy

Leaf: The transverse section of the leaf found that the presence of anamocytic stomata, epidermal cells often contain oil cells, guard cell with many chloroplast in lower epidermis and absence of stomata in upper epidermis. Palisade cells are arranged to subajacent to upper epidermis with very long cells, in midrib upper surface consists of one layered epidermal cells, cuticles are coloured, Collenchymatous are less greenish with less contents and innermost colourless. Xylem vessels are radially arranged, phloem cells are arranged with more dark contents.

Stem: Outermost is a cork of many layers inner crushed cortex with collenchymas cells,

secondary phloem with dark contents and found broad

Table 3: Ash values

Ash value	Leaf powder	Stem powder
Total ash value	8.3%$^{w}/_{w}$	10.11%$^{w}/_{w}$
Acid insoluble ash	2.6%$^{w}/_{w}$	.10%$^{w}/_{w}$
Water soluble ash	2.10%$^{w}/_{w}$	2.86%$^{w}/_{w}$

Table 4: Extractive value

Extractive value	Leaf extract	Stem extract
Water	16.5%$^{w}/_{w}$	14.5%$^{w}/_{w}$
Methanol	21.5%$^{w}/_{w}$	18.4%$^{w}/_{w}$

secondary xylem part, wood diffuse porous with wide fibrous vessels.

Powder charecteristics:

Leaf: From the leaf powder were observed presence of mesophyll cells, epidermal cells, epidermal hairs, epidermis with stomata, oil cells, xylem and phloem..

Stem powder:The tippical secondary wood bit with dark brown colour anthocyanins are heavy fibers are thick walled, cork cells, secondary xylem and phloem were observed.

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