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Pharmacognostical and Phytochemical Standardization of *Nimbadi Yoni Varti* - An Ayurvedic Formulation

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ABSTRACT

In the era of technology, when the manufacturing of *Ayurvedic*drugs become the part of industrial business, then the standard parameters to check the market quality of drugs should be necessary then and then by the invincible *Ayurvedic*science, treatment will be found efficacious. Present work had been carried out to analyzethe *Nimbadi yoni varti*for their Physico-chemical parameter. The present study will assist in standardization for quality, purity and sample identification. Various standardization parameters like morphological characters, microscopic evaluation, physicochemical evaluations, preliminary phytochemical screening and TLC chromatographic profile of the drug were carried out and the qualitative parameters were reported. Pharmacognostical and phyto-chemical observations revealed the specific characters of all active constituents used in the preparation. The presence of tannin, fibers, sclerides, stone cells and calcium oxalate crystals were the characteristic features observed in the microscopy of drug combination. Phyto-chemical analysis showed that average weight of*varti* is 3.5gm, disintegration time 1 hrs, pH 5.0, water soluble extract 36.88% w/w , Methanol soluble extract 4.212% w/w, Ash value 3.95% w/w, Loss on drying 33.84% w/w.Qualitative analysis showed the presence of alkaloids, tannins, flavonoids, saponins and anthraquinon glycosides. These studies provide referential information for correct evaluation and standardization of the *Nimbadi yoni varti.*

Keywords:*Nimbadi yoni varti*, *Shwetapradar*, Abnormal vaginal discharge, Pharmacognosy, Phyto-chemistry.

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INTRODUCTION

Ayurveda is the oldest holistic management system with meticulously documented medicines and being practiced by a large population in India and abroad. The development of this traditional system of medicine with perspectives of safety, efficacy and quality will help not only to preserve the traditional heritage but also to rationalize the use of natural products in health care.[1,2] Majority of the remedies are based on plants and plants products along with animal origin as well as minerals. The subject of herbal drug standardization is massively wide and deep. The WHO has appreciated the importance of medicinal plants for public health care in developing Nations and has evolved guidelines to support the states members in their efforts to formulate national policy on traditional medicines and to study their potential usefulness including evaluation, safety and efficacy.[3]

Nimbadi yoni varti[4]an Ayurvedic formulation consists of *Neem, Triphala, Madhu&Sphatika* is an *Anubhuta yoga* indicated for *Shwetapradar* (Abnormal vaginal discharge) which is considered as a *Vata-KaphaPradhanaTridoshajaVyadhi*.

In the classical texts, many systemic and local preparations like *Yoni Pichu (veginalTampon), Yoni Prakshalana (Douche), Yoni Varti*(Suppositories) etc. have been mentioned. Among them *VartiKalpana* (Suppositories) was selected for the present study. It is convenient for patients to administer by own, needs no precaution or supervision. As in modern science vaginal suppositories are of fixed dose. To resemble that parameter vaginal suppository were prepared for the standardization of*Nimbadi yonivarti*, based on organoleptic, microscopic, physico-chemical, phytochemical parameters and HPTLC study.

MATERIAL AND METHODS:

Drug material:

Triphala, Madhu, Sphatika were collected from the Pharmacy of IPGT & RA, Fresh *Nimbapatra* from Botanical garden &Gelatine was purchased from market before preparation of drug. The ingredients and the part used are given in (Table 1)

Table 1: Ingredients of*Nimbadi Yoni varti*

Sr.num	Drug	Latin Name	Family	Part used
1	*Nimba*	*Azadirachtaindica*A. Juss.	Meliaceae	Leaf
2	*Amalaki*	*Emblicaofficinalis*Linn.	Euphorbiaceae	Fruit
3	*Haritaki*	*Terminaliachebula Retz.*	Combretaceae	Fruit
4	*Bibhitaki*	*Terminaliabellirica*Roxb.	Combretaceae	Fruit
5	*Madhu*	*ApisceranaFabr.*(source)	Apidae	-
6	*Sphatika*	Alam		whole

Table: 2: Ingredients of *Nimbadi Yoni Varti* for 3gm Suppository

Sr.num	Ingredients	For 1 tab. of 3 gm.
1	*Kwatha* of *Nimba* and Triphala	3.33ml
2	*Madhu*	0.16ml
3	*Sphatika*	0.11gm
4	Gelatine powder	1.3gm
5	Methyl-P-Hydroxy Benzoate	0.01gm
6	Paraffin Liquid	as lubricant

Pharmacognostical Evaluation

As per API[5] guideline raw drugs were identified and authenticated inPharmacognosyDept, IPGT & RA, Jamnagar. The identification was carried out based on the organoleptic features and powder microscopy of the individual drugs. Later, Pharmacognostical evaluation of *Nimbadi yoni varti*was carried out. *Varti*dissolved in small quantity of distilled water, studied under the Carl zeisstrinocular microscope attached with camera, with stain and without stain. The microphotographs were also taken.

Preparation of *Nimbadi yoni varti*

For preparation of *Nimbadi Yoni varti* , drugs was collected from Pharmacy of Gujarat Ayurved University, Jamnagar and was prepared at Rasashastra department I.P.G.T & R.A, Gujarat Ayurved University Jamnagar.

NimbadiKwatha(*NimbaPatra*:*TriphalaYavakuta*-3:1) hadprepared by *KwathaVidhi*(1/8 reduction of water) then filtered it & evaporated by mild heatingto made it semi solid. ThenGelatine powder had added in *kwatha*, stirring by help of spatula& heated till melt into a homogeneous mixture. Then*Su.Sphatika*,*Madhu*& preservative added to it and the whole mixture became poured into lubricated mould and allowed to set in refrigerator. Finally the *Varti* had packed in Aluminium foil. The whole process is repeated by three to four times and evaluatedinPharmacognosyDept, IPGT & RA, and Jamnagar.

Weight of each *varti* : About 3 gm.

Shape: Oviform

Size:About 1.5" x 0.5" cm

Colour&odour:Dark Green in colour with specificodour,

Storage: kept in well closed polythene bags and stored in refrigerator. Ingredients of *Nimbadi Yoni Varti* (suppository) for 3 gm suppository are given in (Table 2)

This *Varti*was analyzed using various standard physicochemical parameters such as, Loss on drying,[6]pH,[7] water soluble extract,[8] and methanol soluble extract[9] as per APIat the pharmaceutical chemistry lab.

Qualitative tests[10]

The presence of Alkaloids, Glycosides, Flavonoids, Saponin, Reducing sugar Carbohydrates, Volatiles oils and Tannins were confirmed through suitable tests.

Thin layer Chromatography[11]

Measured volume of the sample was evaporated to dryness, the residue was extracted with methanol by maceration and the sample for spotting was prepared. T.L.C. study of the samples was carried out by using the following conditions:

Sample Preparation

Each extract residue was re-dissolved in 1ml of chromatographic grade methanol and water which was used for sample application on pre-coated silica gel G pre-coated plates.

Developing Solvent System

A number of solvent systems were tried, for extracts, but the satisfactory resolution was obtained in the solvent Toluene: Ethyl acetate in the ratio of 6.5:4.0for methanolic extract of *Nimbadi yoni Varti*.

Sample Application

Application of bands of each extract was carried out (4mm in length and 1µl in concentration) using spray technique. Samples were applied in duplicate on pre-coated silica gel G plates (5 x 10 cm) with the help of Linomat 5 applicator attached to CAMAG TLC system, which was programmed through WIN CATS software.

Development of Chromatogram

After the application of sample, the chromatogram was developed in Twin trough glass chamber 10 x 10 cm saturated with and Toluene: Ethyl acetate in the ratio of 6.5:4.0 for methanolic extract.

Detection of Spots

The air-dried plates were viewed in ultraviolet radiation to mid-day light. The chromatograms were scanned by densitometer at 254 nm for methanolic extract and &366nm after spraying with 10% Ferric chloride for aqueous extract The Rf values and finger print data were recorded by WIN CATS software.

Microscopic

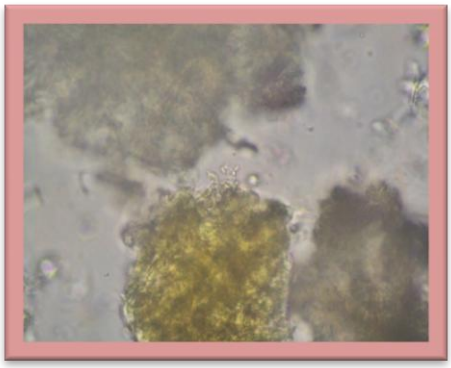
Microscopic evaluation was conducted by dissolving *Nimbadi yoni varti*in distilled water and studied under microscope with and without stain for the presence of the characteristics of the ingredient drugs and for the probable changes in features if any. The microphotographs were taken by using Carl Zeiss Trinocular microscope.

RESULTS AND DISCUSSION:

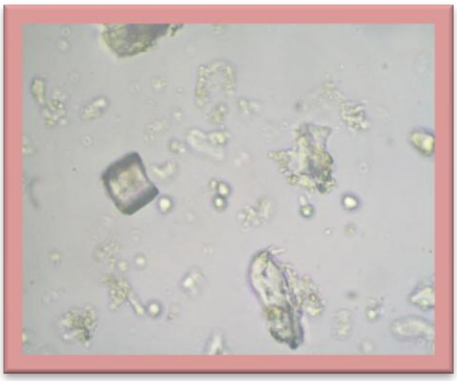
Pharmacognostical study

Microscopic Characters of *Nimbadi yoni varti*

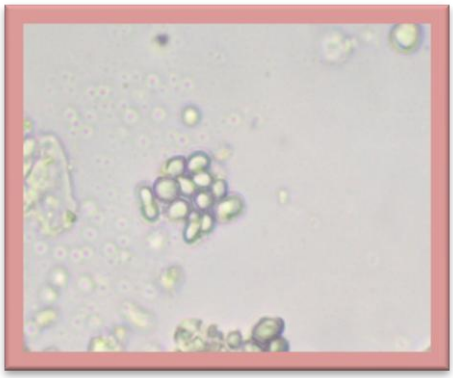
Characteristics of all the ingredient drugs were identified in *Nimbadi yoni varti*showed the presence of prismatic crystal, simple trichomes of *nimba*(*AzadirachtaIndica*), epicarp cells, stone cells of *haritaki*(*Terminaliachebula*), unicellular blunt trichome, rosette crystals of *bibhitaki*(*Terminaliabellirica*), fibres, silica crystals of *amalaki*(*Emblicaofficinalis*). (Figure 1 & 2)



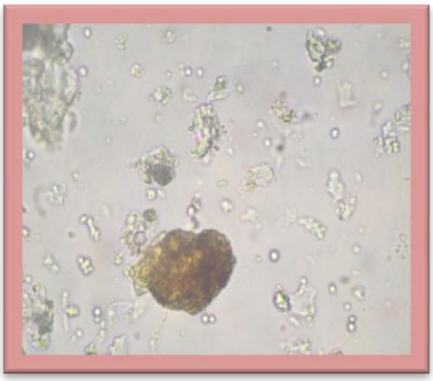
Tanin content of Amalaki



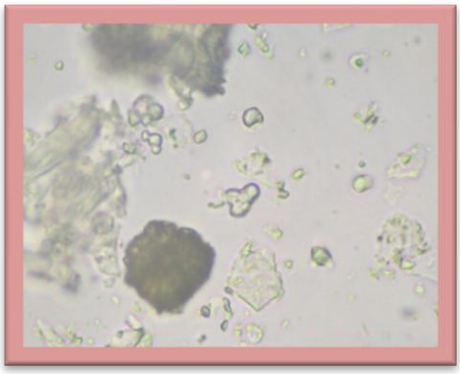
Silica deposition of Amalaki



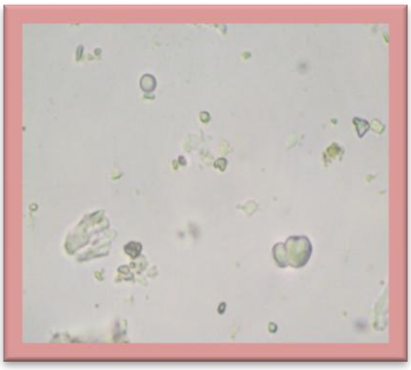
Starch grains of Amalaki



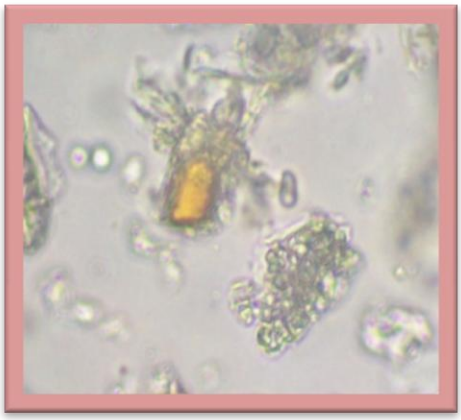
Tanin content of Bibhitaki



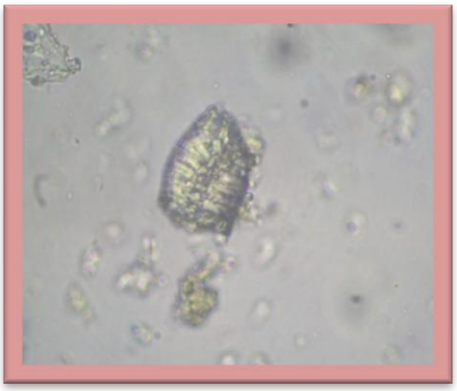
Rosette crystal of Bibhitaki



Starch grains of Bibhitaki



Tanin content of Haritaki

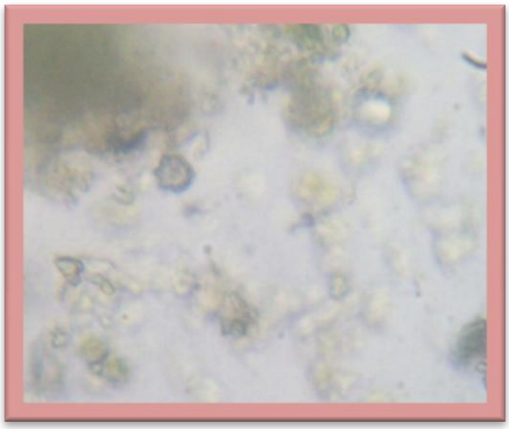


Stone cell of Haritaki

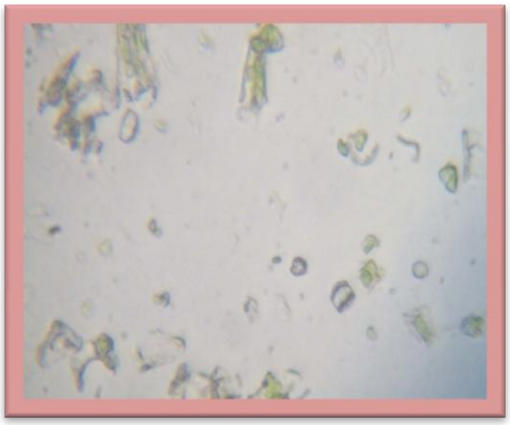
Scleroid of Haritaki

Figure 1: Image of Powder microscopy of Triphala

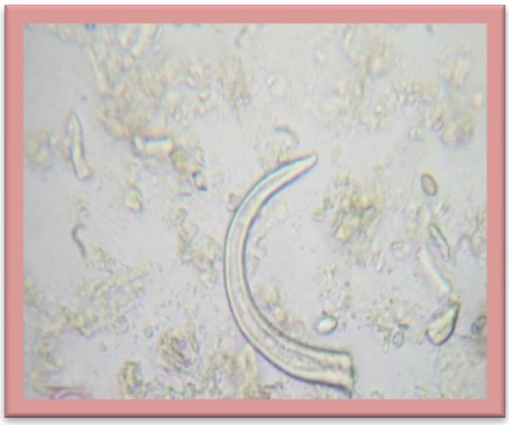
T.S. of Neem Leaf



Cluster crystal



Prismatic crystal



Unicellular simple trichome

Group of fibers

Figure 2: Image of T.S. & Powder microscopy of Neem*(Azadiractaindica)*

Organoleptic parameters of*Nimbadi yoni vartii.e.*Sparsha – Consistency, Rasa – Taste,Rupa – Colour, Gandha - Odour were studied. (Table 3)

Pharmacognostical evaluation of*Nimbadi yoni varti*revealed the specific characters of*Azadirachtaindica* ,*Emblicaofficinalis* , *Terminaliachebula* , *Terminaliabellirica* present in the preparation.

Physico-Chemical Parameters

Physico-Chemical parameters of the*Nimbadi yoni varti*like pH, Loss on drying, water soluble extract, and methanol soluble extract were all found to be within the normal range. (Table 4)

Table: 3 Showing Organoleptic characteristics of *Nimbadi Yoni Varti*

Sr.no.	Parameters	*Nimbadi yoni varti*
1.	Colour	Dark green
2.	Odour	Characteristic aromatic
3.	Taste	Kasaya, Tikta.
4.	Consistency	Solid

Table: 4 Showing Physico-chemical parameters of *Nimbadi Yoni Varti*

Parameters	*Nimbadi yoni varti*
Uniformity of weight (Ounces)	
Maximum weight	0.1336883
Minimum weight	0.1061746
Average weight	0.1252226
Disintegration time	1 hrs
pH Value (By pH meter)	5.0
Water soluble extractive	36.88 % w/w
Methanol soluble extract	4.212% w/w
Ash value	3.9% w/w
Loss on drying	33.84% w/w

The study revealed that quantitative pharmaceutical analysis was in normal range and in accordance with those mentioned in reference. The results of ash value revealed that the preparation have lower value than mentioned in API.

Qualitative test for various functional groups revealed the presence of tannins, alkaloids; flavanoids, saponin glycosides, reducing sugars, and Volatile oil are present in drug. (Table 5)

Table: 5 Showing Qualitative tests for various functional groups of *Nimbadi Yoni Varti*

Name of Test	Result
Test For Carbohydrates	+ve
Test For Reducing Sugar	+ve
Test For Fats & Oils	+ve
Test For Steroids	-ve
Test For Glycosides	-ve
Test For Cardiac Glycosides	-ve
Test For Saponin Glycosides	+ve
Test For Flavonoids	+ve
Test For Alkaloids	+ve
Test For Tannins & Phenolic Compound	+ve

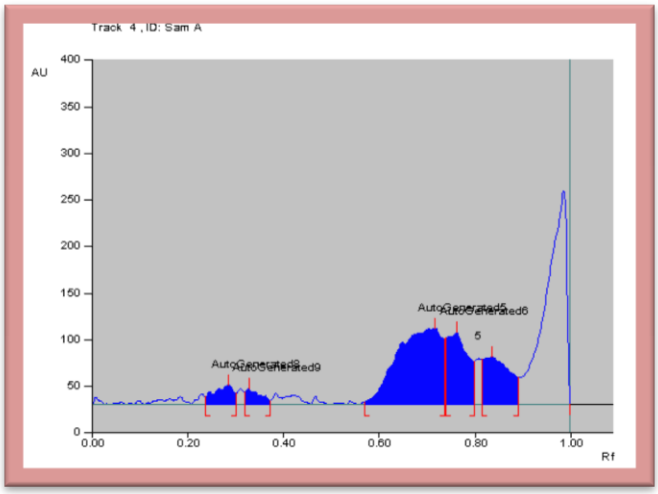
More than 30 % w/w of water soluble active ingredients contents in the preparation accounts that *varti* is formed by *kwatha*. The herbal preparations were found to contain phytochemicals such as:saponin, tannins, alkaloids, Flavonoids and glycosides. These phytochemicals are known to have antimicrobial effects.[12] Tannins, are known to possess antimicrobial properties against the yeast Candida albicans and against phytopathogenic fungi species.[13]*Nimbadi yoni varti*contain these phytochemical on qualitative analysis.

Thin layer Chromatography -

Five spots corresponding to Rf values 0.01, 0.46, 0.63, 0.72 and 0.81 were obtained when the TLC plate was visualized at 366 nm UV light. Whereas four spots corresponding to Rf values 0.01, 0.65, 0.74 and 0.82 were obtained for when the TLC plate was visualized at 254nm UV light. After the spray of FeCl3 solution 3 spots were obtained. (Figure 3,4,5) & (Table 6).

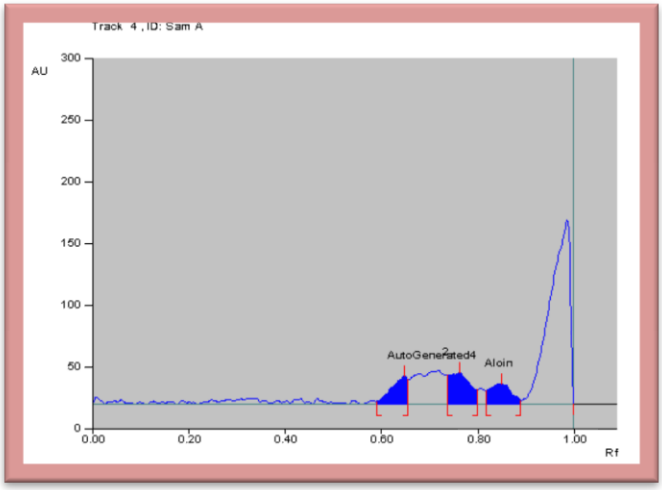
Table-6 Thin Layer Chromatography results of *Nimbadi Yoni Varti*

Before Spray UV-366nm		UV-254nm		After Spray 10%$Fecl_3$	
No. of Spot	Rf Value	No. of Spot	Rf Value	No. of Spot	Rf Value
1	0.01	1	0.01	1	0.41
2	0.46	2	0.65	2	0.58
3	0.63	3	0.74	3	0.75
4	0.72	4	0.82		
5	0.81				



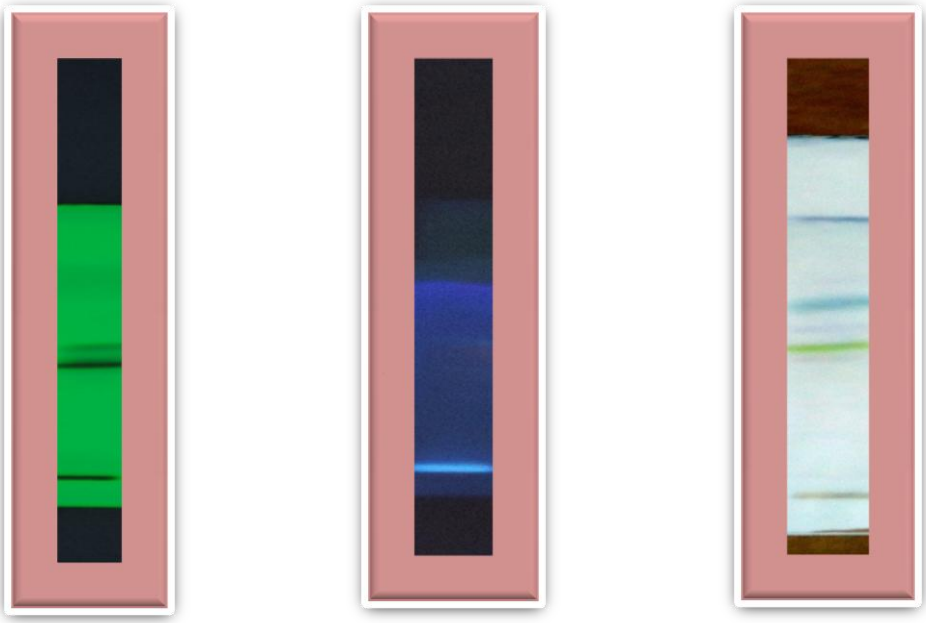
DENSITOMETRY AT 254 nm

Figure 3: Image of Densitogram of Nimbadivarti showed a characteristic peak at 254 nm



DENSITOMETRY AT 366 nm

Figure 4: Image of Densitogram of Nimbadivarti showed a characteristic peak at 254 nm



254NM 366NM AFTER SPRAY

Figure 5: Image of HPTLC of NimbadiVarti at 254 & 366 nm before and after spray.

CONCLUSION:

In a country like India, providing modern health care facility with expensive medicines is still in infancy, especially in rural sections. So, it is prudent to look for options in herbal medicines. Hence, in the recent years, ethnomedical studies have received much attention as they bring to light the numerous known and unknown medical virtues, especially of plant origin, which need studies on modern scientific lines like phytochemical investigation, pharmacological screening and human studies. Various important Pharmacognostical activities as discussed in the present review. The component of vartiare astringents and anti-inflammatory, reduce the secretion of discharge, pain, redness, swelling helps in quicker epithelialization and normal condition of vulva and vagina. Additionally, it is imperative that more pre-clinical and clinical studies along with the establishment of better quality control methods should be conducted to elucidate the unexplored potential of this varti.

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