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Pharmacognostical and Phytochemical Evaluation of *Vasadi Kwatha*- An Ayurvedic Polyherbal Formulation

Rajkrinti[1]*, Laxmipriya Dei[2], Harisha C.R.[3] and Shukla V.J.[4]

[1]Department of Streeroga and PrasootiTantra, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

[2]Department of Streeroga and PrasootiTantra, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

[3]Department ofPharmacognosy, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

[4]Department of Pharmaceutical Chemistry, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

Abstract

The woman is considered as one of the most essential factors for the continuity of the human race. WHO defines normal birth as-spontaneous in onset, low-risk at the start of labour and remaining so throughout labour and delivery. *Acharya Charaka* has used a new term '*Prasuti Maruta*' i.e., the function of *Apana Vayu* (*PrasutiMaruta*) to expel the foetus. So, the *Prakruta Apana* and *Vyana Vayu* are very much essential for *Prakruta Prasava*. *Vasadi Kwatha* 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 "*Vasadi Kwatha"* 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/wHPTLC finger printing profile of*Vasadi Kwatha* revealed 6 spots at 254nm and 4 spots on 366nm.

Keywords

VasadiKwatha, Basti, Prakruta Prasava, Pharmacognosy

Greentree Group

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INTRODUCTION

"Woman is the origin of the progeny". In a pregnant woman, the *Prakruta* function of *Apana* and *Vyana Vayus* are very much essential for normal delivery. At the time of parturition, if any one of it is vitiated, then it leads to *Vilambita Prasava*(Prolong labour*)*, *Moodha Garbha* (Obstructed labour*)* etc. which convert the *Prasava* from normal to abnormal. In Ayurvedic literature, many drugs and procedures are mentioned to achieve *Prakrutaprasava*as a part of *Garbhini Paricharya.*

Basti is considered as best therapy in *Vatic* disorders & *Anulomana* of *Vata*. *Apana Vayu* plays an important role along with *VyanaVayu* for normal uterine function i.e. contraction and relaxation. Uterine muscles are involuntary muscles. *Vyana Vayu*, which is situated in whole bodyit'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, *AcharyaCharaka[ch.sha.6/24]*has used a new term "*PrasutiMaruta'* which may be correlated with combined and coordinated function of *Apana & vyana Vayu* especially for process of expulsion of foetus or *Garbha Nishkramana*. The function of *Apana Vayu* particularly is to expel the foetus, while *Vyana Vayu* is to stimulate the myometrium of the uterus. So, in a pregnant woman, the *Prakruta Apana* and *Vyana Vayus* 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. *Basti* of *Vasadi Kwatha*is 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 Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar

Table 1 Ingredients of Vasadi Kwatha [*AcharyaPriyavatSharma*][2]

Sr.no.	*Name*	*Latin name*	**Part used**	**Proportion**
1	*Pippli*	*Piper longam*Linn.	Dry Fruit	*2*
2	*Pipplimoola*	*Piper longam*Linn.	Root	*2*
3	*Chavya*	*Piper retrofractum*Linn.	Root	*2*
4	*Chitraka*	*Plumbagozeylanicam*Vahl	Root	*2*
5	*Nagara*	*Zingiberofficinale*Rose	Rhizome	*2*
6	*Vasa*	*Adhatodavasica*Nees	Dry leaves	*5*
7	*Haritaki*	*Terminaliachebula*Retz.	Dry fruit	*10*

Method of Preparation of *VasadiKwatha* [*Sha.M.Kh.*2/1-2][3]

Vasadi Kwatha Dravyas – 50gm

16 Part of water added (800ml) *Vasadi Kwatha Dravyas* in amount of 50gm and 16parts of water (800ml) were added for *Kwatha then Shesha*-200ml of Kwatha

Pharmacognostical evaluation of ingredients of *Vasadi Kwatha-*

***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 Trinocular microscope attached with a camera[4].

***Physicochemical study*:**

Vasadi Kwatha was analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar byusing various standard physico-chemical parameters such as Loss on drying, water soluble extract, alcohol soluble extract etc[5].

HPTLC(High Performance Thin Layer Chromatography)

Methanolic extract of *Vasadi Kawatha* compound 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 camage, 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 camage 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[12].

RESULTS AND DISCUSSION

Table 2 Organoleptic characters of *Vasadi Kwatha*

Characters	Results
Colour	Greenish brown
Taste	Astringent followed by Katu rasa
Odour	Slightly Aromatically
Consistency on Touch	Coarse Powder

Microscopic Study[6-9]

Microscopic evaluation was conducted by dissolving powder of *Vasadi Kwatha* 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 *Pippali moola* 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 *Vasadi Kwatha:*

No.	Practical name	*VasadiKwatha*
1.	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
2.	Loss on drying (at 110^0C)	7.2 % w/w
3.	Ash Value	7.7 % w/w
4.	Water soluble extraction	66 % w/w
5.	Methanol soluble extraction	33.3%w/w
6.	pH value by pH meter	6.5

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 *Vasadi Kwatha* 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.

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

Wavelength	Sports	Rf Value
At 254 nm	6	0.03, 0.15, 0.20, 0.30, 0.92, 0.99
At 366 nm	3	0.03, 0.20, 0.92
Vaniline sulphuric acid (after spray)	3	0.03, 0.12, 0.94

Figure 1 Densitogram of *Vasadi Kwatha*at 254 and 366nm

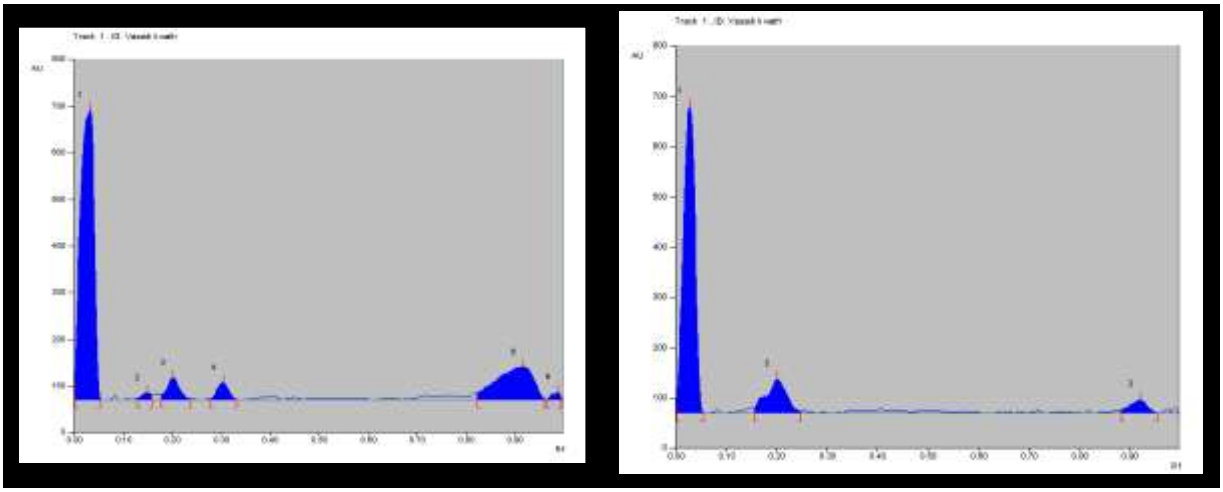
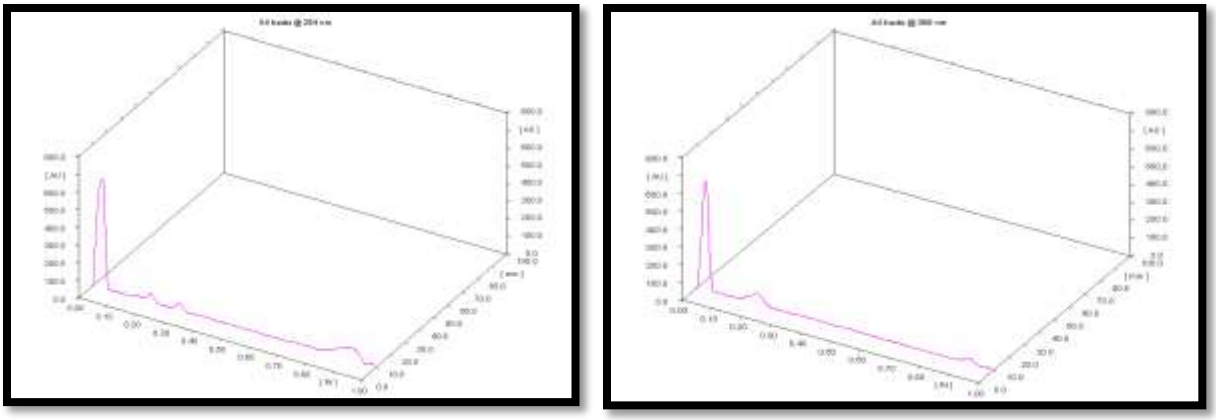


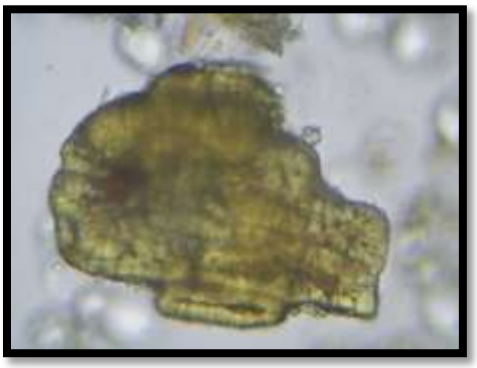
Figure 2 Three dimensional HPTLC (3D) Densitogram



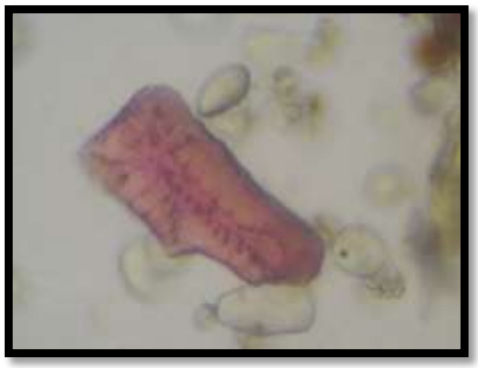
254nm **366nm**

The obtained values of these tests were found within normal limits which indicate good quality of product. All physico-chemical parameters of *Vasadi Kwatah* showed that loss on drying value was 7.2% w/w, Ash value 7.7% w/w,

Plate no. 1-14

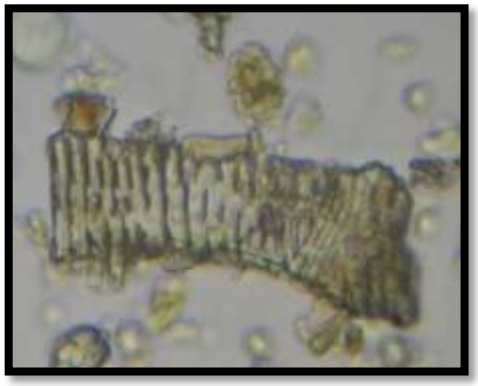


1. Group of stone cells of *Pippali*

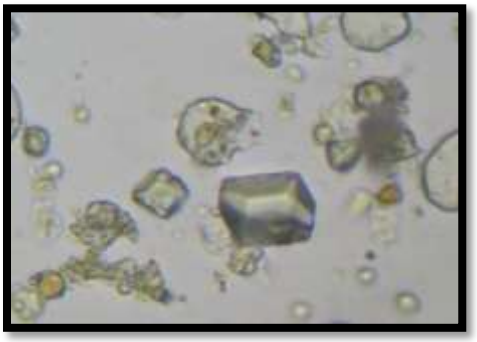


2. Stone cells of *Pippali*

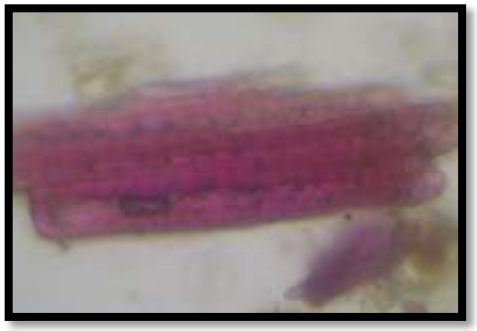
3. Cork cells of *Pippalimoola*



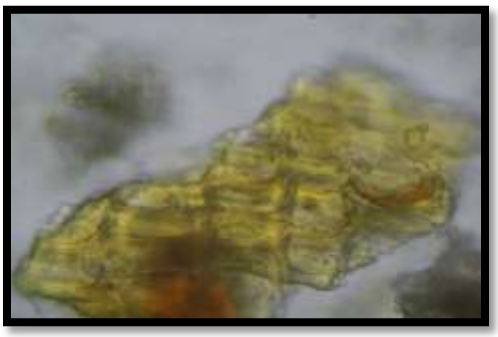
4. Pitted vessels of *Pipplaimoola*



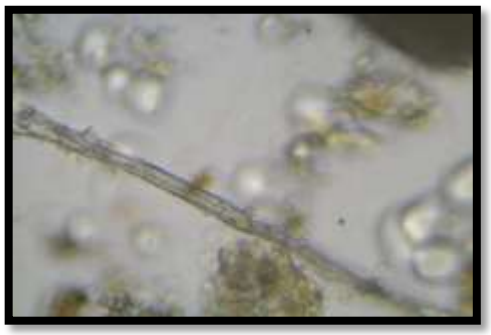
5. Prismatic crystals of *Chavya*



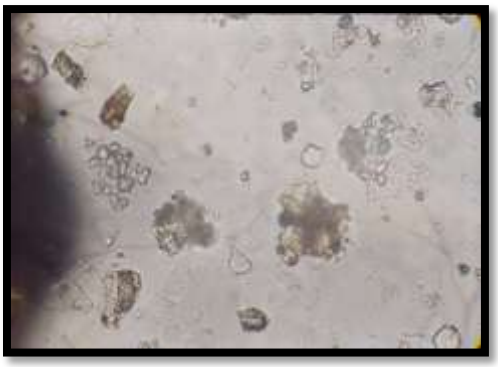
6. Scleroids of *Chavya*



7. Cork cells of *Shunti*

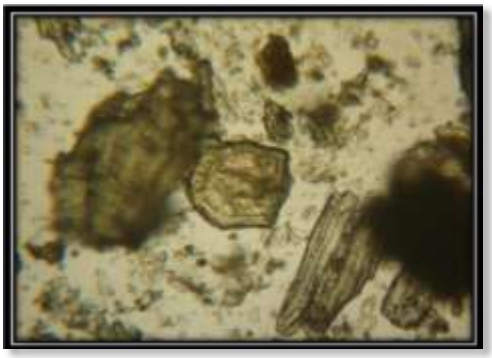


8. Fibres of *Shunti*



9. Coumpound starch of *Vasa*

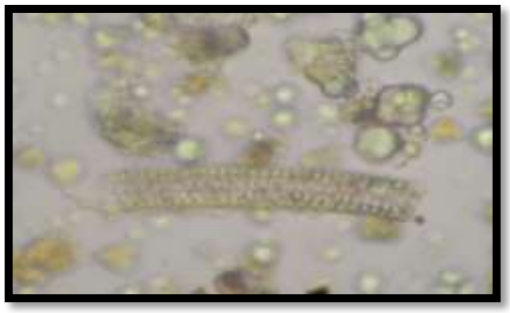
10. *Vasa*-Pitted vessel



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 *Vasadi Kwatha* 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.

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