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# DRUG STANDARDIZATION AND ANALYTICAL STUDY OF NIMBADI YONI VARTI

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## ABSTRACT

In *Ayurveda Samhita, Acharyas* getting good results by using different *ayurveda* drug but in modern scenario to acceptance world widely traditional *ayurvedic* formulation needs to be standardized based on modern parameters. *Sthanika chikitsa* is having satisfactory results in *Yonivyapada*. The present study will assist in standardization for quality, purity and sample identification of *Yonivarti.* The presence of Therapeutic properties in herbs make them pharmacologically important. *Nimbadi Yoni Varti* was prepared in GMP certified Pharmacy and pharmaceutical and analytical study was carried out various standardization parameters like morphological characters, physicochemical evaluations, preliminary phytochemical screening and the HPTLC analysis of *Nimbadi Yoni Varti* in the form of chromatograms shows several peaks which shows having much amount of phytochemicals which enhances therapeutic value of the drug. So, the study concludes that this formulation is safe to use. Phyto-chemical analysis showed that Loss on Drying at 110 c is 10.065 (%w/w), Total Ash Value 1.8068 (%w/w), Water soluble extractive value 44.7(%w/w), Alcohol soluble extractive value 63 (%w/w), pH Value 6, *Varti* Average weight 3.276 (%w/w), *Varti* Highest weight 8.94 (%w/w), *Varti* Lowest weight 11.87(%w/w), *Varti* dissolution time 30min.

**Key word: *Nimbadi Yonivarti*, Pharmacological Analysis, HPTLC, *Garbhashaya greevagata vrana***

**INTRODUCTION:**

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 **[1]**. *Ayurvedic* texts, mentioned some *sthanika chikitsa* in management of *Yonivyapada* like; *Yoni Dhawana, Yoni Pichu, Yoni Dhoopan, Yoni Abhyanga, Yoni Varti* etc. The references of number of *varti* are mentioned under treatment of various disease like *Yoni Varti* in *Yonivyapad, Dhuma Varti, Gudavarti* etc. **[2]** *Yoni Varti* should be used for *Yonivishodhana* and *Vrana Ropan* by its local effects. Medicinal effect is faster than oral route because drug absorb directly into vaginal epithelium. It is capable to cure and prevent Discharge, Unctuousness, cervical erosion, Itching etc genital tract diseases or any complications. Drugs for application on *Vrana* for *Vrana Shodhana* are mentioned in *Ayurvedic* texts. Like *Bhavprakash Nighantu* that wicks made up of purifying drugs are to be used in *Vrana* **[3]**. *Nimbadi Yoni Varti* is *Ayurvedic* formulation consists of *Nimba, Haritaki, Amalaki, Bibhitaki, Madhu* and *Sphatika,* it is *anubhuta yoga* **[4]**. In Parul Institue of Ayurved, a study has been carried out previously on Physiochemical Analsis and Drug Standardisation of *Panchakashaya Yoni Varti* **[5]**.

**1. AIM AND OBJECTIVE:** - To standardization and high performance thin layer chromatography (HPTLC) analysis of the *Nimbadi Yoni Varti* prepared for clinical studies on the basis of physiochemical parameters.

**2. MATERIALS AND METHODS: -**

**2.1 Collection of drugs:-** The raw drugs were produced by standard Raw Herbal Drug Suppliers, Vadodara, Gujarat. All the raw drugs were identified and authentication done by the Department of Dravyaguna, Parul Institute of Ayurved, Limda, Vadodara **[6]**.

**2.2 Preparation of *Nimbadi Yoni Varti*:- (Figure 1)** *Yonivarti* was prepared in GMP approved PIA Pharmacy.

- Ingredients *(Nimba: Hartitaki, Amalki, Bibhitaki)* will be taken 3:1 in quantity and will be pounded separately and sieved to obtain fine powders and then all powders will be mixed uniformly.
- To this, 8 times of water will be added and boiled. When the mixture will be reduced to 1/4th; heating should be stopped.

- Filter and will be heated again, till it becomes Ghana in consistency and then heating should be stopped and add Honey and Suddha Sphatika and mix well.
- The mass will be made into *Varti* form of 3gm each.
- It will be dried in shade and stored in air tight container without moisture by adding drying agent.

**Table 1: Ingredients of Nimbadi yoni Varti**

| Drug | Latin name | Family | Rasa | Guna | Virya | Vipak | Karma | Usefull part |
|---|---|---|---|---|---|---|---|---|
| *Nimba* | *Azadirachta indicaJuss* | *Meliaceae* | *Tikta, kasaya* | *Laghu Ruksa* | *Sheet* | *Katu* | *Krmighna, sothahara, Kandugna, kushthagna, Rakta shodhak* | Patra |
| *Amalaki* | *Embilica officinalis gareth* | *Euphorbiaceae* | *Amlapradhan lavan varjita pancarasa* | *Tulsa, laghu, sara* | *Sheet* | *Madhur* | *Tridosahara* | Fruit |
| *Bibhitaki* | *Terminalia belerica* | *Combretanceae* | *Kasaya* | *Ruksha, laghu* | *Usna* | *Madhura* | *Krimighna, bhedana* | Fruit |
| *Haritaki* | *Terminalia chebula* | *Combretaceae* | *Pancharasa (expect lavan)* | *Laghu, ruksha* | *Usna* | *Madhura* | *Tridosa samak* | Fruit |
| *Madhu* | *Apis mellifera* | *Apidae* | *Madhur, kashay* | *Picchil, ruksha, yogavahi* | *Sheet* | *Katu* | *Ropan, shodhan, sandhankar, prasadan* | - |
| Sphatika | *Potassium alum K2SO4(Al2SO4)3 24H2O* | | | | | | | |

**Figure 1: Preparation of *Nimbadi Yoni vart***

2.2 **ANALYTICAL STUDY**: - The physio-chemical parameters of *Nimbadi Yoni Varti* were analyzed at pharmaceutical chemistry laboratory of PIA, Vadodara. *Nimbadi Yoni Varti* was analyzed by various analytical parameters like:

**2.2.1** Determination of loss on dry: - This parameter determine the amount of volatile matter (i.e. water drying off from the drug). About 10gm of drug was taken in evaporating dish. After that dry at 110˚C for 5 hrs. and weigh again.

**2.2.2** Weight variation test: -Test of uniformity of weight is performed by weighing 10 *Varti* which is selected

randomly from batch and determining their weights. The individual weights are compared with the average weight.

**2.2.3** Determination of total ash: - About 3gm of pounded drug was taken in a silica dish and burnt at temperature below 450˚C.

**2.2.4** Determination of water-soluble Ash: - Ash was boiled with 25ml water for 5 minutes; insoluble matter was collected on ashless filter paper, washed with hot water and heated for 15 minutes straight at temperature below 450 ˚C. weight of insoluble matter is subtracted from weight of ash; this difference in weight is Water Soluble Ash.

**2.2.5** Determination of Acid Insoluble Ash: -Ash obtained was boiled for 5 minutes with 25ml of diluted HCL, then the insoluble matter was collected on ashless filter paper. Then washed with hot water and heated straight for 15 minutes. The weight of insoluble matter is subtracted from weight of ash; this difference in weight is acid insoluble ash.

**2.2.6** Determination of Alcohol Soluble Extractive: - 2 gm of drug was taken and 40ml of Alcohol added to it and was placed for 24 hours. Obtained mixture was filtered and solvent was evaporated. The material was placed in bottom shallow dish and dried at 105˚C at constant.

**2.2.7** Determination of Water Soluble Extractive: - This test was carried out to evaluate the water soluble principle of the sample. About 5gm of drug, accurately measure with 100ml of distilled water in a closed flask for twenty-four hours, shaking frequently during six hours and allowed to stand for eighteen hours. Filtered rapidly, taking precaution against loss of solvent and 25 ml of the filtrate was evaporated to dryness in a tarred flat bottom shallow dish. First dried over water-bath and than at $105^0$C in hot air oven, to constant weight and weight was noted down. From the weight of the residue the percentage of water-soluble extractive was calculated with reference to air-dried sample.

**2.2.8** pH value: - A 10% w/v aqueous solution of drug was prepared, filtered and the pH of the filtered and the pH of filtrate was noted in digital pH meter using combined glass electrode.

**2.3 RESULT AND DISCUSSION:**

**2.4 HPTLC FINGERPRINTING: [7]**

The HPTLC (High performance thin layer chromatography) analysis for the Methanol extract of *Nimbadi Yonivarti* was carried out.

The Chromatography was performed on 10 × 10 cm thin layer chromatography (TLC) plates coated with 0.2 mm layers of silica gel F254 (Merck). The samples were applied to the plate as 6 mm wide bands by means of a Linomat 5 sample applicator (CAMAG, Switzerland). The plate was developed to a distance of 8.0 cm with Toluene:Ethyl Acetate:Methanol (9:1:1 v/v/v) as mobile phase in a CAMAG twin-trough chamber saturated with mobile phase vapor. The plate was then dried and scanned after derivatisation at 254 nm and 366 nm by use of a CAMAG TLC scanner 3 using winCATS 4 software (CAMAG, Switzerland).

**Figure 2, Figure 3** shows the HPTLC chromatograms and Densitometric scans of Nimbadi Yonivarti at UV 254 nm and UV 366 nm using (Toluene: Ethyl acetate: Methanol: Formic Acid (10:8:1:1 v/v)) and **Table 4 and 5** gives the Rf values of the same. 6 spots were visualised at UV 254 nm and UV 366 nm for *Nimbadi Yonivarti.*

HPTLC densitometric scan of *Nimbadi Yonivarti* at UV 254 nm and 366 nm shows 6 peaks with varied heights **(Figure 2 and 3)**. Maximum peak height is observed in the peak with Rf values of 0.47 and 0.62 at 254nm and 366 nm respectively. The peak with the maximum peak height observed in the sample with Rf value 0.6 at visualisations UV 366 nm and 540 nm corresponds to Ellagic acid present in *Hareethaki* (*Terminalia chebula*). Spots which are indicative of presence of Tannic acid is observed at Rf value 0.74 in the sample under both visualisations. There is presence of spots at Rf value 0.78 under both visualisations which indicate the presence of Gallic acid **[8]**. Presence of a spot at Rf value 0.47 closely indicates the presence of Nimbolide in *Nimba* **[9]**.

**Table 2: Organoleptic characteristics of *Nimbadi Yoni Varti***

| | |
|---|---|
| **Color** | **Black** |
| **Odor** | **Characteristic bitter smell** |
| **Shape** | **Oval** |
| **Consistency** | **Semisolid** |

**Table 3: Physico-chemical parameters of *Nimbadi Yoni Varti***

| | **SAMPLE** | ***Nimbadi yoni varti*** |
|---|---|---|
| **Sr No.** | **PARAMETER** | **Value** |
| **1.** | **Loss on Drying at 110 c(%w/w)** | **10.065** |
| **2.** | **Total Ash Value (%w/w)** | **1.8068** |
| **4.** | **Water soluble extractive value (%w/w)** | **44.7%** |
| **5.** | **Alcohol soluble extractive value (%w/w)** | **63%** |
| **6.** | **pH Value** | **5.8** |
| **7** | **Varti Average weight (%w/w)** | **3.276** |
| **8.** | **Varti Highest weight (%w/w)** | **8.94%** |
| **9.** | **Varti Lowest weight (%w/w)** | **11.87%** |
| **10.** | **Varti dissolution time (in mins)** | **30 min** |

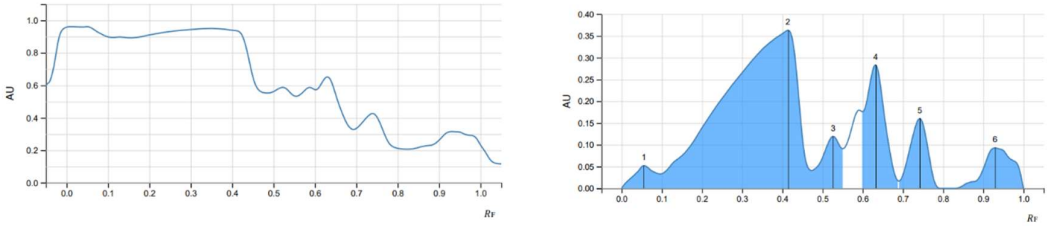


**Figure 2: Densitometric Scan and Chromatogram of *Nimbadi Yoni Varti* at 254 nm**

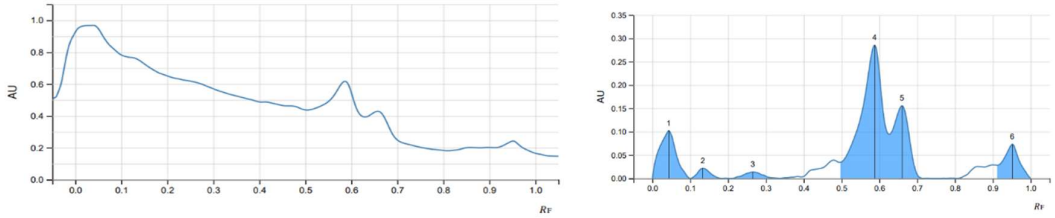


**Figure 3: Densitometric Scan and Chromatogram of *Nimbadi Yoni Varti* at 366 nm**

**Table 4: Rf for *Nimbadi Yonivarti* at 254 nm visualisation**

| Sl. No. | End Rf value | Max Height | End Area% |
|---|---|---|---|
| 1 | 0.096 | 0.0522 | 2.73% |
| 2 | 0.472 | 0.3628 | 64.97% |
| 3 | 0.550 | 0.1192 | 5.56% |
| 4 | 0.689 | 0.2832 | 13.05% |
| 5 | 0.792 | 0.1602 | 6.92% |
| 6 | 1.000 | 0.0930 | 6.77% |

**Table 5: Rf for *Nimbadi Yoni Varti* at 366 nm visualisation**

| Sl. No. | End Rf value | Max Height | End Area% |
|---|---|---|---|
| 1 | 0.100 | 0.1020 | 14.25% |
| 2 | 0.181 | 0.0218 | 2.22% |
| 3 | 0.336 | 0.0136 | 2.13% |
| 4 | 0.625 | 0.2851 | 50.96% |
| 5 | 0.715 | 0.1554 | 20.89% |
| 6 | 1.000 | 0.0730 | 9.55% |

## CONCLUSION:

*Ayurveda Samhitas* describe its own methodology of explaining the nature of plants and its properties. In modern era drug is standardize and analysis according to specific line of examination study. In these study Organoleptic, phytochemical and HPTLC analytical study is done. The component of *varti* are anti inflammatory, anti cancer, anti viral, antibacterial, antioxidant properties. On the basis of observation and experimental results, these study may also helpful as reference in further quality control researches.

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