

Pharmacognostical and Preliminary Phyto-Chemical Profiles of *Shatavari-Shatapushpa Choorna*

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ABSTRACT

Although some perceive infertility as a quality-of-life issue, it is in fact a disease with increasing public health concerns. Infertility has been declared as global health issue by world health organization. Anovulation comprises 30-40% part and also probably a major cause of female infertility which interfere woman's chances to conceive. Reference regarding *Shatavari-Shatapushpa Choorna* was given in Kashyapa Samhita. There is no scientific evaluation has been found on this formulation till date. For evaluation of pharmacognostical and physico-chemical profile of *Shatavari-Shatapushpa Choorna* has been taken in this present study. *Choorna* of *Shatavari-Shatapushpa* was analyzed through Pharmacognostically and also it was examined through qualitative and quantitative analysis of physicochemical parameters. High Performance Thin layer Chromatography study (HPTLC) was also studied. Pharmacognostical evaluation of coarse *Shatavari-Shatapushpa Choorna* revealed the diagnostic characters like acicular Crystals, group of starch grains, raphides, parancymal cells, anovular vessels and stone cell of *Shatavari*, group of fibers, misocarp cells, septate fiber, epicarp cells, aleurone grains and fiber of *Shatapushpa* content which authenticate genuineness of the raw drug of *Shatavari-Shatapushpa Choorna*. Qualitative study observes that pH is 6.5, Ash value is 10.5% w/w, Loss on drying is 9.94%, Water soluble extract is 7.96% & Alcohol soluble extract is 30.1%, HPTLC study shows that maximum 15 spots and 10 spots were obtained when viewed under short wave ultra violet light both (254 nm) and (366 nm) respectively.

Key Words: HPTLC, Pharmacognosy, Pharmaceutics, *Shatavari-Shatapushpa Choorna*, *Vandhyatva*

INTRODUCTION

Procreation is the greatest desire among human beings. Infertility besides being health issue is more of social problem which affects personal, social and mental health of the affected person. Infertility is major crisis affecting 10–15% of the 1.5 billion women of reproductive age¹. The majority of these women are not evaluated for infertility management and even in developed economies there are great

inequalities in access to diagnosis and treatment. Infertility decreases quality of life of women. Due to today's lifestyle, incidence of infertility because of ovulatory dysfunction is increased. According to International Federation of Gynaecology and Obstetrics (FIGO) manual, ovarian factor contribute 30-40% in causes of the female infertility. So, it is the main common cause of infertility. Ovarian dysfunction includes anovulation or oligo-

ovulation, decreased ovarian reserve, luteal phase defect and luteinized unruptured follicle.

As per Ayurveda, due to *Mithya Ahara-Vihara-Achara*, *Dhatvagni* will be disturbed. This *Dhavgnimandhya* further may lead to *Dhatudushti* (*Rasa, Rakta, Artava*) and *Vatapradhana Tridosha Prakopa* (which were tend to be prime governing factors for whole process of ovulation) that will be vitiated and anovulation takes place. So, physician should have drug which will boost the *Agni* as well as normalize *Vatapradhana Tridosha Prakopa*. Acharya Kashyapa has mentioned about use of *Shatavari* and *Shatapushpa* in the context of *Vandhytva*². This formulation is said to have properties like *Vrushya, Rasayana, Pathya, Pushpaprajakara, Balya, Brimhaniya, Deepana, Pachana, Yonivishodhana, Rutupravartana, Prajasthapana* etc., as separately described *Shatavari* and *Shatapushpa* in Kashyapa Samhita³. Ayurveda can provide much in this regard indirectly, if thousands of unexplored combinations are brought into limelight. *Shatavari-Shatapushpa Choorna* is one among them.

The quality of a medicinal product is determined by its content of active substance(s), its purity and its organoleptic, physicochemical profiles⁴. The characteristics of materials are examined subjectively and substitutes or adulterants may closely resemble the genuine material, it is often necessary to consider the findings by microscopy and/or physicochemical analysis⁵. Therefore, it is also a need to evaluate finished product as well as

crude drugs for the quality assurance. In the present study, *Shatavari-Shatapushpa Choorna* was exposed to pharmacognostical (powder microscopy), high performance thin layer chromatography (HPTLC) and pharmaceutical evaluation for various physicochemical parameters to prepare a preliminary profile of formulation for future.

AIMS & OBJECTIVES

1. To authentify and evaluate all contents of *Shatavari-Shatapushpa Choorna*.
2. To assay the modern parameters of an Ayurvedic classical drugs for the scientific evaluation and also illuminated the ingredients for well acceptance in general people.

MATERIALS & METHODS

After examining the raw material for their authenticity at Pharmacognosy Laboratory, *Shatavari Choorna* was procured from Pharmacy of Gujarat Ayurved University, Jamnagar and *Shatapushpa* Seed was purchased from local market of Jamnagar on 28/2/2019. The final drug (*Shatavari-Shatapushpa Choorna*) was prepared in the Pharmacy, Gujarat Ayurved University; Jamnagar. Seed was lightly roasted and grinded. Then, powder was passed through sieve no 80. After that Mixture of *Shatavari Choorna* and *Shatapushpa Choorna* in 3:2 quantity (Table 1), it was packed in air tight container on 14/02/2019.

Table 1 Ingredients of *Shatavari-Shatapushpa Choorna*:

No	Drug	Latin Name	Part Used	Quantity
1	<i>Shatavari</i>	<i>Asparagus racemosus</i> Willd.	Rhizome	3 part

Pharmacognostical Study: Drugs were identified and authenticated by the pharmacognosy laboratory, I.P.G.T. & R.A, GAU, Jamnagar. The identification was done on the basis of organoleptic features, morphological features and Powder microscopy of drug in detailed table 1. (Plate no. 1). Coarse powder dissolved in small quantity of distilled water was filtered through filter paper; filtrate was examined under the microscope attached with camera, with and without stain. The microphotographs were also examined under the microscope⁵.



Plate 1 Shatavari-Shatavushpa Choorna finished product

Physicochemical Parameters: Shatavari-Shatavushpa Choorna was analysed with help of qualitative and quantitative parameters at Pharmaceutical laboratory, IPGT & RA, Gujarat Ayurved University, Jamnagar. The common parameters were mentioned for Ayurvedic Pharmacopodia of India and CCRAS guidelines i.e. pH value, Loss on drying, total ash value and Water and alcohol soluble extractives were taken. Presence of more moisture content in a sample can create problem for preservation. Hence loss on drying was also selected as one of the parameters.^{6,7}

High-Performance Thin Layer Chromatography (HPTLC): HPTLC was

performed as per the guideline provided by API. HPTLC was carried out after making appropriate solvent system. Methanol extract of Shatavari-Shatavushpa Choorna was spotted on precoated silica gel GF CO254 aluminium plate as 5 mm bands, 5 mm apart and 1 cm from the edge of the plates, by means of CAMAG Linomat V sample applicator attached with a 100 L. Hamilton syringe was used as the mobile phase. After development, densitometry scanning was carried out with a CAMAG TLC scanner III reflectance absorbance mode at 254 nm and 366 nm under the control of win CATS Software (V 1.2.1, manufactured by CAMAG Switzerland). The slit dimensions were 6.0mm × 0.45 mm, and the scanning speed was 20mm/s⁸.

RESULTS AND DISCUSSION

Pharmacognostical Study:

Table 2 Organoleptic features of Shatavari-Shatavushpa Choorna

CHARACTER	RESULT
Colour	Dark Greyish White
Odour	Aromatic
Taste	Astringent Followed by Bitter
Appearance	Powder
Touch	Fine powder

Microscopic evaluation: Microscopic evaluation was conducted of Choorna. For review the presence of characteristics of ingredient drugs, Choorna was dissolved in the distilled water and studied under a microscope for the presence of Organoleptic characteristics (Table 2 and Plate no 2) i.e., colour, odour, taste and touch were

scientifically studied following standard references described for the study of powder drug.

Physicochemical Parameters: Physicochemical parameters of the *Shatavari-Shatapushpa*

Choorna like Ash Value, Loss on drying, pH, Water soluble extract, Alcohol soluble extract, HPTLC were performed and evaluated¹⁰. The results are placed as below: (Table 3).

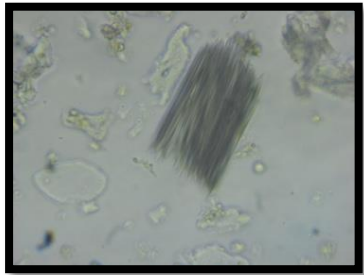
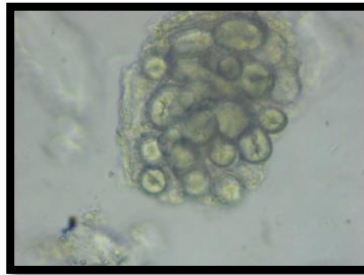

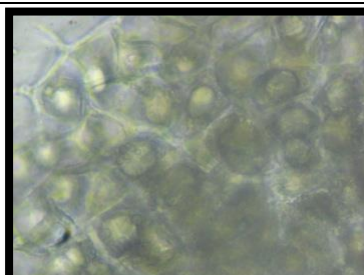
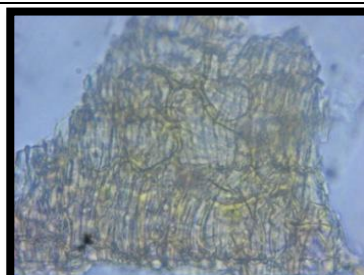


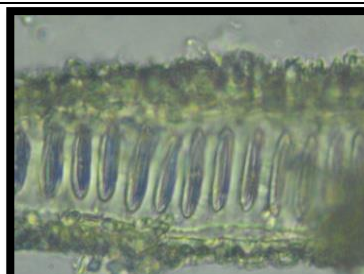




		
Acicular Crystals of <i>Shatavari</i>	Group of Starch Grains of <i>Shatavari</i>	Raphides of <i>Shatavari</i>
		
Parancymal Cells of <i>Shatavari</i>	Anovular Vessels of <i>Shatavari</i>	Stone Cell of <i>Shatavari</i>
		
Misocarp cells of <i>Shatapushpa</i>	Septate Fiber of <i>Shatapushpa</i>	Group of fibers of <i>Shatapushpa</i>
		
Epicarp cells of <i>Shatapushpa</i>	Aleurone Grains of <i>Shatapushpa</i>	Fiber of <i>Shatapushpa</i>

Plate 2 Microscopic features of *Shatavari-Shatapushpa Choorna*

Table 3 Physicochemical Parameters of *Shatavari-Shatapushpa Choorna*

Sr. No.	Test	Result
1	Loss on Drying	9.94% w/w
2	Ash Value	10.5 % w/w
3	Water soluble extract	7.96% w/w 96% w/w
4	Methanol soluble extract	30.1 % w/w
5	pH	6.5

Table 4 R_f value of *Shatavari-Shatapushpa Choorna*

Wave length	No. Spot	R _f value
254	15	0.01, 0.09, 0.11, 0.20, 0.25, 0.38, 0.46, 0.53, 0.55, 0.57, 0.62, 0.65, 0.79, 0.93, 0.95
366	10	0.00, 0.11, 0.17, 0.20, 0.36, 0.47, 0.55, 0.57, 0.62, 0.95

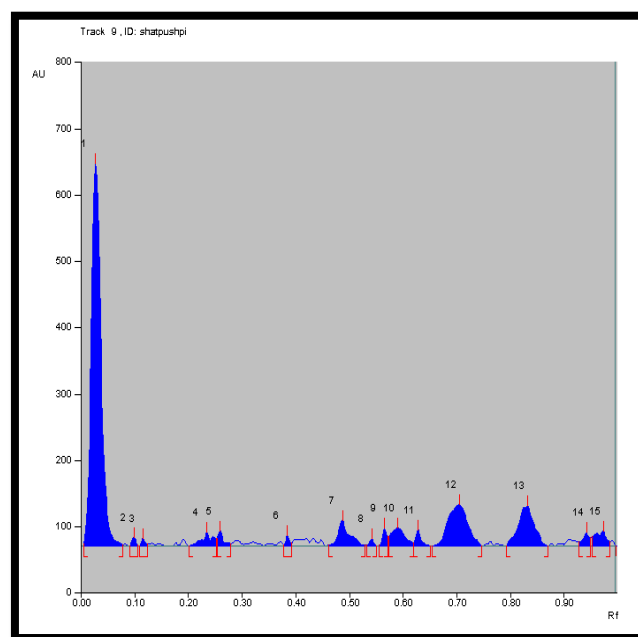
DISCUSSION

In the present study a new pharmaceutical preparation of *Shatavari-Shatapushpa Choorna* was taken. Its pharmaceutical properties had to be studied; hence the formulation should be assessed to minimum Pharmacognostical and Pharmaceutical analysis. As per Plate no 1, Pharmacognostical evaluation of *Shatavari-Shatapushpa Choorna* revealed the diagnostic characters like Acicular Crystals, Group of Starch Grains, Raphides, Parancymal Cells, Anular Vessels and Stone Cell of *Shatavari*, group of fibers, Mesocarp cells, Septate Fiber, Epicarp cells, Aleurone Grains and Fiber of *Shatapushpa* content which authenticate genuineness of the raw drug of *Shatavari-Shatapushpa Choorna*. Moisture contents should be less to prevent degradation of product. Excess of water in formulation enhances microbial growth, presence of fungi or insects and deterioration of drug. Ash values are the criteria to judge the identity and purity of crude drugs were total ash, water soluble are considered. As per Table no 3, *Shatavari-*

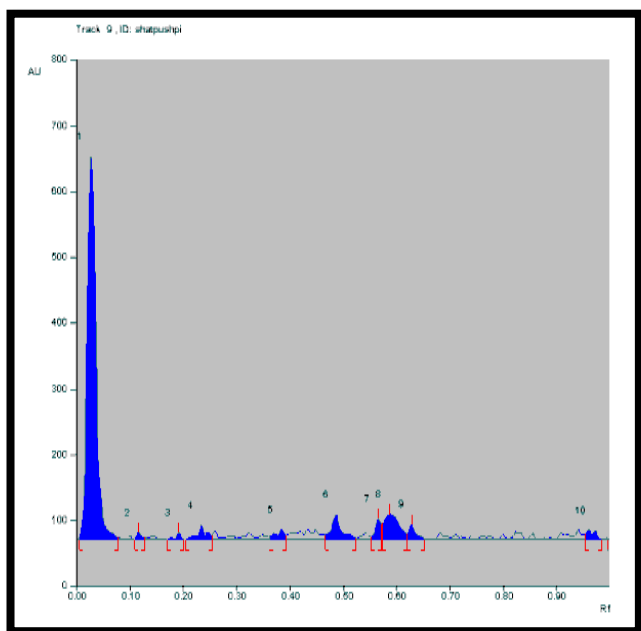
Qualitative Test of *Shatavari-Shatapushpa*

Choorna: The methanol extract of the sample was analyzed qualitatively for different functional groups. Densitometric scanning of the HPTLC pattern showed 15 spots in short wave UV 254 nm and 10 spots obtained in long wave UV 366 nm as per shown on Table no 4.

Shatapushpa Choorna possessed 10.5% w/w total ash. The 7.96% w/w of water soluble extractives and 30.1% w/w methanol soluble extractives were present in *Shatavari-Shatapushpa Choorna* indicating that the drug is having good solubility in water. In HPTLC study 15 spots at 254 nm and 10 spots 366 nm were observed, indicating its possible components of matrix which may possess its therapeutic effect shows in (plate no 3 & 4 and Table no 4.)

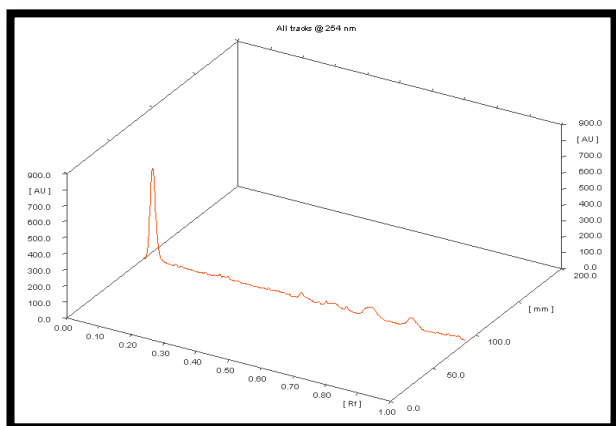


254 nm

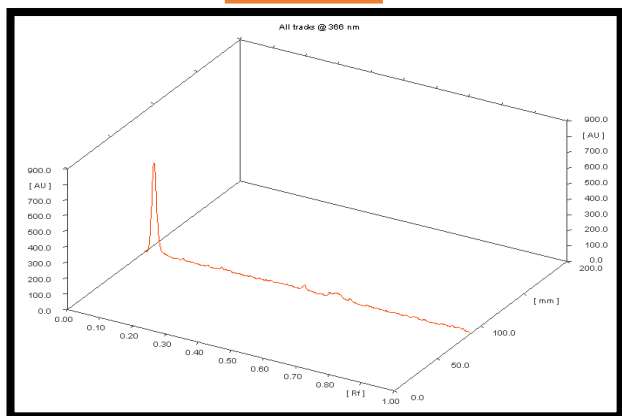


366nm

Plate 3 Densitogram of *Shatavari-Shatapushpa Choorna* at 254 nm and 366 nm



254 nm



366 nm

Plate no 4 Three dimensional Densitogram of *Shatavari-Shatapushpa Choorna* at 254 nm and 366 nm

CONCLUSION

■ The system of Ayurvedic medicine is lifted up day by day in whole world. So, purity, safety, authenticity and efficacy of the used drug standardization become need of the time. *Shatavari-Shatapushpa Choorna* was found to be effective in the management of *Vandhytva* (Female Infertility) w.s.r. Anovulatory factor. *Shatavari-Shatapushpa Choorna* exhibits a set of diagnostic characters of its ingredients exhibit specific characters such as Acicular Crystals, Group of Starch Grains, Raphides, Parancymal Cells, Anular Vessels and Stone Cell of *Shatavari*, Group of fibers, Mesocarp cells, Septate Fiber, Epicarp cells, Aleurone Grains and Fiber of *Shatapushpa* showed the purity and genuinity of the finished product. The quantitative pharmaceutical analysis, pH, Loss on drying, ash value, water soluble extract, methanol soluble extract and HPTLC were assessed and in normal range in accordance with those mentioned in reference books. Though the groundwork requisites for the standardization of *Shatavari-Shatapushpa Choorna* are included in the current study, additional echoing evaluation and investigations are required for the identification of all the active chemical constituents of the test drug to substantiate the clinical efficacy.

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