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**ORIGINAL ARTICLE** **OPEN ACCESS**

# Pharmacognostical and Phyto-Chemical Standardization of *Jyotishmatyadi Vati*: A Polyherbal Formulation

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**ABSTRACT**
*Jyotishmatyadi Vati is indicated for Vandhya Chikitsa by regulating the menses irregularities (Artavakshaya – Oligomenorrhoea/Hypomenorrhoea/Secondary amenorrhoea). The present work was carried out to standardize the finished product Jyotishmatyadi Vati to confirm its identity, quality and purity by Pharmacognostical and phyto-chemical analysis. Observations showed the specific characters of all active constituents used in this preparation. The presence of amino acids, tannins, flavonoids were the characteristic features observed in the microscopy of drug combination. Phyto-chemical analysis showed that Solid Content 11.21% w/w, Water soluble extract 50.3 % w/w, Alcohol soluble extract 16.51 %w/w. On the basis of this study, further quality control standardization & researches may be carried out on Jyotishmatyadi Vati.*
***Keywords:*** Ayurved, *Jyotishmatyadi Vati, Artavakshaya*, Pharmacognostic analysis, Phyto-chemical analysis

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## INTRODUCTION

Ayurvedic Herbal as well as Herbomineral medicines are in great demand of use, as natural origin, having less side effects and mode of action by *sampraptivighatana* of rogas. *Kharaleeya rasayana*, preparations takes minimal time for drug preparation, easy for manufacturing as well as storing, with minimum efforts. They also occupies maximum portion of raw material as compare to *churna, kwatha-yavakuta,swarasa* etc. *Jyotishmatyadi Vati*, basically the reference mentioned in *Yogaratnakara- Vandhya Chikitsa* by taking all the four raw drugs *Jyotishmati,Rajika,Yavanika,Asana* in freshly prepared formulation, they will bring the menses immediately within 3 days.[1] Thus for the study of *Artavakshaya[2,3,4]* it will be beneficial by regularizing the menstrual irregularities. The ingredients of this formulations are easily available and it's easy to prepare in vatiform. All the drugs are in equal proportion and having *katu,tikta-rasa,ushna -veerya,katu-vipaka, vata-kaphahara* in *doshaghnata*. All these properties are useful in *sampraptivighatana* of *artavakshaya* by doing *Srotoshodhana* as well as *rajahpravartana. Artavakshaya* is one of the most leading gynaecological disorder faced by women at any stage of life nowadays which may present with clinical manifestations as Oligomenorrhoea, Secondary amenorrhoea, Scanty menstruation, infertility [5] too. It may create emotional distress. In modern medicine it is treated by oral contraceptive pills, these can also cause side effects. So here in *Jyotishmatyadi Vati* - the drug has property of *vatanulomana, srotoshodhana, artavajanana*. The present study aimed to standardize the finished product of *Jyotishmatyadi Vati* using pharmacognostical and phytochemical parameters.

## MATERIAL AND METHODS

### Collection, Identification and authentication of raw drugs:

The raw drugs for the study were procured from the authentified pharmacy with proper documentation. The ingredients were identified and authenticated in the Pharmacognosy Laboratory of Parul Institute of Ayurved, Parul University, Vadodara. The ingredients and parts used and proportion are listed in **Table no.1** and showed in photographs, which were collected & cleaned in vibro shifter and dried. Finely powder done in disintegrator and filtered in sieve number 89. Kwath of same dravya prepared by adding 4 parts of water and reduced by 1/4$^{th}$. Bhavana given with prepared kwath in end-runner machine followed by making homogeneous lumps. They were kept in tray and dried in oven. These dry lumps

were again passed through disintegrator for making granules/powder. They were passed through tablet making machine for making 500mg tablets. Tablets packed in air tight bottles followed by labeling.

**Table 1: Ingredients, Part used and Proportion used in the *Jyotishmatyadi Vati***

| S.No. | Name | Bot. Name | Part | Proportion |
|---|---|---|---|---|
| **1** | *Jyotishmati* | *Celastruspaniculata* | *Patra* | 1 |
| **2** | *Rajika* | *Brassica juncea* | *Beeja* | 1 |
| **3** | *Ugra/Yavanika* | *Trachyspermumammi* | *Beeja* | 1 |
| **4** | *Asana* | *Pterocarpusmarsupium* | *Sara* | 1 |

**Table 2: Organoleptic properties of *Jyotishmatyadi Vati***

| Sample | JYOTISHMATYADI VATI | CHATURBEEJA VATI |
|---|---|---|
| Color | Light Brown | Dark Brown |
| Odour | Pleasant | Bitter |
| Taste | Astringent (Kashaya) | Bitter (Tikta) |
| Consistency | Tablet Form (Solid) | Tablet Form (Solid) |

The drugs enlisted from 1 to 4 (Table 1) were washed, dried and made into fine powder and then sieved in mesh no. 80 separately. The ingredients 1 to 4 were mixed well in quantity as per formulation in mass mixing machine till a homogenous mixture was obtained. After cooling the prepared material for 15 minutes, it is filtered and stored in plastic containers. Phyto-chemical analysis of drug *Jyotishmatyadi Vati,* was analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory, All Physico-chemical parameters such as Loss on drying, Total Ash Value,Acid Insoluble Ash ,water soluble extract, Alcohol soluble Extract, Friability test etc were determined (Table 3).

**Table 3 :Physico-chemical parameters of *Jyotishmatyadi Vati***

| S.No | Test | Sample |
|---|---|---|
| 1 | Loss on drying at 110° C (%w/w) | 11.21% w/w |
| 2 | Total Ash Value (%w/w) | 0.20 % w/w |
| 3 | Acid Insoluble Ash (%w/w) | 0.09 % w/w |
| 4 | Water soluble Extractive value (%w/w) | 50.3 %w/w |
| 5 | Alcohol soluble Extractive value (%w/w) | 16.51%w/w |
| 6 | PH Value (10% Aqueous) | 6 |
| 7 | Friability test (%w/w) | 0 |
| 8 | Tablet Disintegration (in minutes) | 12.31 |
| 9 | Tablet Hardness (kg/cm$^2$) | 1.9 |
| 10 | Tablet Average Weight<br>Percentage of Lowest weight %w/w<br>Percentage of Highest weight %w/w | 502mg<br>5.37<br>12.59 |

**High performance thin layer chromatography (HPTLC)**

Preparation of Test solution: Methanol extract of *Jyotishmatyadi Vati* was used for High performance thin layer chromatography (HPTLC) study.1 g of sample was weighed accurately in an Iodine flask. To it 20 ml methanol was added, and refluxed for 10 minutes. Then after, filtered with the help of Whatman filter paper No.1.the filtrate thus obtained was used for HPTLC fingerprinting.

Preparation of Spray reagent [Anisaldehyde-sulphuric acid reagent] : 0.5ml Anisaldehyde is mixed with 10ml Glacial acetic acid, followed by 85ml Methanol and 5 ml Sulphuric acid (98%).

**Table 4 :Chromatographic Conditions:**

| | |
|---|---|
| Application Mode | CAMAG Linomate 5 – Applicator |
| Filtering System | Whatman filter paper No.1 |
| Stationary Phase | MERCK – TLC/HPTLC Silica gel 60 $F_{254}$ on Aluminum sheets |
| Application Y axis Start Position | 10mm |
| Development End Position | 80mm from plate base |
| Sample Application Volume | 5 microL |
| Distance Between Tracks | 0mm |
| Development Mode | CAMAG TLC Twin Trough Chamber |
| Chamber Saturation Time | 30 minutes |
| Mobile Phase (MP) | Toluene : Ethyl acetate (7:3 v/v) |
| Visualization | @254 nm,@366 nm and @540 nm (after derivatization) |
| Spray reagent | Anisaldehyde Sulphuric acid reagent |
| Derivatization mode | CAMAG – Dip tank for about 1 minute |
| Drying Mode, Temp.&Time | TLC Plate Heater Preheated at 100 ±5°C for 3 minutes |

**Table 5: HPTLC of *Jyotishmatyadi Vati* (Methanol Extract)5*1(a),5*1(b),5*2(a),5*2(b),5*3(a),5*3(b),**

| S.No. | Visualizing condition | No of spots | Rf value |
|---|---|---|---|
| 1 | 254 nm | 4 | 0.18,0.31,0.69,0.85 |
| 2 | 366 nm | 8 | 0.09,0.27,0.31,0.42,0.69,0.79,0.85,0.93 |
| 3 | 540nm | 9 | 0.09,0.20,0.24,0.31,0.37,0.62,0.69,0.79,0.85 |

**DISCUSSION**

Chemical composition of *Jyotishmati* are glycosides, proteins & amino acids, tannins, carbohydrates, flavonoids, saponins. These plant has pharmacological activities like hypolipidemic, antioxidant, antifertility, analgesic, antidepressant. *Rajika* contains glucosinolates, volatile components, polyphenolic compounds – include flavonoids, tannins, having properties like anti-oxidation, anti-inflammatory, anti-obesity, anti-depression. *Yavanika* having tannins, glycosides, saponins, iron, nicotinic acid as chemical constitutes. It also works as anti-spasmodic, fungicide, anti-inflammatory potential, detoxification, antimicrobial actions. *Asana* has chemical composition like iso-flavonoids, terpenoids, beta- sitosterol, pterosupin, pterostilbene, kintannic acid and marsupol. It is anti-diabetic, antioxidant, anti inflammatory activity, antibacterial and analgesic [1,2].

*Jyotishmatyadi Vati* also contains the good physico-chemical parameters – having less moisture content-so less chances of contamination with fungus and other parasites, less organic content making its metabolism and absorption quicker for digestion; good water soluble capacity makes it easy for metabolism as body also contains maximum liquid/water content [3-5]. The weak acidic pH – that shows *agneyatva* & *ushnata* of *dravya* which is beneficial for *artavajanana* (menstruation as well as ovulation), having appropriate hardness, which promotes dissolution and absorption in the body.(Table no.3)These parameters make *Jyotishmatyadi Vati* suitable for *Artavakshaya* with remarkable results [6,7].

Fig.1. Jyotishmati Patra

Fig. 2**.** Asana

Fig.3.Yavanika

Fig.4.Rajika

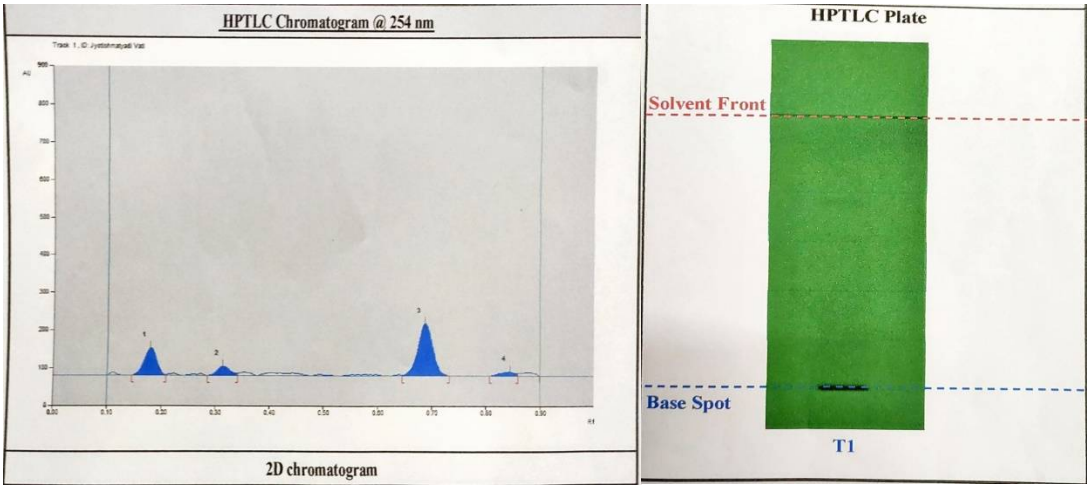


**Fig.5*1(a)** HPTLC Chromatogram @ 254 nm of Jyotishmatyadi Vati **Fig. 5*1(b)** 2D Chromatogram

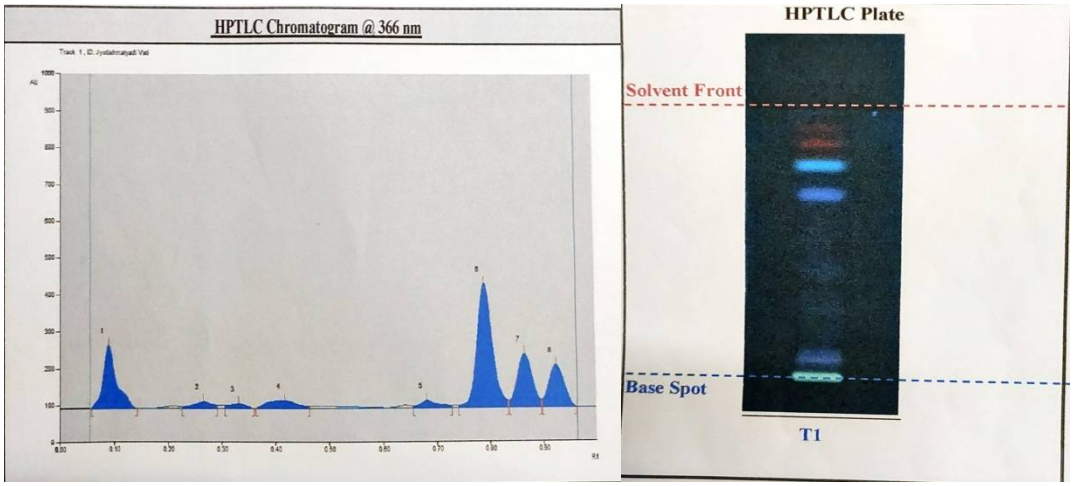


**Fig.5*2(a)** HPTLC Chromatogram @ 366 nm of Jyotishmatyadi Vati **Fig.5*2(b)** 2D Chromatogram

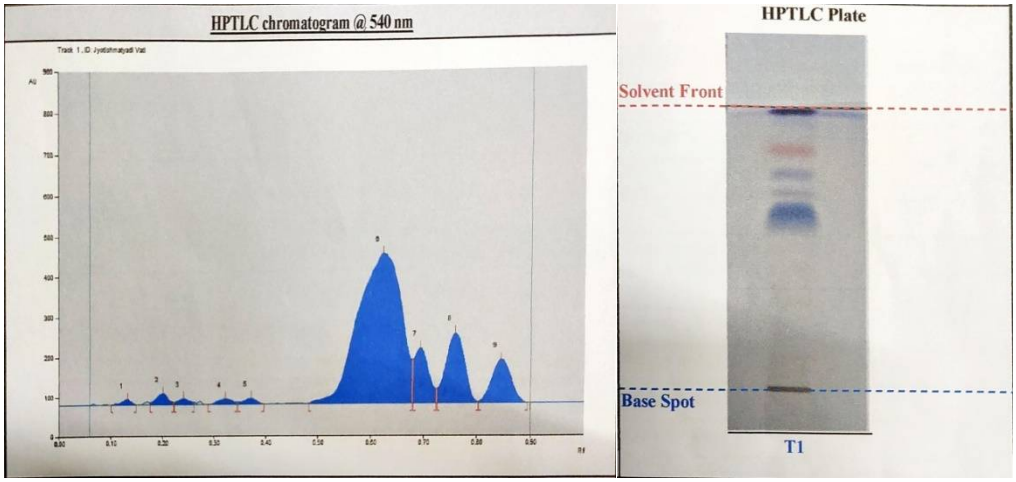


**Fig.5*3(a)** HPTLC Chromatogram @ 540 nm of JyotishmatyadiVati **Fig. 3(b)** 2D Chromatogram

## CONCLUSION

Pharmacognostical and phyto-chemical evaluation of *Jyotishmatyadi Vati* illustrated the specific characters of all ingredients which were used in the preparation. The weak acidic pH of the preparation is the cause for inducing *Agneyatwa*, helping in induction and regularization of menstruation and ovulation. For the first time, this pharmaceutical preparation *Jyotishmatyadi Vati* which was economical in terms of time and machinery usage was tried for the evaluation. On the basis of observations and experimental

results, this study may be used as reference standard in the further quality control researches. Further studies may be carried out on *Jyotishmatyadi Vati*based on identification and separation of active ingredients with the help of various Biomarkers.

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