

PHARMACOGNOSTIC STUDIES OF THE *LAGENARIA SICERARIA* (MOLINA) STANDLEY

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ABSTRACT: The leaf of *Lagenaria siceraria* is considered as a hypolipidemic in folklore medicine. In present investigation, the detailed pharmacognostic study of *Lagenaria siceraria* leaf is carried out to lay down the standards which could be useful in future experimental studies. The study includes macroscopy, microscopy, preliminary phytochemical screening and physicochemical evaluation.

Key words: *Lagenaria siceraria*, Pharmacognosy, Microscopy.

INTRODUCTION

Herbal medicines are promising choice over modern synthetic drugs. They show minimum/no side effects and are considered to be safe. Generally herbal formulations involve use of fresh or dried plant parts. Correct knowledge of such crude drugs is very important aspect in preparation, safety and efficacy of the herbal product. Pharmacognosy is a simple and reliable tool, by which complete information of the crude drug can be obtained [1-4].

Lagenaria siceraria (Molina) Standley (family cucurbitaceae), commonly known as lauki (Hindi) and bottle gourd (English), is a medicinal plant and utilizable species. The plant enjoys the reputation of being one of the earliest plants to be domesticated on the earth. It is a climbing or trailing herb with bottle, oval or dumbbell shaped fruit. *Lagenaria siceraria* fruit is traditionally used for its cardioprotective, cardiotonic, general tonic and aphrodisiac properties. It is also used in treatment of various allergic and inflammatory disorders like bronchial asthma, rhinitis, bronchitis, and rheumatism. Various extracts of fruit of *Lagenaria siceraria* were found to have anti-inflammatory, analgesic, hepatoprotective, antihyperlipidemic, diuretic and antibacterial activities.

These properties of *Lagenaria siceraria* fruit have been attributed to its saponins, carbohydrates and flavonoids. However there is paucity of data available on the effect of the phytoconstituents of *Lagenaria siceraria* fruit on immune system. Previously we reported the immunomodulatory activity of different extracts of *Lagenaria siceraria* fruits in experimental animals [5].

In literature details of morphology, phytoconstituents, medicinal properties and uses of *Lagenaria siceraria* is very sparse therefore, in present study pharmacognostic standards of the leaves of *Lagenaria siceraria* are studied. These standards are of utmost importance not only in finding out genuity, but also in detection of adulterants in marketed drug [6].

MATERIALS AND METHODS

Lagenaria siceraria was obtained from local supplier in Bardoli, Gujarat. The sample was authenticated for its botanical identity by Botanist, and voucher specimen deposited in herbarium of the institute. After collection the fresh leaves of the plant were preserved in F.A.A solution. Dried leaves were made into powder. An exhaustive Pharmacognosy was carried out using standard methodology [1-3, 7-18]

MACROSCOPIC STUDY

Size	:	7.9 - 11.5 -15.5cm in length. 3.8 - 4.5 - 5.7cm in breadth.
Shape	:	Elliptical
Margin	:	Entire
Venation	:	Parallel
Apex	:	Acute to acuminate
Base	:	Sub sessile to cuneate
Surface	:	Leathery to coriaceous
Texture	:	Firm, flexible, slightly succulent
Colour	:	Dark green adaxially, light green abaxially
Taste	:	Bitter
Odour	:	Characteristic

Table .1 Physicochemical evaluation:

Extractive Value	
Methanol	5.36 %w/w
Aqueous	4.04 %w/w
Loss on drying	4.60 %w/w
Ash values	
Total ash	90.50 %w/w
Acid insoluble ash	0.50 %w/w
Water soluble ash value	3.50 %w/w

MICROSCOPY

Transverse section of *Lagenaria siceraria* leaf showed following features-

Upper epidermis consists of elongated parenchymatous cells, covered by cuticle. It shows few stomata, which are of anisocytic type. Palisade cells are present at upper and lower epidermis. It shows hexagonal to polygonal, large, thin walled colourless cells, may be water storing. Mesophyll – Mesophyll is made up of 3-4 layered chloroplast containing, compactly arranged, oval to circular cells. It is interrupted by vascular bundles of various sizes. Vascular bundles - Vascular bundles are surrounded by 2-3 layered sclerenchyma. They are conjoint, collateral and closed. Xylem is placed towards upper epidermis and phloem towards lower epidermis. Lower epidermis – contains elongated wavy walled parenchymatous

cells covered by cuticle. Number of Covering and collapsed trichomes are present, while very few glandular trichomes are also present.

RESULT AND DISCUSSION

The pharmacognostic standards for the leaves of *Lagenaria siceraria* are laid down for the first time in this study. Morphological and anatomical studies of the leaf will enable to identify the crude drug. The information obtained from preliminary phytochemical screening will be useful in finding out the genuity of the drug. Ash values, extractive values can be used as reliable aid for detecting adulteration. These simple but reliable standards will be useful to a lay person in using the drug as a home remedy. Also the manufacturers can utilize them for identification and selection of the raw material for drug production.

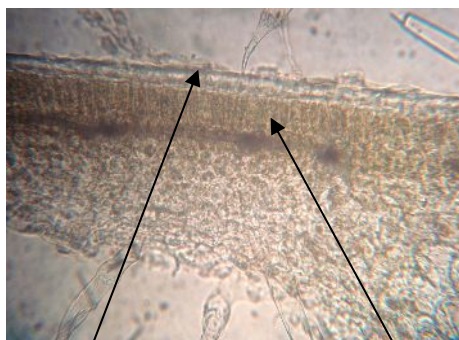
Table. 2. Preliminary phyto-chemical screening.

Sr. No.	Tests	Methanol Extract	Water Extract
1	Alkaloids	-	-
2	Carbohydrates	+	+
3	Phytosterols	+	-
4	Fixed oils and fats	-	-
5	Saponins	+	+
6	Phenolic comp. & tannins	+	+
7	Proteins & amino acids	+	+
8	Gums and mucilage	-	-
9	Volatile oil	-	-
10	Flavonoids	+	+

+ = Present, - = Absent

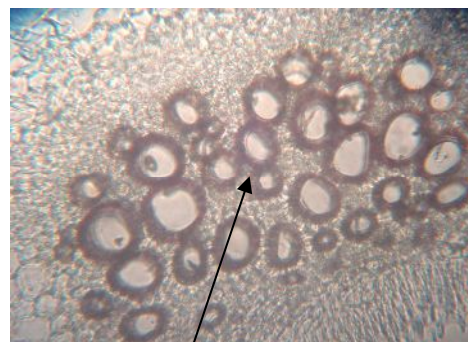


Transverse section of *Lagenaria siceraria* Leaf.

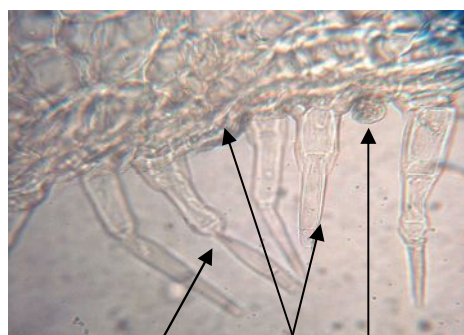


Upper epidermis

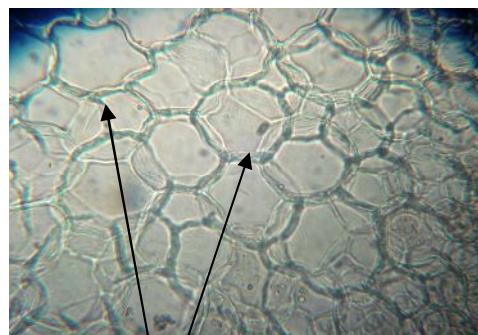
Palisade cells



Vascular bundles



Collapsed trichomes
Glandular trichome
Covering trichome
Lower epidermis



Parenchymatous cells with wavy walls

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