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PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF VACHADI CHURNA - AN AYURVEDIC POLYHERBAL FORMULATION

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ABSTRACT :

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* (*Prasuti Maruta*) to expel the foetus. So, the *Prakruta Apana* and *Vyana Vayu* are essential for *Prakruta Prasava*. *Vachadi Churna* is an Ayurvedic poly herbal formulation used in *Nasya* form *for* augmentation of labour. The present work was carried out to standardize the finished product "*Vachadi Churna"* to confirm 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 reveals the presence of Starch grains, Crystal fibres, Tannin contents, Epicarpe cell, Cystolith, Spiral vesicle 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 moderately fine powder = 55.7% w/w, (c) Percentage of fine powder = 84.3%w/w, (d) Percentage of very fine powder = 13.88 %w/w, HPTLC finger printing profile of *Vachadi Churna* revealed 5 spots at 254nm and 5spots on 366nm.

Keywords : *Vachadi Churna* , *Nasya*, *Prakruta Prasava*, Pharmacognosy.

INTRODUCTION: *Prasava* is an important event of woman's life and every pregnant woman expects *Sukhaprasava.* In Ayurvedic literature, many drugs and procedures are mentioned to achieve *Prakruta prasava* as a part of *Garbhini Paricharya*[1].*Acharya Sushruta* mentions the importance of *Indriyapanchapanchaka* and *Panchaabhibhuta Dhamanis*[2] This phenomenon tells about *Gandha jnana,* when *Gandha Artha* is perceived by *Nasa Indriya* through *Panchaabhibhuta Dhamanis*. These *Dhamanis* are specific (olfactory receptors/neurons) for the smell. These *Dhamanis* are porous structures, which perceive the objects.These can be considered the ciliary bed/the transneural area of the Nasal mucosa where absorption of the drug takes place. It is stated in Ayurvedic classics that, there is a very close relationship between the *Nasa* and *Shiras* (Brain). The nasal mucosa provides a direct connection between central nervous system (CNS) and the atmosphere. Drugs administered to the nasal cavity rapidly traverse through the cribriform plate into the CNS by 3 routes. 1)Directly by olfactory neurons, 2) Through supporting cells and the surrounding capillary bed; and 3) Directly into the cerebrospinal fluid (CSF). *Acharya*

Indu[3], mentioned the exact *Sthana* of the *Shringataka Marma* (i.e., *Shiraso Antarmadhya Murdha*) which can be considered as the Middle Cephalic Fossa. The Middle Cephalic fossa is the region, which, in connection with ethmoid and sphenoidal sinuses, consists of meningeal vessels, mainly internal carotid artery, cranial nerves (3rd, 4th, 5th and 6th) and optic nerve. The pituitary gland can be approached through the sphenoidal sinus by trans-antral and trans-nasal routes. The sphenoidal sinus is inferiorly in connection with the Naso-pharynx and posteriorly with the brain stem.

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 of Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

Table No.1 Ingredients of *Vachadi Churna*[4]

Sr.no.	Name	Latin Name	Part used	Proportions
1	*Chitraka(shweta)*	*Plumbago zeylanicum* Vahl	Root	1 part
2	*Kushtha*	*Sassurea lappa* C.B.Clarke	Root	1 part
3	*Vacha*	*Acorus calamus* Linn.	Rhizome	1 part
4	*Yashthimadhu*	*Glycyrrhiza glabra* Linn.	Rhizome	1 part
5	*Sukshma Ela*	*Elettaria cardamomum* Maton	Seeds	1 part
6	*Chirabilwa*	*Holoptea integrifolia* Planch.	Bark	1 part

Method of Preparation of *Vachadi Churna*[5] All ingredients taken into equal quantity and made into fine powder with the help of mechanical grinder sieved through 85# mixed together mechanically to get homogenous mixture .

Pharmacognostical evaluation of ingredients of *Vachadi Churna*[6]

Organoleptic study: Individual powders were subjected to various sensory characters like colour, taste, odour, and touch**.**

Powder microscopy: The powder of respective parts was taken in glass slide covered with cover slip and observed under the Carl Zeiss microscope with stain (Phloroglucinol and Conc. HCl) and without stain, to study the characters. The microphotographs were taken by using Carl Zeiss Trinocular attached with camera[7]

Physicochemical study: *Vachadi Churna* was 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: First of all take a drop of sample and diluted with haxen (as per require) then application of the sample at the one end of the precoated plate through linomat V (150 µl/sec) then on the sample zone again applied 7% alcoholic KOH then leave for 10-15 minutes at 60-80ºc in oven. The plate is then developed by the suitable mobile phase in a chromatographic chamber which was previously saturated with the mobile phase. Then after development it is visualized into day light, short UV (254nm) and/or by derivatiza reagent. The Rf value and the colors of resolved bands and finger printing profiles are recorded[8]

RESULTS AND DISCUSSION:

Table no.2 Organoleptic characters of *Vachadi Churna*

Characters	Results
Colour	Light brown
Taste	Sweetest Astringent
Odour	Aromatically
Consistency on Touch	Fine Powder

Microscopic Study[9,10]: The diagnostic microscopical characters of individual powder are shown in PLATE 1-6 (Figure 1-6) The pharmacognostical study reveals the presence of Starch grains of *Vacha*, Crystal fibres of *Yashtimadhu*, Tannin contents of *Chitraka*, Epicarpe cell of *Ela*, Cystolith of *Chirabilva*, Spiral vesicle of *Kushtha*.

Table no. 3 Physicochemical tests

No.	Practical name	*Vachadi Chrna*
1.	Particle size	(a) Percentage of moderately fine powder = 55.7% w/w (b) Percentage of fine powder = 84.3%w/w (c) Percentage of very fine powder = 13.88 %w/w
2.	Loss on drying (at 110^0C)	13.67 % w/w
3.	Ash Value	7.65 % w/w
4.	Water soluble extraction	52.8 % w/w
5.	Methanol soluble extraction	20.90%w/w
6.	pH value by pH meter	6.5

HPTLC study results: On analyzing under demonstrator at 254 nm, the chromatogram showed 5 peaks and at 366nm chromatogram showed 5 peaks. Three dimensional densitogram (3D) at 254 and 366nm shows comparative Rf value of sample with standard.

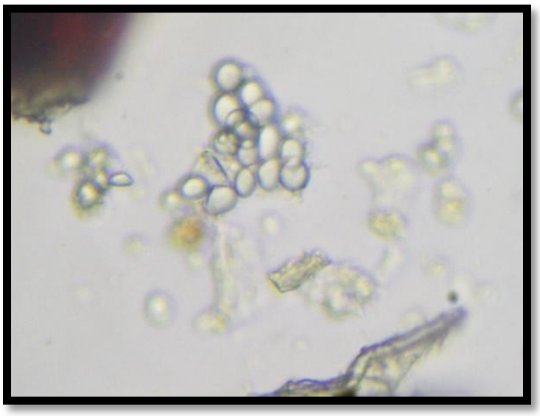
Table no. 4 The findings of HPTLC at 366nm and 254nm UV light (Methanol Extract)

Wavelength	Spots	Rf Value
At 254 nm	5	0.03, 0.09, 0.15, 0.69, 0.93
At 366 nm	5	0.03, 0.09, 0.11, 0.33, 0.93
Vaniline sulphuric acid (after spray)	3	0.03, 0.12, 0.92

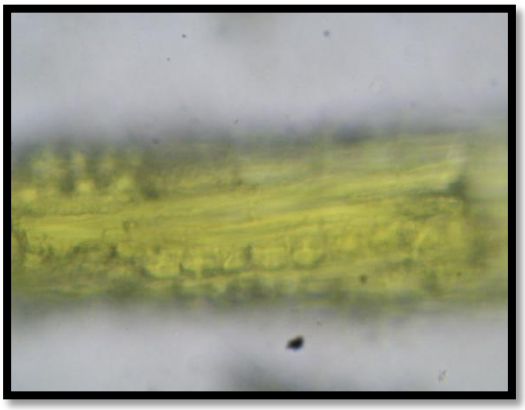
DISCUSSION: Pharmacognostical evaluation showed that the *Vachadi Churna* contains all the ingredients, which were observed in the microscopical characters, this shows the purity and quality of the product. Phytochemical analysis showed that material gains no moisture during storage, so quality of the product is not affected. The obtained values of these tests were found within normal limits which indicate good quality of product. 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 (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 show the product is good in quality and better results in the diseases. HPTLC results showed that the 5 spots at 254nm and 5 spots on 366nm.

CONCLUSION: Pharmacognostical and phytochemical evaluation of *Vachadi Churna* illustrated the specific characters of all ingredients which are used in the preparation. The pharmacognostical study reveals the presence of Starch grains of *Vacha*, Crystal fibres of *Yashtimadhu*, Tannin contents of *Chitraka*, Epicarpe cell of *Ela*, Cystolith of *Chirabilva*, Spiral vesicle of *Kushtha* etc. All the physicochemical parameters like acid value, loss on drying, ash value are analyzed within the normal range. The result show the quality of the preparation is standard.

Plate no. 1-6

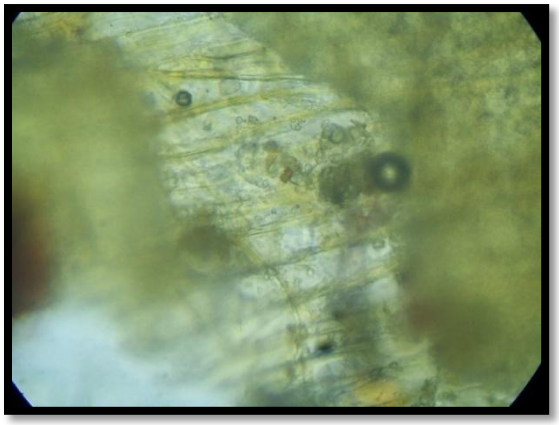


1.Starch grains of *Vacha*

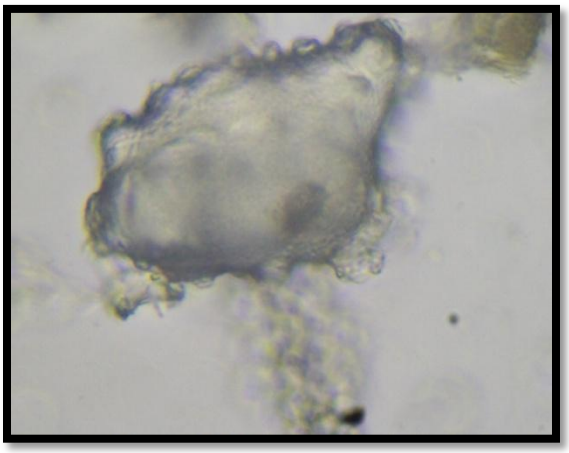


2. Crystal fibres of *Yashtimadhu*

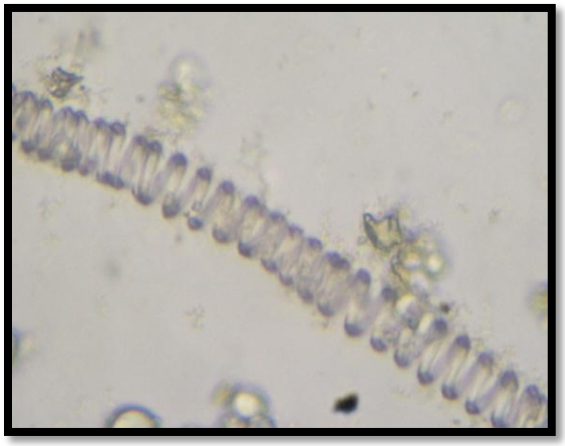
3. Tannin contents of *Chitraka*



*4.*Epicarpe cell of *Sukshma Ela*



5. Cystolith of *Chirabilva*



6. Spiral vesicle of *Kushtha* **Plate2.**

Densitogram of *Vachadi Churna* at 254 and 366nm

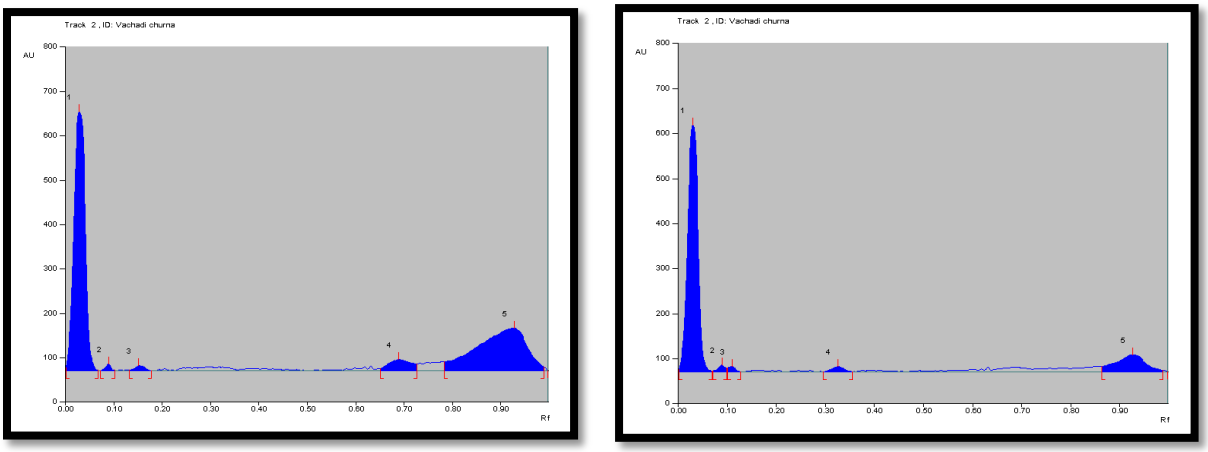
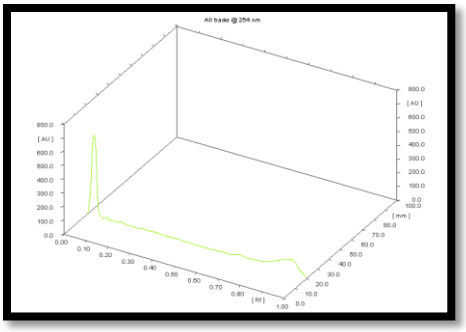
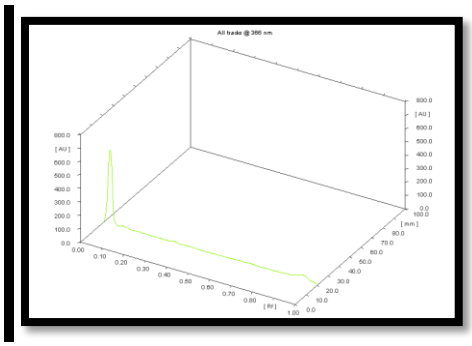


Plate 3. Three dimensional HPTLC (3D) Densitogram at 254nm and 366nm





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