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ORIGINAL RESEARCH ARTICLE

Phamacognostical and Phamaceutical Evaluation of *Ikshvaku churna* (*Lagenaria vulgaris* Ser.) Fruit Pulp Powder

Patil S*[1], Thakar A B[2], Harisha CR[3], Shukla VJ[4]

[1]*M.D.Scholar, Department of Panchakarma.I.P.G.T.&R.A, G.A.U. Jamnagar, Gujarat, India*
[2]*Associate prof. & HOD, Department of Panchakarma. I.P.G.T. & R.A, G.A.Jamnagar, Gujarat, India*
[3]*Head, Pharmacognosy, I.P.G.T & R.A. G.A.U. Jamnagar, Gujarat, India*
[4]*Head, Pharmaceutical chemistry, I.P.G.T. & R.A. G.A.U. Jamnagar, Gujarat, India*

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ABSTRACT

Lagenaria vulgaris Ser.*(Monila)*Standly.*(Ikshvaku)* is an annular herbaceous climbing plant with a long history of medicinal uses for treatment of various ailments including Jaundice, Diabetes, Ulcer, Piles, Colitis, Asthma, Insanity, Hypertension, CCF, Skin disorders. Its fruit pulp is used both as an emetic and purgative. Based on classical Ayurvedic textual indications and recent pharmacological studies its fruit pulp powder was selected for studying its emetic effect clinically on Bronchial Asthma. Till date it has not yet been investigated scientifically hence, it was thought worth to study it in detail. The present paper highlights the pharmacognostical and phytochemical details and their role in laying down standardization and pharmacopoeial parameters. Pharmacognostical study shows fibers, annular vessels and calcium oxalate crystals. physicochemical parameters shows total ash, acid insoluble ash 10.63 % w/w, alcohol soluble extractive value 46 % w/w. High performance Thin Layer Chromatography (HPTLC) study shows 9 spots in 254 nm.

Key words: *Lagenaria vulgaris*, *Ikshvaku*, Pharmacognosy, Phytochemestry.

INTRODUCTION

Herbal medicines are promising choice over modern synthetic drugs they show minimum or less side effects and considered to be safe. According to WHO survey 80% of the populations living in developing countries rely almost exclusively on traditional medicine for their primary health care and needs [1]. There exists plethora of knowledge & information and benefits of herbal drugs in our ancient literature of Ayurvedic medicine, one of the earliest treatiser of Indian medicine; the Charaka Samhita (1000 B.C.) mentions the use of over 2000 herbs for medicinal purposes. Revival of interest in Ayurveda there has been a phenomenal increase in the demand for specialized therapies of Ayurveda out of which Panchakarma presents a unique approach of Ayurveda with specially designed five procedures of internal purification of body through the nearest possible roots. Such purification allows the biological system to return to homeostasis & to rejuvenate rapidly and also facilitates the desired pharmaco- theraputic effects of medicine administered thereafter [2]. Panchakarma has a full role of promotive, preventive and curative procedures. Out of the five procedures of Panchakarma *Vamana* or therapeutic emesis is the procedures of eliminating *Kapha Dosha* from the body through the upper passage by the vomatting.There are mainly six drugs i,e *Catunaregam spinosa (Thunb)Tiruv-Madanphala, Luffa echinata Roxb.-Jeemutaka, Lagenaria vulgaris (Monila)standly-Ikshvaku, Luffa cylindrica (Linn.)-Dhamargava, Luffa acutangula (Linn) Roxb-Krutvedhana, Holarrhena antidysentrica (Roxb.ex Flem) wall-Kutaja* [3] recommended for therapeutic emesis in the form of different formulations in Charaka Kalpasthana [4].Out of these drugs *Madanphala* is most commonly used for the process of emesis but there are certain drugs which are specifically indicated for treatment of particular diseases e.g. *Dhamargava* in Anemia, *Ikshvaku* in Diabetes [5], Asthma & Dry cough [6]. So it is a need of time to prove the pharmacological actions of these drugs

***Corresponding Author:** Dr. Shweta Patil**, Email:** vdpatilshweta@gmail.com, **Phone No:** +91-9510405898

on particular disease with the help of modern tools of standardization. Hence, to provide standard parameter for the quality control of *Ikshvaku* pulp powder in Bronchial Asthma.the present study was carried out Pharmacognostical, pharmaceutical and phytochemical analysis of *Lagenaria vulgaris (Monila)* Standly for setting a preliminary profile for further references.

Botanical Description of Plant [7]**:**

*Lagenaria vulgaris (Monila)*standley. Belonging to family cucurbitaceae, commonly known as Bitter bottle guard (Eng), Lauki (Hindi).It is a large pubescent, climbing or tailing herb with stout 5-angled hispid stems and bifid long tendrils. It found throughout the India either wild or cultivated. Leaves are long, petioled having 3-5 lobed, 7-10 or 10-12 cm. long. Fruits are 1-8 m large, bottle shaped with hard shell like epicarp when ripe. Seeds are numerous, long, white, smooth, 1.6-2 cm. long and horizontally compressed with marginal groove. Flowers are large white, solitary, monoecious. Seeds are many, obovate- oblong, white & compressed.

MATERIALS AND METHODS

Pharmacognostical Evaluation [8, 9]**:**

Lagenaria vulgaris (Monila) standly fruits were collected from the local farms of Chandrapur district, Maharashtra in the month of December-January. The fresh and semi-ripened fruits were cut into small pieces. The pulp obtained from fruits were shade dried & made into the coarse powder later the organoleptic and powder microscopy of fruit pulp powder was carried out at pharmacognosy department of I.P.G.T. & R.A. GAU, Jamnagar.For microscopic observation The fruit pulp powder was treated with small quantity of distilled water on the slide, and then it is again stained with phloroglucinol & conc. HCl to find out the lignified materials along with other cellular constituents. The micro photographs were taken under Carl Zeiss Binocular microscope attached with camera.

Pharmaceutical and Phytochemical Evaluation [10]**:**

Lagenaria vulgaris (Monila) standly fruit pulp powder was analyzed using various standard physicochemical parameters such as loss on drying, ash value, water soluble extract, alcohol soluble extract and pH value[8]. In qualitative analysis presence of carbohydrate, phytosterol, saponin, tannins, flavonoids were assessed. HPTLC were carried out after making appropriate solvent system with Methanolic extract of *Lagenaria vulgaris (Monila)* standly fruit pulp powder at the Pharmaceutical chemistry lab, IPGT & RA.

Qualitative tests:

The methanol extract of the sample was analyzed for different functional groups. The presence of carbohydrate, phytosterol, saponin, tannins and flavonoid were confirmed through suitable tests.

HPTLC:

Methanol extract of *Lagenaria vulgaris* fruit pulp powder was spotted on pre coated silica gel GF 60_{254} aluminum plates by means of Camang Linomat V sample applicator fitted with a 100 µL Hamilton syringe. Chloroform: MeOH (9:1) was used as the mobile phase. After development densitometric scan was performed with a Camag T. L. C. scanner III in reflectance absorbance mode at U.V. detection as 254 nm and 366 nm under control of Win CATS Software (V 1.2.1. Camag). After completion of chromatographic procedure spraying of the plate was done with Anisaldehyde and the spots obtained were observed in day light.

RESULTS

Pharmacognostical analysis:

Organoleptic characters:

Color- Light cream
Odour- Pungent
Taste- Bitter

Microscopic Observations:

Diagnostic characters under microscope are fibers (**Fig 1**), fragments of annular vessels (**Fig 2**), prismatic crystals of Calcium Oxalate (**Fig 3**), tannin (**Fig 4**), loosely arranged parenchymal cells (**Fig 5**), simple starch grains (**Fig 6**), spiral vessels (**Fig 7**), pitted scleroid (**Fig 8**), mesocarp cells (**Fig 9**)

Pharmaceutical Analysis:

Lagenaria vulgaris (Monila) standly fruit pulp powder was analyzed using various standard physicochemical parameters at the Pharmaceutical chemistry lab. All the Pharmaceutical parameters such as loss on drying, ash value, water soluble extract, alcohol soluble extract and pH value were analyzed (**Table 1**).

Phytochemical Analysis & HPTLC:

Qualitative tests:

Presence of glycosides, flavonoid and tannins were confirmed through the suitable tests (**Table 2**).

HPTLC:

On analyzing under densitometer Track Showed 5 spots under 366nm with Rf 0.01,0.12,0.20,0.50,0.90 and 9 spots were seen

under 254nm with Rf 0.01, 0.09, 0.14, 0.18, 0.27, 0.50, 0.64, 0.73, 0.87 (**Table 3**).

DISCUSSION

Pharmacognosy study helps in authentication of the commonly used drugs through morphological, histological and physico-chemical parameters. This can prevent the accidental misuse of drugs and adulteration to a greater extent. In the present study the sample was proved to be genuine by assessing the pharmacognostical Parameters. Evaluation of physico-chemical parameters and qualitative analysis helps to identify the presence of specific ingredients in a sample and application of chromatographic techniques aid in recognition of number of ingredients and also to assess the purity by comparing with the standard ones. Refractive index procedure was not applicable to the *churna* so the same could not be assessed. pH is the measure of acidity or basicity of a solution. In the present sample pH was detected by using pH indicator paper and it was 6 showing the acidic nature of the solution. Loss on drying method is applied to determine the amount of water, all or a part of water for crystallization, or volatile matter in the sample. Loss on drying of test drug is 10.4669 % w/w. Total ashes are designed to measure the total amount of material remaining after ignition. It includes both physiological (which is derived from the plant tissue itself) and non-physiological ash (residue of the extraneous matter likes and etc adhering to the plant substance) Ash value of *Lagenaria vulgaris* fruit pulp powder is 10.6304 %w/w. Water soluble extract & alcohol soluble extract is 49.12 % w/w & 46 % w/w respectively. Thin layer chromatography is the most common form of chromatographic method used by Ayurvedic research workers to detect the number of compounds present in a product. It also helps to determine the purity of the sample. Identity of a compound is also possible by comparing it with the Rf value of a known compound. Here for the purpose of conducting TLC tracks were made having the sample ethyl acetate extract of *Lagenaria vulgaris* fruit pulp powder. After careful analysis and discussion with experts the mobile phase was fixed to be Toluene+Ethylacetate in the proportion of 7:3 respectively. The sample tracks and mobile phase remained the same for all the experiments related to TLC .The spots produced by TLC were observed in day light , short UV and long UV and Rf value was calculated . After completion of chromatographic procedure spraying of the plate was done with Anisaldehyde and the spots obtained were observed in day light.

Table 1: Physicochemical parameters

S. No	Test	Result
1	Aqueous Extractive	49.12 %w/w
2	Alcohol Extractive	46 %w/w
3	pH	6.0
4	Ash value	10.6304 % w/w
5	Loss on drying	10.4669 % w/w

Table 2: Qualitative Test

Material	Functional Group	Result
Alcoholic Extract of fruit pulp powder of *Lagenaria vulgaris*	Phytosterol	Present
	Flavanoids	Present
	Tannins	Present
	Saponine	Present

Table 3: HPTLC

	SPOTS	R_f Values at 254 nm
HPTLC	9	0.01, 0.09, 0.14, 0.18, 0.27, 0.50, 0.64, 0.73, 0.87
		R_f Values at 366 nm
	5	0.01, 0.12, 0.20, 0.50, 0.90.

Microphotographs:

Fig 1: Fibre

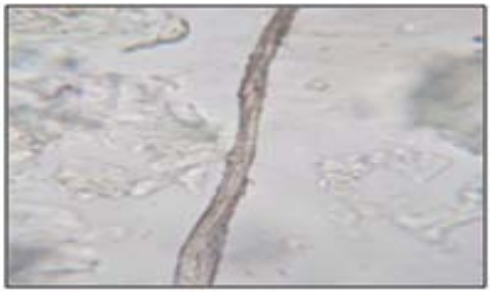


Fig 2: Fragments of Annular vessels

Fig 3: Prismatic crystal of Calcium Oxylate

Fig 4: Tannin content

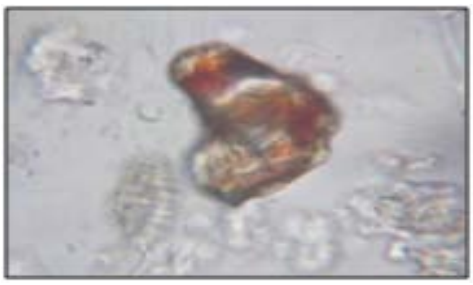


Fig 5: Loosely arranged Parenchymal cell

Fig 6: Simple Starch Grain

Fig 7: Pitted Scleroid

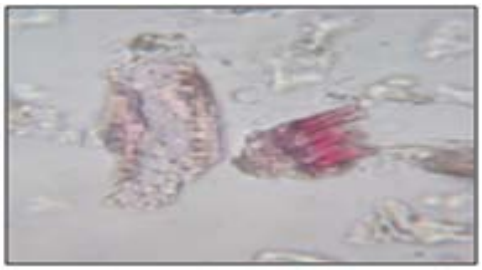


Fig 8: Mesocarp Cells

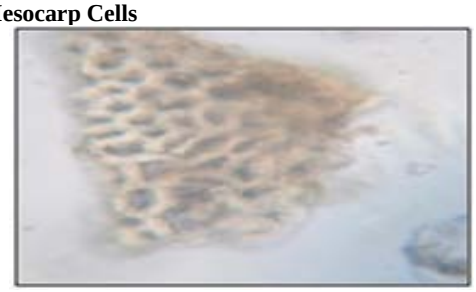


Fig 9: Spiral Vessels

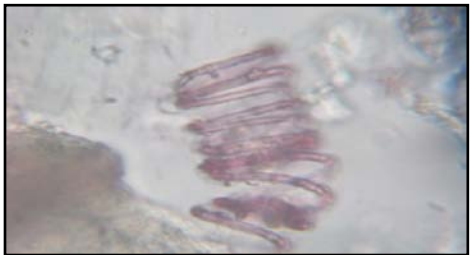
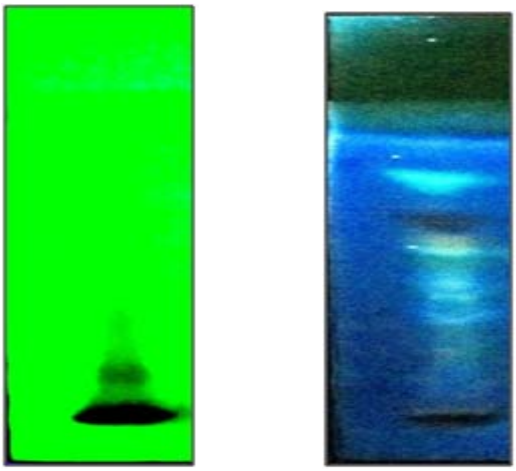
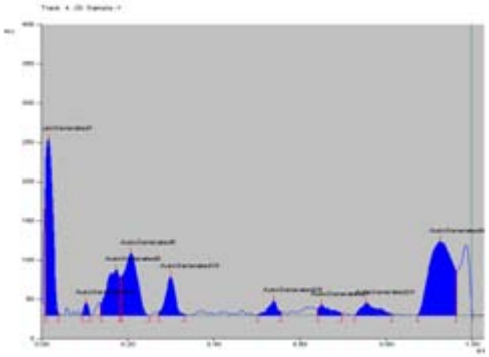


Fig 10: HPTLC Results

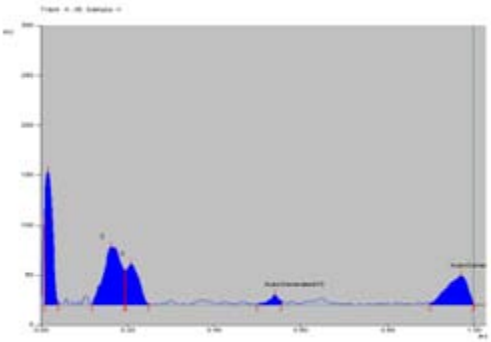


254 nm 366 nm

Fig 11: Densitogram of *Lagenaria vulgaris* fruit pulp powder



Densitogram curve of methnol extract of *Lagenaria vulgaris* fruit pulp powder at 254 nm



Densitogram curve of methnol extract of *Lagenaria vulgaris* fruit pulp powder at 366 nm

CONCLUSION

Identified phytochemical components content in the present sample i.e., tannins have highly antioxidant & anti-inflammatory function [9], saponin shows steroidal aglycone structure with antibacterial & adjuvant property [10], phytosterol promise in allergies and stress related illness [11], flavonoids are antioxidant, anti-inflammatory, anti-allergic relives hay fever, eczema, sinusitis [12]. All this support the intended action of the given sample in management of Bronchial Asthma. It is inferred that the given sample meets minimum qualitative standards as prescribed by API at preliminary level. The results of this study may be used as the reference standard in further research undertakings of its kind.

REFERENCES

1. http://www.who.int/mediacentre/factsheets /fs134/en.
2. Vasant C.Patil, Principle & Practise of Panchakarma,Atreya Ayurveda Publications, Karnataka,2nd edition,2011;1
3. http:// www.Ayurvedic_Matreria_ Medica _Article/T.2html.
4. Charaka, Charaksamhita Kalpasthana 1/6, Charak samhita with Ayurved Dipika commenentry of Chakrapanidatta, edited

by Yadavji Trikamji Acharya, Chaukhamba Sanskrit Sansthana, Varanasi,India, 2009;652.

5. Charaka, Charaksamhita Siddhisthana 11/12, Charak samhita with Ayurved Dipika commenentry of Chakrapanidatta, edited by Yadavji Trikamji Acharya, Chaukhamba Sanskrit Sansthana, Varanasi,India, 2009;727.
6. Charaka, Charaksamhita Kalpasthana 1/3, Charak samhita with Ayurved Dipika commenentry of Chakrapanidatta, edited by Yadavji Trikamji Acharya, Chaukhamba Sanskrit Sansthana, Varanasi,India, 2009;657.
7. Database on Medicinal Plants used in Ayurveda, published by The Central Council of Research in Ayurved & Siddha, New Delhi, year of publication 2008, volume no.5, Page no.438.
8. Trease and Evans, Pharmacognosy, 15th ed. W.B. Sunders Company Ltd., 1996.95-98
9. Wallis T.E., Text book of Pharmacognosy, 5th ed., CBS Publisher & Distributors, New Delhi, 2002. 571-578.
10. Ravishankar S, Textbook of Pharmaceutical Analysis, Ootacamund:Rx Publication. 2001.
11. Anonymous. The Ayurvedic Pharmacopoeia of India, Part 3, Vol 1-5, 1st ed. New Delhi: Ministry of Health and Family welfare, Department of AYUSH Government of India; 2001.Page no.216.
12. http:// www.academicjournals.com.
13. http:// www.redorbit.com.
14. http:// www.ncbi.nim.nih.gov/pmc/ article / PMC 3117318.
15. http: www.phytochemicals.info/ phyto chemicals /flavonoids.php.