Pharmacognostical and Phytochemical Evaluation of VasadiKwatha- An Ayurvedic Polyherbal Formulation

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Abstract
The woman is considered as one of the most essential factors for the continuity of the human race. WHO defines normalbirth as spontaneous in onset, low-risk at the start of labour and remaining so throughout labour and delivery. AcharyaCharakahas used a new term ‘PrasutiMaruta’ i.e., the function of ApanaVayu (PrasutiMaruta) to expel the foetus. So, the PrakrutaApanaAndVyanaVayuare very much essential for PrakrutaPrasava. VasadiKwatha is an Ayurvedic poly herbal formulation used for Basti for normalization of these Vayus. The present work was carried out to standardize the finished product “VasadiKwatha” in terms of its identity, quality and purity. Pharmacognostical and phyto-chemical observations revealed the specific characters of all active constituents used in the preparation. The pharmacognostical study revealed the presence of group of Stone cells, Starch grain, Pitted vessel, Prismatic crystal, Starch grains, Cork fibers, Simple Trichome, Pitted stone cells and Scleroides etc. Pharmaceutical analysis showed that the loss on drying value was 7.2 % w/w, Ash value 7.7% w/w, water soluble extraction 66% w/w, methanol soluble extraction 33.3% w/w, pH value 6.5. Particle size, Percentage of fine powder = 55.7% w/w, Percentage of very fine powder = 13.88% w/w. HPTLC finger printing profile of VasadiKwatha revealed 6 spots at 254nm and 4 spots on 366nm.

Keywords
VasadiKwatha, Basti, PrakrutaPrasava, Pharmacognosy

Received 27/12/16 Accepted 01/02/17 Published 10/03/17
INTRODUCTION

“Woman is the origin of the progeny”. In a pregnant woman, the Prakrutha function of Apana and VyanaVayus are very much essential for normal delivery. At the time of parturition, if any one of it is vitiated, then it leads to VilambitaPrasava (Prolong labour), MoodhaGarbha (Obstructed labour) etc. which convert the Prasava from normal to abnormal. In Ayurvedic literature, many drugs and procedures are mentioned to achieve Prakrutaprasavasaas a part of GarbhiniParicharya.

Basti is considered as best therapy in Vataic disorders & Anulomana of Vata. ApanaVayu plays an important role along with VyanaVayu for normal uterine function i.e. contraction and relaxation. Uterine muscles are involuntary muscles. VyanaVayu, which is situated in whole body’s functions are Gati (motion), Akshepa (contraction), Prasarana (relaxation) etc. When proper time of Prasava comes, the VyanaVayu stimulates the uterus for contraction and relaxation in the uterine muscles and due to its influence, ApanaVayu becomes active to expel the Garbha outside the Garbhasaya.

In the context of mechanism of normal labour, Acharya Charaka [ch.sha.6/24] has used a new term ‘PrasutiMaruta’ which may be correlated with combined and coordinated function of Apana & vyanaVayus especially for process of expulsion of foetus or GarbhaNishkramana. The function of ApanaVayuparticularly is to expel the foetus, while VyanaVayu is to stimulate the myometrium of the uterus. So, in a pregnant woman, the Prakrutha Apana and VyanaVayus are very much essential for conduct of normal delivery, for which Acharyas have instructed to give Basti. At the same time, for expulsion of foetus, the stretching of ligaments is very much essential, when the Vayu is in its normal direction and then the expulsion of foetus from the birth canal is very easy. Bastiof Vasadi Kwathais the best drug for Vatanulomana. Its normal function is expulsion of foetus through natural passage without any complication.

MATERIALS AND METHODS

Collection, Identification and authentication of raw drugs

The raw drugs for the study were procured form the Pharmacy of Gujarat Ayurved University, Jamnagar. The ingredients were identified and authenticated in the Pharmacognosy Institute for Post Graduate
Table 1 Ingredients of VasadiKwatha [Acharya Priyavat Sharma]  

<table>
<thead>
<tr>
<th>Sr.no.</th>
<th>Name</th>
<th>Latin name</th>
<th>Part used</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pippli</td>
<td>Piper longam Linn.</td>
<td>Dry Fruit</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Pipplimoola</td>
<td>Piper longam Linn.</td>
<td>Root</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Chavya</td>
<td>Piper retrofractum Linn.</td>
<td>Root</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Chitraka</td>
<td>Plumbago zeylanica Vahl</td>
<td>Root</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Nagara</td>
<td>Zingiber officinale Rose</td>
<td>Rhizome</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Vasa</td>
<td>Adhatodavasica Nees</td>
<td>Dry leaves</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Haritaki</td>
<td>Terminalia chebula Retz.</td>
<td>Dry fruit</td>
<td>10</td>
</tr>
</tbody>
</table>

Method of Preparation of VasadiKwatha [Sha.M.Kh.2/1-2]  

VasadiKwathaDravyas – 50gm  
16 Part of water added (800ml)VasadiKwathaDravyasin amount of 50gm and 16 parts of water (800ml) were added for Kwatha then Shesha-200ml of Kwatha  

Pharmacognostical evaluation of ingredients of VasadiKwatha-  

Organoleptic study:  
Individual powders were subjected for various sensory characters like colour, taste, odour, and touch were carefully noted.  

Powder microscopy:  
The powder of respective parts was taken on a glass slide covered with cover slip and observed under the Carl Zeiss microscope with stain (Phloroglucinol and Conc. HCl) and without stain, to study various characteristics. Microphotographs were taken by using Carl Zeiss Trinocularmicroscope attached with camera.  

Physicochemical study:  
VasadiKwathawas analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar by using various standard physico-chemical parameters such as Loss on drying, water soluble extract, alcohol soluble extract etc.  

HPTLC (High Performance Thin Layer Chromatography)  
Methanolic extract of VasadiKwathacompound was spotted on pre-coated 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 campage, linomate V sample applicator fitted with a 100 μL. Hamilton syringe was used as the mobile phase. After development,
densitometry scanning was performed with a camague TLC scanner III reflectance absorbance mode at 254 nm and 366 nm under control of win CATS software (V 1.2.1 manufactured by CAMAGE Switzerland). The slit dimensions were 6.00 x 0.45 mm and the scanning speed was 20 mm per second and microscopic evaluation separately to confirm the genuineness of all the raw drugs. Later after the preparation of formulation, pharmacognostical evaluation was carried out.

RESULTS AND DISCUSSION

Table 2 Organoleptic characters of *VasadiKwatha*

<table>
<thead>
<tr>
<th>Characters</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Greenish brown</td>
</tr>
<tr>
<td>Taste</td>
<td>Astringent followed by Katu rasa</td>
</tr>
<tr>
<td>Odour</td>
<td>Slightly Aromatically</td>
</tr>
<tr>
<td>Consistency</td>
<td>Coarse Powder</td>
</tr>
</tbody>
</table>

Microscopic Study

Microscopic evaluation was conducted by dissolving powder of *VasadiKwatha* in the distilled water and studied under microscope for the presence of characteristics of ingredient drugs. The diagnostic character microscopically characters of individual powder are shown in PLATES1-14. *Pippali* have the contents of the group of stone cells, in *Pippalimoola* Starch grains and Pitted vessel, in *Chavya* Prismatic crystal and Pitted vessels in *Chitraka*, in *Shunthi* Starch grains, Cork fibres, in *Vasa* Simple Trichome, Pitted vessel and Compound starch, in *Haritaki* Pitted stone cells and Sclerides are present. (plate 1-14). All ingredients were identify under microscopy in the laboratory of pharmacognocy of IPGT&RA GAU Jamnagar.

Physicochemical tests

Table 3 Physicochemical analysis of *VasadiKwatha*:

<table>
<thead>
<tr>
<th>No.</th>
<th>Practical name</th>
<th><em>VasadiKwatha</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Particle size</td>
<td>(a) Percentage of coarse powder = 70.67 % w/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Percentage of moderately fine powder = 84.3% w/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Percentage of fine powder = 55.7%w/w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Percentage of very fine powder = 13.88 %w/w</td>
</tr>
<tr>
<td>2.</td>
<td>Loss on drying (at 110°C)</td>
<td>7.2 % w/w</td>
</tr>
<tr>
<td>3.</td>
<td>Ash Value</td>
<td>7.7 % w/w</td>
</tr>
<tr>
<td>4.</td>
<td>Water soluble extraction</td>
<td>66 % w/w</td>
</tr>
<tr>
<td>5.</td>
<td>Methanol soluble extraction</td>
<td>33.3%w/w</td>
</tr>
<tr>
<td>6.</td>
<td>pH value by pH meter</td>
<td>6.5</td>
</tr>
</tbody>
</table>

HPTLC Study

On analyzing under demonstrator at 254 nm the chromatogram showed 6 peaks and at 366nm 3 peaks. Three dimensional densitogram (3D) at 254 and 366nm shows comparative Rf value of sample with standard (Figure 1 and 2).

DISCUSSION
Pharmacognostical evaluation showed that the VasadiKwatha contains all the ingredients, which were observed in the microscopical characters. Phytochemical analysis showed that material gains no moisture during storage, so quality of the product is not affected.

Figure 1 Densitogram of VasadiKwatha at 254 and 366nm

![Densitogram of VasadiKwatha at 254 and 366nm]

Table 4 The findings of HPTLC at 366nm and 254nm UV light (Methanol Extract)

<table>
<thead>
<tr>
<th>Wavelength</th>
<th>Sports</th>
<th>RF Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 254 nm</td>
<td>6</td>
<td>0.03, 0.15, 0.20, 0.30, 0.92, 0.99</td>
</tr>
<tr>
<td>At 366 nm</td>
<td>3</td>
<td>0.03, 0.20, 0.92</td>
</tr>
<tr>
<td>Vaniline sulphuric acid (after spray)</td>
<td>3</td>
<td>0.03, 0.12, 0.94</td>
</tr>
</tbody>
</table>

Figure 2 Three dimensional HPTLC (3D) Densitogram

![Three dimensional HPTLC (3D) Densitogram]

254nm 366nm

The obtained values of these tests were found within normal limits which indicate good quality of product. All physicochemical parameters of VasadiKwatha showed that loss on drying value was 7.2% w/w, Ash value 7.7% w/w,
Plate no. 1-14

1. Group of stone cells of *Pippali*
2. Stone cells of *Pippali*
3. Cork cells of *Pippalimoola*
4. Pitted vessels of *Pipplaimoola*
5. Prismatic crystals of *Chavya*
6. Scleroids of *Chavya*
7. Cork cells of *Shunti*

8. Fibres of *Shunti*

9. Compound starch of *Vasa*

10. *Vasa*-Pitted vessel

11. Pitted stone cells of *Haritaki*

12. Sclerides of *Haritaki*

13. Pitted stone cells of *Chitraka*

14. Pitted vessels of *Chitraka*
water soluble extraction 66%w/w, methanol soluble extraction 33.3%w/w, pH value 6.5, Particle size (a) Percentage of coarse powder = 70.67% w/w,(b) Percentage of moderately fine powder = 84.3% w/w ,(c) Percentage of fine powder = 55.7%w/w,(d) Percentage of very fine powder = 13.88%w/w. All tests are normal in limit and shows that the product is good in quality. HPTLC results showed that the 6 spots at 254 nm and 3 spots at 366 nm.

CONCLUSION
Pharmaogonostical and phytochemical evaluation of VasadiKwatha illustrated the specific characters of all ingredients which are used in the preparation. The pitted vessels, prismatic crystal,Sclerides etc. are observed in the ingredients. All the physicochemical parameters like acid value, saponification value, iodine value, refractive index, specific gravity analyzed are within the normal range. The result show the quality of the preparation is standard, further studies may be carried out on it on the basis of observations made and results of experimental studies, this study may be beneficial for future researchers and can be used as a reference standard in the further quality control researches.
REFERENCES


