

## PHARMACOGNOSTICAL AND PHYTO-CHEMICAL STANDARDIZATION OF VARUNADI CHOORNA- A POLYHERBAL FORMULATION

Dr. Sajeewane M. S.\*<sup>1</sup>, L. P. Dei<sup>2</sup>, Harisha C. R.<sup>3</sup> and V. J. Shukla<sup>4</sup>

<sup>1</sup>MD Scholar, Department of Prasuti tantra and Stree Roga.

<sup>2</sup>Professor and HOD, Department of Prasuti Tantra and Stree Roga.

<sup>3</sup>Head, Pharmacognosy Lab.

<sup>4</sup>Head, Pharmaceutical Chemistry Lab, I.P.G.T. and R.A., Gujarat Ayurved University,  
Jamanagar, Gujarat.

### ABSTRACT

Article Received on  
24 June 2018,

Revised on 15 July 2018,  
Accepted on 05 August 2018

DOI: 10.20959/wjpr201816-13082

#### \*Corresponding Author

Dr. Sajeewane M. S.

MD Scholar, Department of  
Prasuti Tantra and Stree  
Roga.

**Introduction:** Uterine fibroids do not have definite medical treatment in the modern gynaecological practices other than surgery. When we consider about the present scenario of this disease which is needed to find out appropriate and effective solution of this problem. So many formulations are advised in Ayurveda classics under the *Granthi Arbuda* and *Apachi Chikitsa* along with some specific lifestyle restrictions. Ayurveda texts have described *Mamsaja granthi* which perfectly correlates with benign neoplasm on modern lines. *Granthi* when present in yoni (female reproductive system) *Garbhashaya* (uterus) will lead to disturbed menstrual cycle-menorrhagia,

metrorrhagia, dysmenorrhea, etc., along with infertility. Most of the Ayurvedic drugs are very effective but lack standardisation. *Varunadi* decoction is mentioned in Sri Lankan Ayurveda Pharmacopeia which is commonly used by Sri Lankan Traditional Medical Practitioners for *Garbhasayagata Granthi/Arbuda*. *Varunadi choorna* was selected as the trial drug for uterine fibroid. **Aim:** To develop the pharmacognostical and phytochemical profile of *Varunadi choorna*. **Material and Methods:** *Varunadi choorna* was prepared as per classical methods and analytical findings were systematically recorded. The samples were subjected to organoleptic analysis, physicochemical analysis and HPTLC examination by optimizing the solvent systems. **Results and Conclusions:** Pharmacognostical profile of *Varunadi choorna* was established. The presence of Stone cells, cork cell in surface view, cluster crystal,

lignified stone cells. Pitted stone cell with greenish content, Rhomboidal crystal were the characteristic features observed in the microscopy of the finished product. Physico-chemical analysis showed Loss on drying 0.02% w/w, ash value 0.91% w/w, and pH- 6.5. Water soluble extract 12.50 % (w/w), HPTLC fingerprinting profile of *Varunadi choorna* revealed 10 spots at 254 nm and 5 spots at 366 nm.

**KEYWORDS:** Organoleptic, Pharmacognosy, HPTLC, Uterine fibroid, *Varunadi choorna*, Physio-chemical.

## INTRODUCTION

Uterine fibroid, a noncancerous growth of the uterus also known as fibromyomas, leiomyomas or myomas,<sup>[1,2]</sup> that often appear during childbearing age (between 35-45 years) in nulliparous or in those having one child infertility of female. Approximately 1.6 million women are newly diagnosed with uterine fibroid per year only in U.S. As a consequence of these local pressure effects and bleeding, uterine fibroids rank as a major reason for hysterectomy accounting for approximately one-third of all hysterectomies or about 2,00,000 hysterectomies per-year.<sup>[3,4]</sup> The prevalence of uterine fibroids among women between 30-50% in India.<sup>[5,6]</sup> Uterine fibroids do not have definite medical treatment in the modern gynaecological practices other than surgery, available treatment protocol in modern are hormonal therapy, hysterectomy, myomectomy, myolysis, endometrial ablation and uterine artery embolization having so many complications and expensive also. Ayurveda texts have described *Mamsaja granthi*<sup>[7]</sup> which perfectly correlates with benign neoplasm on modern lines. *Granthi* when present in yoni (female reproductive system) *Garbhashaya* (uterus) will lead to disturbed menstrual cycle-menorrhagia, metrorrhagia, dysmenorrhea, etc., along with infertility. The aetiology, classification, pathogenesis, and management of *Garanthi/Arbuda* are discussed at length and in detail in the Ayurveda texts. *Mamsa Granthi/Arbuda* uterine fibroid is a *Bahu Dosh janya* disease which involve the *Astama Ashaya (Grabhashya)* and deep *Dhatus* in the body. *Varunadi* decoction is mentioned in Sri Lankan Ayurveda Pharmacopeia which is commonly used by Sri Lankan Traditional Medical Practitioners for *Garbhasayagata Granthi/Arbuda*. Standardization is needed to establish quality control parameters for each traditional drug before it is released for use without the fear of toxicity and contamination.<sup>[8]</sup> So the present work comprises of Pharmacognostical, physiochemical and HPTLC fingerprinting profile for *Varunadi choorna*.

## MATERIALS AND METHODS

### Collection, identification and authentication of raw drugs

The raw materials were procured from the pharmacy of Gujarat Ayurved University, Jamnagar. The raw drugs were identified and authenticated for quality and purity in the Pharmacognosy laboratory, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

### Ingredients of *Varunadi choorna*

Drug	Botanical name	Parted used	Quantity
<i>Varuna</i>	<i>Crataeva nurvala</i> Buch. -Ham	Twak	16g
<i>Gokshura</i>	<i>Tribulus terrestris</i> Linn	Whole plant	16g
<i>Shunti</i>	<i>Zingiber officinale</i> Rosc	Rhizome	16g
<i>Yavakshara</i>	<i>Hordeum vulgare</i> Linn	Whole plant	2g

### Preparation of Drug

All 3 ingredients (part of use) will be cleaned and then dried. They will be taken in equal proportion, i.e 48gm will be prepared coarse powder and store in dry container. *Yavakshara* 2g as a *Prakshepa*. *Yavakshara* will be prepared by according to the *Kshara* preparation method and store as a powder in dry container.

### Pharmacognostical Study of *Varunadi choorna*

Pharmacognostical analysis of the *Varunadi choorna* was carried out in the Pharmacognosy laboratory of I.P.G.T. & R.A., G.A.U., Jamnagar. It was carried out in two steps.

### Organoleptic Study

The organoleptic characters of *Varunadi choorna* i.e. Color, Touch, Odor and Taste were analyzed with the help of sense organs<sup>[9]</sup> (*Darshana, Sparshana, Aaghrana* and *Rasana Pareeksha* mentioned in Ayurveda).

### Microscopic Study

Powder Microscopy Small quantity from the *Varunadi choorna* was dissolved in distilled water. Few drops of this is spread on a glass slide and covered with a cover slip and excessive water was removed with filter paper. Microscopic examination was done with the prepared slide first without staining and then stained with Phloroglucinol and concentrated HCl under Carl Zeiss Trinocular microscope. Photomicrographs were taken by using Carl Zeiss Trinocular research microscope attached with camera.<sup>[10]</sup>

### Pharmaceutical Study of *Varunadi choorna*

Physico-chemical Analysis *Varunadi choorna* was analyzed using various standard physico-chemical parameters such as Loss on drying, Ash value, Water soluble extract, Alcohol soluble extract and pH.<sup>[11]</sup>

### High Performance Thin Layer Chromatography (HPTLC)

HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using Toluene+ Ethyl acetate+ Diethyl amine (7:2:1) solvent system and observed under visible light. The colour and Rf values of resolved spots were noted.<sup>[12]</sup>

## RESULTS AND DISCUSSION

### Organoleptic characteristics of *Varunadi choorna*

Organoleptic characteristics of *Varunadi choorna* like Colour, Touch, Odour and Taste were recorded and shown in Table No.2.

**Table 2: Organoleptic characters of *Varunadi* powder.**

Sr. No.	Characters	Results
1	Colour	Light brownish
2	Odour	Slightly aromatic
3	Taste	Astringent
4	Touch	Coarse powder

### Microscopic Characteristics of *Varunadi choorna*

Diagnostic characters of *Varunadi choorna* were observed under the microscope and presence of all ingredients showed their different characters such as Rhomboidal crystal, cluster crystal, lignified stone cells of *Varuna*, Starch grain, fragment of angular end pitted vessel of *Shunti*, Stone cells, cork cell in surface view of *Varuna*, Stone cells, epicarp cells, group of lignified stone cells of *Gokshura*, Epidermal cells, fibers of *Yava* Pitted stone cell with greenish content of *Varuna*, Oleo resin, group of fiber, lignified pitted vessels, lignified simple of *Shunti* Starch grains & aleurone grains, epidermal parenchyma cells of *Yavakshara*.

### Physico-chemical analysis

Physico-chemical analysis of *Varunadi choorna* revealed the values such as Loss on drying 0.02% w/w, ash value 0.91% w/w, and pH- 6.5, Water soluble extract 12.50% (w/w), Alcohol soluble extract 9.50% (w/w), and shown in Table No.3.

**Table3: Physico-chemical analysis: *Varunadi choorna*.**

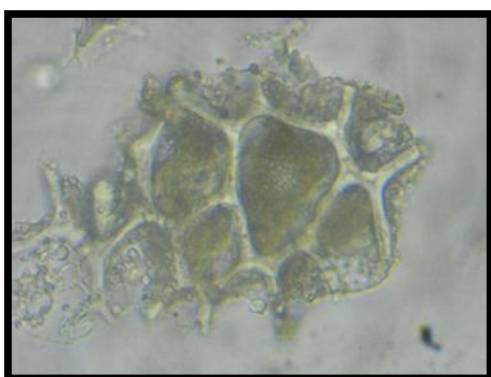
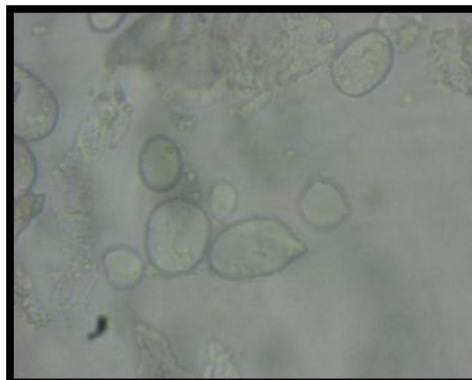
Sr. No	Test	<i>Varunadi choorna</i>
1	Loss on drying	0.020 % (w/w)
2	Water soluble extract	12.50 % (w/w)
3	Alcohol soluble extract	9.50% (w/w)
4	pH	6.5

**High performance thin layer chromatography of *Varunadi choorna***

HPTLC Study The chromatographic study (HPTLC) was carried out under densitometer at 254 nm and 366 nm UV to establish fingerprinting profile. Chromatogram shows 10 prominent spots at 254 nm with maximum Rf value 0.03, 0.17, 0.35, 0.39, 0.48, 0.66, 0.73, 0.75 0.93,0.98 and 5 spots at 366 nm with maximum Rf value 0.03, 0.17, 0.37, 0.53, 0.98.

**Table 4: High performance thin layer chromatography of *Varunadi choorna*.**

Wave length /UV	Number of Spots	Rf value
At 254 nm	10	0.03, 0.17, 0.35, 0.39, 0.48, 0.66, 0.73, 0.75 0.93,0.98
At 366 nm	05	0.03, 0.17, 0.37, 0.53, 0.98.

**Plate 1: Microphotographs of *Varunadi choorna*.****Fig 1: Epicarp cells of Gokshura.****Fig 2: Stone cells of Varuna.****Fig 3: Stone cells of Gokshura.****Fig 4: Starch grains of Shunti.**



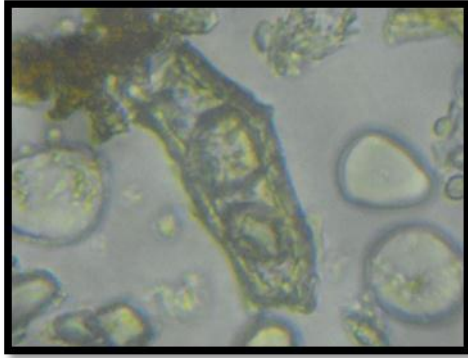


Fig 5: Scleroid of Varuna

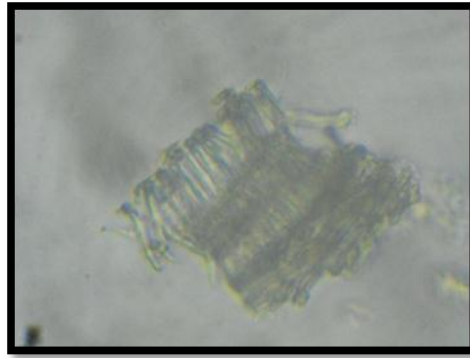


Fig 6: Scalariform vessels of Shunti

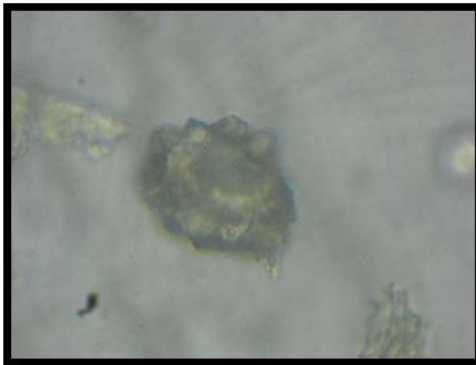


Fig 7: Rosette crystal of Varuna



Fig 8: Prismatic crystal of Varuna

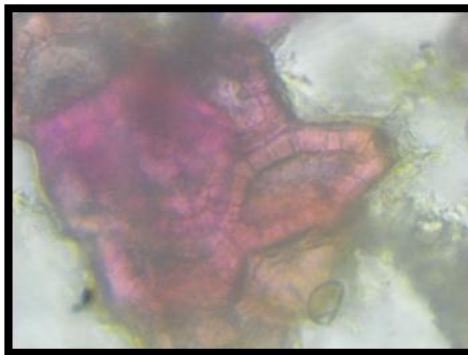


Fig 9: Oiloresine content of Shunti



Fig 10: Group of stone cells of Varuna

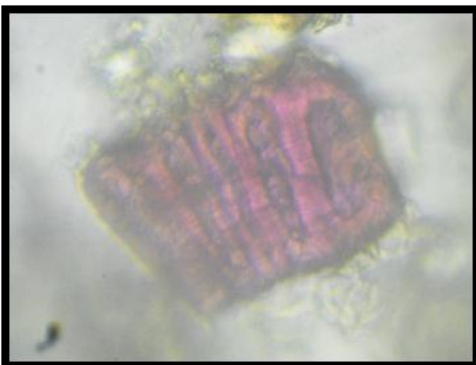


Fig 11: Group of Stone cells of Gokshura



Fig 12: Fibres of Yavakshara

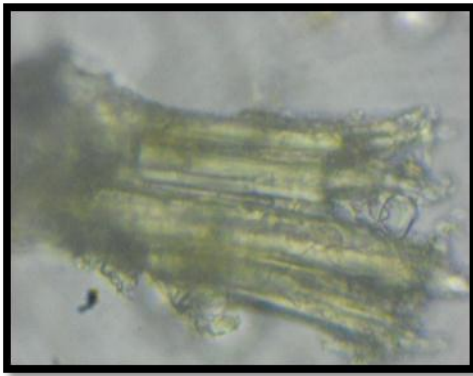


Fig 13: Fibres of Varuna

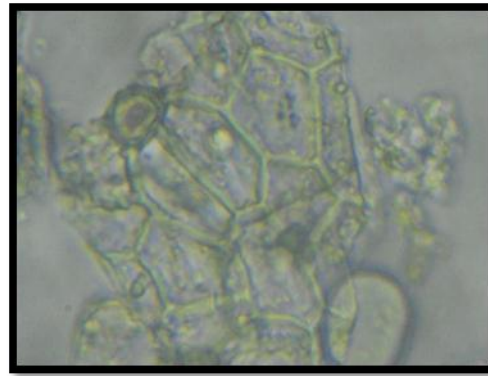


Fig 14: Epidermal cells of Yavakshara

Plate 2: Densitogram of *Varunadi choorna* at 254 nm and 366 nm.

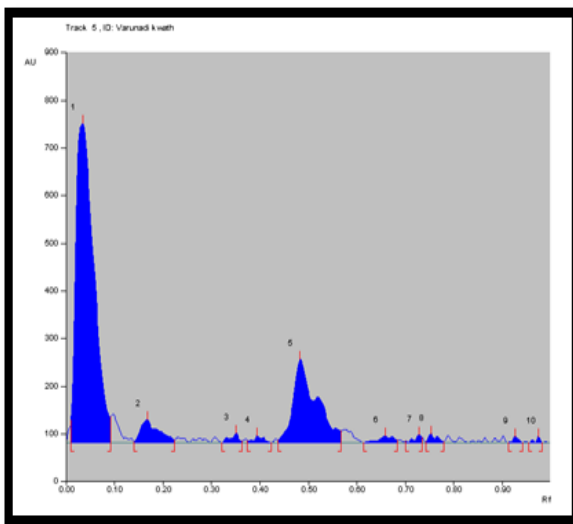


Fig 1: 254nm Peak display.

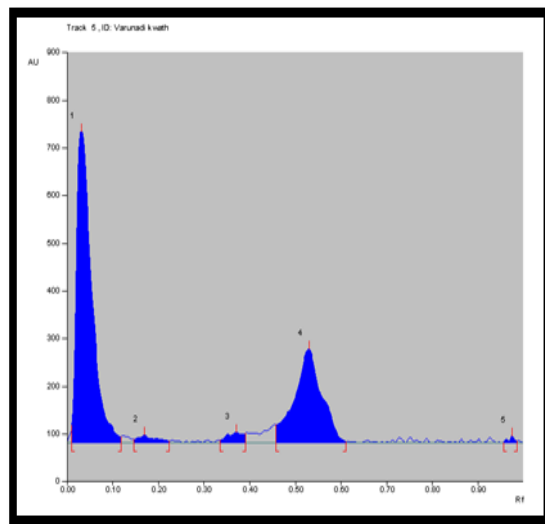


Fig 2: 366nm Peak display.

Plate 2: Three Dimensional HPTLC (3D) Densitogram.

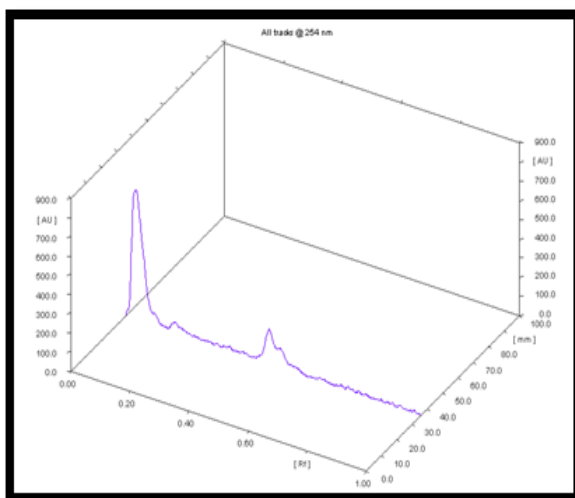


Fig 1: 254nm.

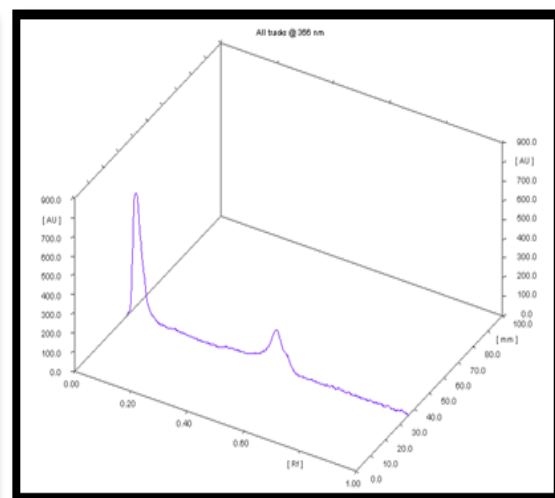


Fig 2: 366nm.

*Varunadi choorna* is a formulated combination; consist of four herbal ingredients which were proved to be genuine by assessing the pharmacognostical parameters. The therapeutic effect depends on the quality of the drug administered. All the physico-chemical parameters analyzed were found to be within the normal reference range. Evaluation of physico-chemical parameters and qualitative analysis helped to identify the presence of specific ingredients in a formulation and application of chromatographic techniques aid in recognition of number of ingredients and also to assess the purity by comparing with the standard ones.

## CONCLUSION

As *Varunadi choorna* is a formulated combination and intended to given for patients who have uterine fibroids, it is necessary for the authentication of ingredients and standardization to ensure the quality control. Pharmacognostical characteristic of *Varunadi choorna* under the microscope showed characters of all the ingredients of finished product and there is no major change in the microscopic structure of the raw drugs during the pharmaceutical processes of preparation of the drug. The physicochemical analysis is inferred that the formulation meets maximum qualitative standards and all the parameters discussed here may be used as identifying tools for the quality assessment of this formulated yoga, enabling the reproducibility of the formulation.

## REFERENCE

1. Pratap K, Malhotra N. Jeffcoate's Principles of Gynaecology. 7th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd., 2008; 488.
2. Wilcox LS, Koonin LM, Pokras R, Strauss LT, Xia Z, Peterson HB. Hysterectomy in the United States, 1988-1990. *Obstet Gynecol*, 1994; 83: 549-55.
3. Hildreth CJ, Lynn C, Glass RM. Uterine Fibroids. *JAMA*, 2009; 301(1): 122. doi:10.1001/jama.301.1.122.
4. Relationship between obesity and uterine leiomyomata. Shikora SA, Niloff JM, Bistran BR, Forse RA, Blackburn GL.
5. Bhatla N. "Tumour of the corpus uteri," in Jeffcoate Principles of Gynaecology Revise, 2001; 467-477. Butterworth, London, UK, 5<sup>th</sup> edition.
6. Agboola A, "Tumours of the corpus uteri," in Textbook of Obstetrics and Gynaecology for Medical Students, A. Agboola, Ed., 1988; 1: 235-247, University Services Educational Publishers, Ibadan, Nigeria.



7. Vaidya Jadavji Trikamji Acharya., editor. 9<sup>th</sup> ed. Varanasi: Chaukhamba Orientalia; 2007. Sushruta, Sushruta Samhita, Nidana Sthana, Granthi-Apachi-Arbud-Galganda Nidana Adhyaya, 11/4. 311.
8. Amartya Bose, Krishanu De, Dr Vikas Saroch. A Review on latest developments in the standardization of Ayurvedic drugs, IJPRBS, 2012; 1(3): 96-119.
9. Wallis TE, Text book of Pharmacognosy, 5<sup>th</sup> Ed., New Delhi: CBS Publishers & Distributors, 2002; 123-132: 210-215.
10. Trease and Evans, Pharmacognosy, 15th Ed., W.B. Saunders Company Ltd. 1996, 569570.
11. Ayurvedic Pharmacopoeia of India PDF-1, Govt. of India, Ministry of health and family welfare, Delhi, 2007; 5, appendix-2.2.9: 214.
12. Stahl E; Thin-layer chromatography a laboratory hand book. 2<sup>nd</sup> edition. Springer Verlag New York, 1969; 125-133.