



Short Communication

A preliminary physicochemical evaluation of *Darvyadi Yoni Varti*: A compound Ayurvedic formulation

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Abstract

Background: *Darvyadi Yoni Varti* is an Ayurvedic formulation indicated for the management of *Garbhasaya Grivamukhagata Vrana* (cervical erosion). Though a number of drugs are available in modern medicine, interest towards Ayurveda is gaining. Drugs with *Vranasodhana*, *Ropana* and *Prasadana* properties like *Sphatika*, *Darvi*, *Haridra*, and *Lodhra* are useful in this situation and are selected to prepare *Yoni Varti*. **Aim:** To standardize and evaluate preliminary pharmacognostical as well as physicochemical profiles of *Darvyadi Yoni Varti*. **Materials and Methods:** Raw material was analyzed in the Pharmacognostical Laboratory for genuinity before converting into *Varti*. Finished product was analyzed by following pharmacopoeial standards. **Results:** The pH value of *Darvyadi Yoni Varti* was 5.0, water soluble extract was 23.3%w/w, alcohol soluble extract was 8.7%w/w, ash value was 5.16%w/w, loss on drying was 71.73%w/w. High performance thin layer chromatography was carried out; in which maximum 10 spots at 254 nm and 3 spots at 366 nm were distinguished. **Conclusion:** Pharmacognostical study of raw drug revealed the quality and genuineness of all the constituents of *Darvyadi Yoni Varti*.

Key words: Cervical erosion, *Darvyadi Yoni Varti*, *Garbhasaya Vrana*

Introduction

Yoni Varti (vaginal suppository) is a unique Ayurvedic formulation mentioned for the management of *Yoniroga* (gynecological disorders). This makes it widely acceptable. In gynecological disorders, local route is mostly preferred against oral as high concentration of drug can be expected at the target organ by passing systemic circulation.^[1] About 85% women suffer from cervical erosion.^[2] It adversely affects the physiological as well as psychological health of women and even interferes in their professional life and may even lead to infertility^[3] or may show malignant changes in the chronic stage.^[4] Though many synthetic drugs are available for this condition are known for side effects. Considering this researchers are behind traditional drugs that can provide satisfactory answers.

Acharya Shushruta has mentioned *Sphatika*, *Gairika*, *Tuttha*, *Kasisa*, *Lodhra*, *Rasanjana*, *Darvi*, etc. in *Upadansha*

Chikitsa.^[5] Some of the drugs mentioned in this context like *Darvi* (*Berberis aristata* DC.), *Lodhra* (*Symplocos racemosa* Roxb.), *Haridra* (*Curcuma longa* L.), *Suddha Sphatika* (purified alum), and *Suddha Gairika* (purified ochre) and *Madhu* having *Vranasodhana*, *Vranaropana* and *Prasadana* properties were selected for *Yoni Varti* preparation. *Darvyadi Yoni Varti*, one such formulation is effective in gynecological disorders. But, pharmacognostical and preliminary physico-chemical profiles are not available till date. Considering this it is planned for physico-chemical evaluation of the *Darvyadi Yoni Varti*.

Materials and Methods

Drug material

Darvi, *Lodhra*, *Haridra*, *Suddha Sphatika* and *Suddha Gairika* were collected from the Pharmacy, Gujarat Ayurved University, Jamnagar. Gelatine, honey and propylparaben sodium salt were purchased from local market. The ingredients of *Yoni Varti* are given in Table 1.

Pharmacognostical evaluation

Raw drugs were identified and authenticated as per Ayurvedic Pharmacopeia of India^[6] in the Pharmacognosy Laboratory. The identification was done based on the

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morphological features and organoleptic features. Later, Varti was dissolved in small quantity of distilled water, filtered through filter paper and filtrate was studied under the Carl Zeiss microscope attached with the camera, with stain and without stain. The microphotographs were also taken under the microscope.^[7]

Methods of preparation of Darvyadi Yoni Varti

Kwatha (decoction) of equal parts of Darvi, Lodhra and Haridra was prepared by adding 8 times of water and reducing to 1/4. This was further boiled on mild flame to prepare semisolid. This was added with purified Sphatika and Gairika and stirred with a spatula to prepare homogeneous mixture. Gelatine and preservative were added to this and was heated until complete melting. Honey was added to mixture and poured into lubricated mould and allowed to set in the refrigerator for 30 min. The prepared oviform shaped Varti of 3g each were stored in refrigerator to avoid disintegration and contamination.

Physicochemical analysis

This Darvyadi Yoni Varti was analyzed by using various standard physicochemical parameters at Pharmaceutical Chemistry Laboratory. Parameters such as, loss on drying,^[8] pH,^[9] water soluble extract, and methanol soluble extract^[10] as per Ayurvedic Pharmacopoeia of India (API) were considered.

High performance thin layer chromatography

Methanolic extract of Darvyadi Yoni Varti was spotted on pre coated silica gel GF₂₅₄ aluminum plate as 5 mm bands, 5 mm apart and 1 cm from the edge of the plates, by means of a Camang Linomat V sample applicator fitted with a 500 µL Hamilton syringe. Toluene (8 ml) and ethyl acetate (2 ml) was used as the mobile phase. After development, densitometric scanning was performed with a Camag TLC scanner III (version 3.14) in reflectance absorbance mode at 254 nm and 366 nm under control of win CATS software (version 3.17). The slit dimensions were 6 mm × 0.45 mm and the scanning speed was 20 mm/s.^[11] Mild polar component like phenolic acid, sterols well-discriminated through this solvent system hence toluene was selected as solvent in this study.

Results and Discussion

Organoleptic study

The initial purpose of the study was to confirm the authenticity of the drugs used in the preparation of Darvyadi Yoni Varti. Results matched with the API and thus confirmed the genuineness of all the raw drugs. Organoleptic features of Darvyadi Yoni Varti were observed like brown in color, astringent in taste and slippery in touch with a smooth surface [Table 2].

Microscopic study

Darvyadi Yoni Varti shows fragments of pitted vessels, crystal fibers, fibers, starch grains (Darvi), prismatic crystal, oil globule, tanin, lignified fiber (Lodhra), yellow content, fiber, oil globule, starch grains (Haridra) under microscope [Figures 1-12].

Physicochemical parameters

Physicochemical parameters of the Varti like uniformity, hardness, loss on drying were all found to be 90% within the normal range. The water soluble extract and methanol soluble extract values were found to be 23.3% w/w and 8.7% w/w, respectively. Loss on drying was observed 71.73% [Table 3].

Loss on drying was found 71.73% due to the use of decoction in Varti which is more prone to degradation. For that propyl para ben sodium salt was added in preparation as preservative. Ash value was due to the presence of Gairika and Sphatika and inorganic constituents of herbal drugs. Water soluble extract was 23.3% indicating that the drug is having good solubility in water.

High-performance thin layer chromatography

HPTLC under 254 nm showed 10 spots at 0.02, 0.45, 0.53, 0.64, 0.70, 0.79, 0.82, 0.087, 0.92 and 0.96 R_f values and under 366 nm showed 3 spots at 0.02, 0.45 and 0.92 R_f values [Table 4, Figures 13 and 14]. Mainly trigger phenolic

Table 1: Ingredients of Darvyadi Yoni Varti

Ingredients	For 1 tablet of 3 g
Kwatha (decoction) of Darvi, Lodhra and Haridra	2.5 ml
Madhu (honey)	0.16 ml
Suddha Sphatika	0.06 g
Suddha Gairika	0.05 g
Gelatin powder	1.3 g
Propylparaben sodium salt	0.01 g

Table 2: Organoleptic features of Darvyadi Yoni Varti

Characters	Observed
Texture	Smooth
Color	Brown
Odor	Gelatinus odor
Taste	Astringent
Consistency	Slippery

Table 3: Physicochemical parameters of Darvyadi Yoni Varti

Test	Value
Loss on drying (at 110°C)	71.73% w/w
Ash value	5.16% w/w
Water soluble extraction	23.3% w/w
Methanol soluble extraction	8.7% w/w
pH value	5.0

Table 4: Thin layer chromatography

Densitometry	Sports	R _f value
At 254 nm	10	0.02, 0.45, 0.53, 0.64, 0.70, 0.79, 0.82, 0.87, 0.92, 0.96
At 366 nm	3	0.02, 0.45, 0.92

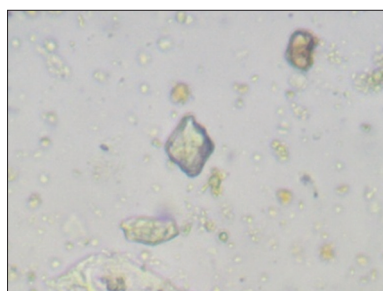


Figure 1: Prismatic crystal - *Lodhra*



Figure 2: Fragment of pitted vessel - *Darvi*

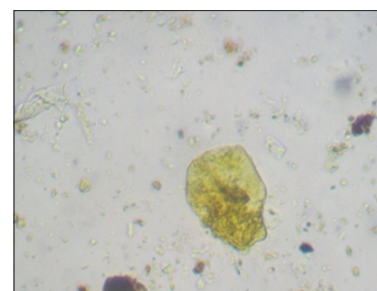


Figure 3: Yellow content - *Haridra*

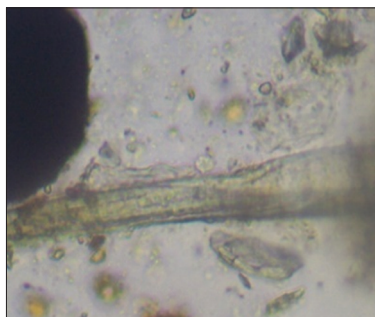


Figure 4: Crystal fiber - *Darvi*



Figure 5: Lignified fiber - *Lodhra*

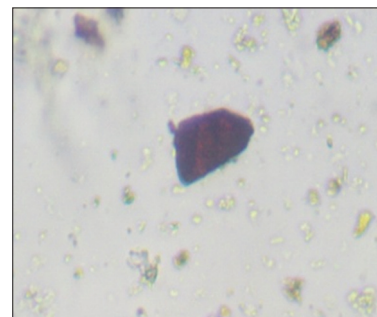


Figure 6: Tanin - *Lodhra*

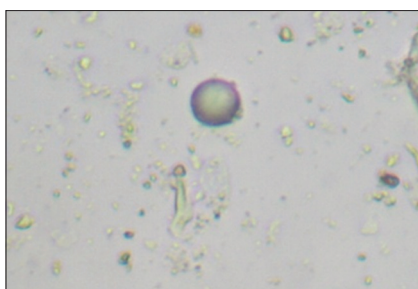


Figure 7: Oil globule - *Lodhra*



Figure 8: Fiber - *Haridra*



Figure 9: Fiber - *Darvi*



Figure 10: Oil globule - *Haridra*

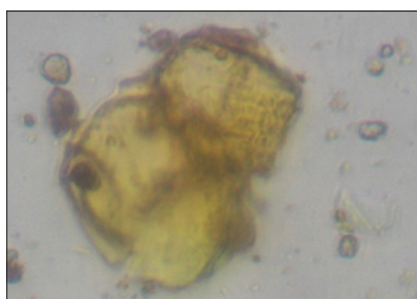


Figure 11: Starch grains - *Haridra*

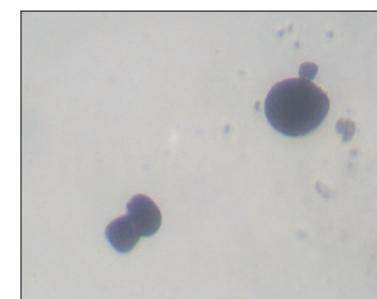


Figure 12: Starch grains - *Darvi*

acid and sterols type molecules and TLC patent obtained can be used as finger printing of the final product.

Conclusion

Pharmacognostical and phytochemical evaluation of *Darvyadi Yoni Varti* illustrated the specific characters of all ingredients which were used in the preparation. In TLC, 10 spots at

254 nm and 3 spots at 366 nm were found. Toluene as solvent can be used as separation method. Though the groundwork requisites for the standardization of *Darvyadi Yoni Varti* were covered in the current study, additional important analysis and investigations are required for the identification of all the active chemical constituents of the test drug to substantiate the clinical efficacy. The inference from this study may be used as a reference standard in further quality control researches.

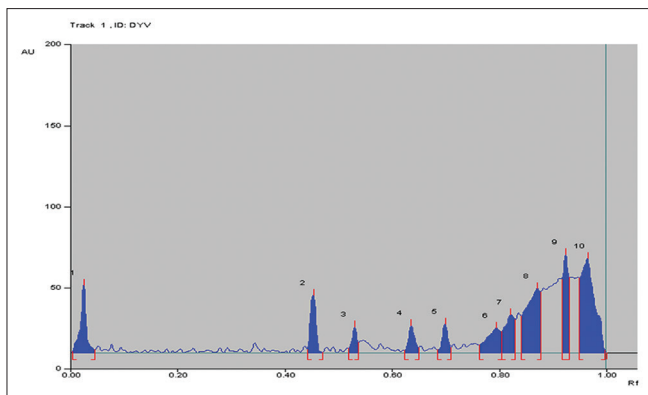


Figure 13: Densitometry at 254 nm

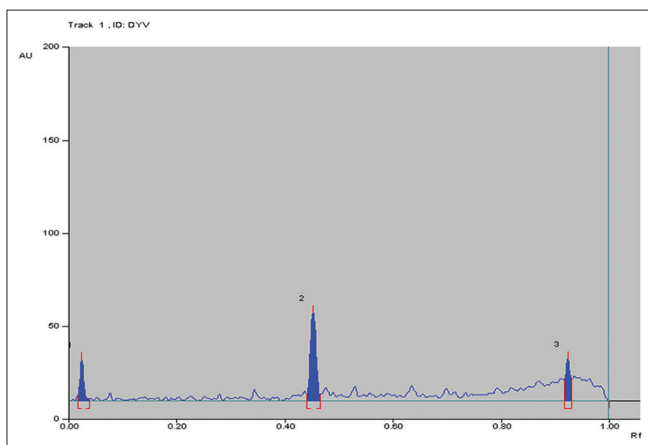


Figure 14: Densitometry at 366 nm

References

1. Tripathi KD. Essential Medical Pharmacology. 5th ed. New Delhi: Jaypee Brothers Medical Publisher LTD; 2003. p. 6.
2. Neelam, Neeraj K. Management of cervical erosion. AYU Int Res J Ayurveda 2009;30:171-4.
3. Insler V, Lunenfeld B. Diagnosis and classification of sperm – Mucus interaction. Infertility; Male and Female. 2nd ed. Edinburgh, London, Madrid, Melbourne, New York and Tokyo: Churchill Living Stone; 1993. p. 345.
4. Padubidri VG, Shirish ND. Carcinoma of the cervix. Shaw's Textbook of Gynaecology. 13th ed. Delhi: Elsevier; a Division of Reed Elsevier India Private Limited Delhi Publication; 2005. p. 382.
5. Acharya VJ, editor. Sushruta, Sushruta Samhita, Chikitsa Sthana, Vridhyupadansha-Shlipada Chikitsa Adhyaya, 19/40. 9th ed. Varanasi: Chaukhambha Orientalia; 2007. p. 477.
6. Anonymous. The Ayurvedic Pharmacopoeia of India. 1st ed., Vol. 5. Part-I. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2004.
7. Khandelwal KR. Practical Pharmacognocny. Pune: Nirali Prakashan; 2008. p. 149-66.
8. Anonymous. The Ayurvedic Pharmacopoeia of India. 1st ed., Vol. I, Part I. Appendix-2. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 1999. p. 214 (2.2.9).
9. Anonymous. The Ayurvedic Pharmacopoeia of India. 1st ed., Vol. I, Part I. Appendix-3. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 1999. p. 230 (3.3).
10. Anonymous. The Ayurvedic Pharmacopoeia of India. 1st ed., Vol. I, Part I. Appendix-2. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 1999. p. 214 (2.2.6, 2.2.7).
11. Kalasz H, Bathori M. Past accomplishment, presents status and future perspectives of thin layer chromatography. LC-GC Magazine 1997; 15 (11):1044.

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हिन्दी सारांश

आयुर्वेदिक औषधि दाव्यादि योनि वर्ती का प्रारम्भिक भौतिक-रासायनिकी अध्ययन

अमित व्ही. रूपापरा, शिल्पा बी. दोंगा, सी.आर. हरीशा, विनय जे. शुक्ला

भौतिक-रासायनिकी विश्लेषण औषधि के मानकीकरण एवं गुणवत्ता नियंत्रण तथा उत्पादन कि गुणवत्ता को सुनिश्चित करने की दिशा में एक महत्वपूर्ण कदम है। प्रस्तुत अध्ययन में दाव्यादि योनि वर्ती के घटक द्रव्यों का परिचयात्मक एवं रासायनिक विश्लेषण किया गया है। सभी घटक द्रव्यों के परिचयात्मक नामरूप लक्षण सामान्य परिधि के अन्तर्गत पाये गये। उक्त वर्ती का भार २६६+१०% मि.ग्रा., पी.एच.५.००, शुष्क होने पर भार में कमी ७१.७३%w/w, राख ५.१६%w/w, जल धुलनशील सत्व २३.३%w/w तथा मिथेनोल धुलनशील सत्व ८.७%w/w पाया गया। औषधि का HPTLC के माध्यम से मानकीकरण किया गया।