

A PHARMACOGNOSTICAL AND PHYSICO-CHEMICAL ANALYSIS OF ABHAYADI VATI: AN AYURVEDIC POLYHERBAL FORMULATION

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ABSTRACT

In the era of increasing demand for indigenous medicines, maintaining quality standards is the need of the hour. Standardisation of compound formulations is lagging behind because of absence of reference standards. *Abhayadi vati* is an important Ayurvedic formulation containing *Haritaki* (*Terminalia chebula* Retz.), *Pippali* (*Piper longum* Linn.), *Draksha* (*Vitis vinifera* Linn.), *Dhanvyavas* (*Fegonia cretica* Linn.), *Sita* (*Sugar*), all the constituents are available and prepared according to the reference present in *Yogratnakara Amlapitta nidana chikitsa-35*.^[1] Hence the present study was undertaken to standardize the compound *Ayurvedic* formulation through Pharmacognostical and pharmaceutical evaluation. The sample was subjected for various phytochemical parameters like water soluble extractive (48.96% w/w), alcohol soluble extractive (48.03% w/w), ash value (10% w/w), loss on drying (17.82% w/w), the pH (6.5) and hardness (6.5 kg/cm²). The HPTLC, solvent system was Toluene: ethyl acetate (9 :1), showed the presence of 7 spots at 254nm and 2 spots at 366nm. Thus, the physiochemical and microscopic characters achieved may provide guidelines for standardization of formulation *Abhayadi vati*.

KEYWORDS: HPTLC, *Abhayadi vati*, Pharmacognostical, Physiochemical Evaluation.

INTRODUCTION

Ayurveda is an Indian system of medicine with vast number of compound formulations for various disease entities. *Abhayadi vati* is a group of 4 herbs and *Sita*(sugar) [Table 1] mentioned in *Amlapittanidanachikitsa* for *Sleshma-Amlapitta shaman Yoga in Yogratnakara*.^[2] This disease mainly due to vitiation of *Pitta*(*pachaka*), but *Kapha*(*kledaka*) and *Vata*(*saman vayu*) vitiation may be there as secondary one causing *Gaurava*, *Udgara* and *Kampa*^[3] etc. That's why *Vati* pacifice vitiated *Kaphaja Amlapitta*, results in relief in symptoms and signs of disease. *Abhayadi vati* is an *Ayurvedic* herbal preparation as mentioned in the *Yogratnakara Samhita* composed of medicinal plants of different botanical families but from *Ayurvedic* pharmacological point of view having similar properties which are effective in *Kaphaja Amlapitta*. *Abhayadi vati* contains *Haritaki*, *Pippali*, *Draksha*, *Dhanvyavas*, *Sita*, maintaining the quality of a drug and looking at the effectiveness of the herbal formulation of the *Abhayadi vati* is a high need in the light of scientific evaluation. But till date there is no scientific evaluation of *Abhayadi vati*. In the present study the powder formulation of *Abhayadi vati* was subjected to Pharmacognostical (microscopic), HPTLC, and pharmaceutical (evaluation of various physiochemical parameters) evaluation in order to prepare a preliminary profile of the formulation.

MATERIALS AND METHOD

Method of preparation of *Abhayadi vati* as per *Abhayadi vati*, for the present study the drugs of *Abhayadi vati* were procured from Pharmacy of I.P.G.T. & R.A., Gujarat Ayurved University which was prepared as per the reference of *Yogratnkara Samhita*.^[4]

Table 1: Ingredients: *Abhayadi vati*.

S.no.	Drug name	Botanical name	Part used	Part
1	<i>Haritaki</i>	<i>Terminalia chebula</i> Retz	Fruit	1
2	<i>Pippali</i>	<i>Piper longum</i> Linn.	Fruit	1
3	<i>Draksha</i>	<i>Vitis vinifera</i> Linn	Fruit	1
4	<i>Dhanvyavas</i>	<i>Fegonia cretica</i> Linn.	Whole part	1
5	<i>Sita</i>	Sugar		1

Above table drugs taken in equal proportions were properly dried and *Haritaki*, *Pippali*, *Dhanvyavas*, *Sita*(sugar) pulverised into a coarse powder then powder of all these 4 drugs was added in dried *Draksha* pulp and mixing very well to make the *Vati* of 500 mg each and keep in 1 hour furnish at 60° temp for drying. On the next day, *Vati* were packed in air-tight

packing. The whole process of *Vati* preparation was done at the Pharmacy under sterile environment.

Pharmacognostical Evaluation

Various characters like colour, odour, taste and touch are recorded by using sensory organs.^[5] Powder microscopy of the finished product was done without stain and after staining with Phloroglucinol+HCl micro photographs were taken under Carl- Zeiss Trinocular microscope attached with camera.^[6] By Powder microscopy observed the characters, determined the chemical nature of the cell wall along with the form and chemical nature of the content of the cells.

Physico-Chemical Evaluation

Abhayadi vati was subjected to physicochemical study in order to develop analytical profiles. In this phase following parameter were carried out -Loss on drying at 1100C, pH value, ash value, water soluble extractive, alcohol soluble extractive.^[7]

High Performance Thin Layer Chromatography^[8]

In HPTLC study of *Abhayadi vati*, methanol extract of *Abhayadi vati* was spotted on pre-coated silica gel GF 60254 Aluminium plate by mean of Camag Linomate V sample applicator fitted with a 100µl Hamilton syringe. The mobile phase consisted of Toluene: Ethyl acetate a ratio of 9:1 v/v. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance in absorbance mode at 254 and 366 nm under control of Win CATS Software (V1.2.1.Camag). Then, the plate was sprayed with Vanillin Sulphuric acid followed by heating and then visualized in daylight.

OBSERVATION AND RESULTS

PHARMACOGNOSTICAL STUDY

Organoleptic Characters

Chocolate brown in colour, Sweet astringent in taste, Hard in touch and soft in texture. (Table 2).

Table no. 2: Organoleptic Characteristics of *Abhayadi vati*.

Sr. No.	Characteristics	Results
1	Colour	Chocolate brown
2	Odor	<i>Triphala</i> smell
3	Taste	Sweet astringent
4	Touch	Hard
5	Texture	Soft

Microscopic Characters of *Abhayadi vati*

Diagnostic characters of *Abhayadi vati* were observed under the microscope were group of stone cells, simple unicellular trichome and lignified stone cells of *Haritaki*. Scleroid, black debris, simple starch grain with hilum, stone cells, iodine stain simple starch grain, lignified stone cells of *Pippali*. Oil globule, epicarp cells in surface view, iodine stain simple starch grain, mesocarp cells of *Draksha*. Simple starch grain, fragment of covering trichome, prismatic crystal, simple fibers, iodine stain simple starch grain, lignified simple fiber, lignified and fragment of boarder pitted vessels of *Dhanvyavas*.

Physicochemical analysis

Results of physicochemical analysis i.e. loss on drying, ash value, water soluble extract, alcohol soluble extract and pH are shown in Table 3.

Table 3: Physico-chemical parameters.

Sr. No.	Parameters	Value
1	Loss on Drying	10.85 % w/w
2	Ash Value	10 % w/w
3	Water Soluble Extract	48.96% w/w
4	Methanol Soluble Extract	48.03 % w/w
5	pH	6.5

High performance thin layer chromatography (HPTLC)

The colour and R_f values of resolved spots of HPTLC were noted. (Table 4).

Table 4: R_f values obtained by HPTLC.

Sample	Detection Condition	No. of spots	R _f value
<i>Abhayadi vati</i>	254 nm	10	0.06, 0.15, 0.20, 0.31, 0.37, 0.45, 0.52, 0.57, 0.77, 0.86
	366nm	10	0.06, 0.15, 0.20, 0.33, 0.45, 0.57, 0.62, 0.77, 0.86, 0.89

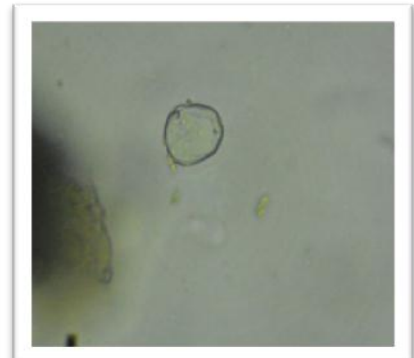
Plate 1. Microscopic characters of *Abhayadi vati*



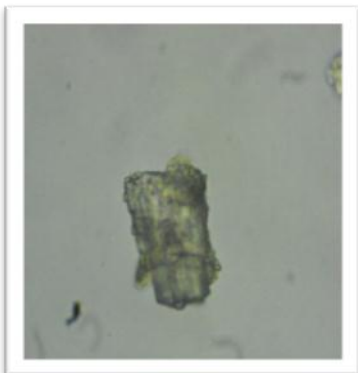
Prepared Abhayadi Vati



Powder of Abhayadi Vati



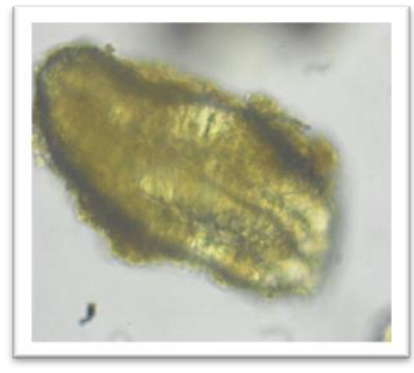
Simple starch grain of Dhanvyavas



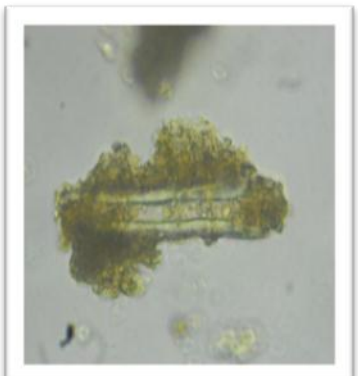
Crystal matter of Sugar



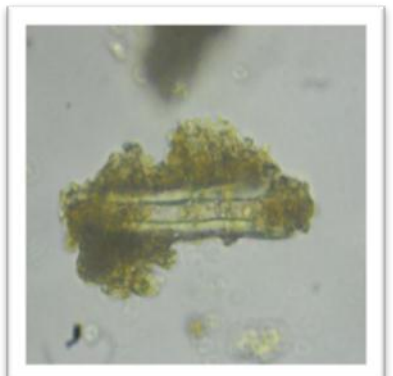
Scleroids of Pippali



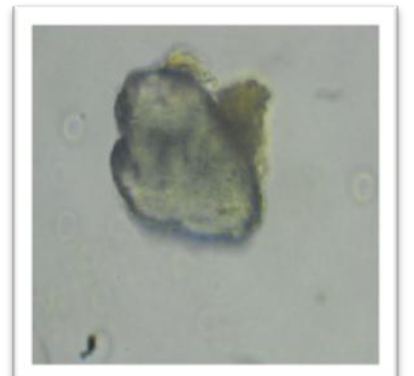
Stone cells of Haritaki



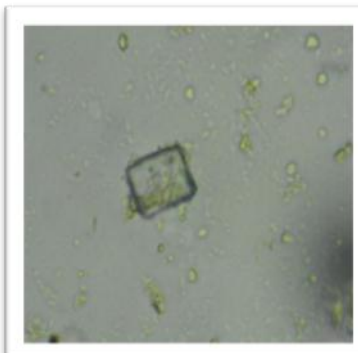
Trichome of Draksha



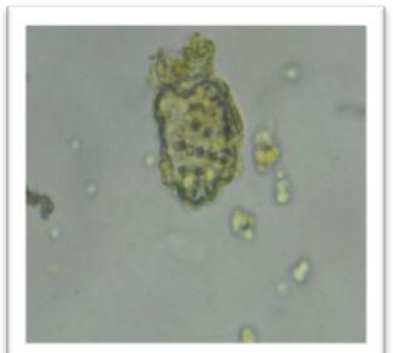
Trichome of Dhanvyavas



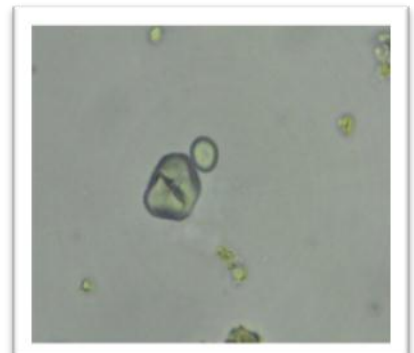
Black debris of Pippali



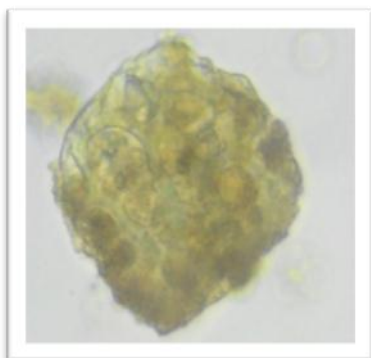
Prismatic crystal of Dhanvyavas



Pitted vessels of Dhanvyavas



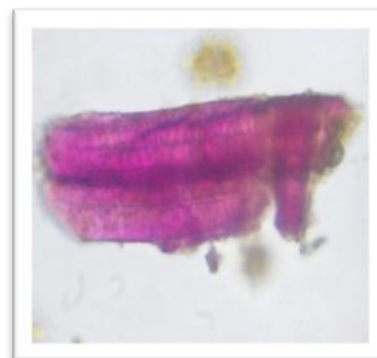
Simple starch of grain



Epicarp cell of Draksha

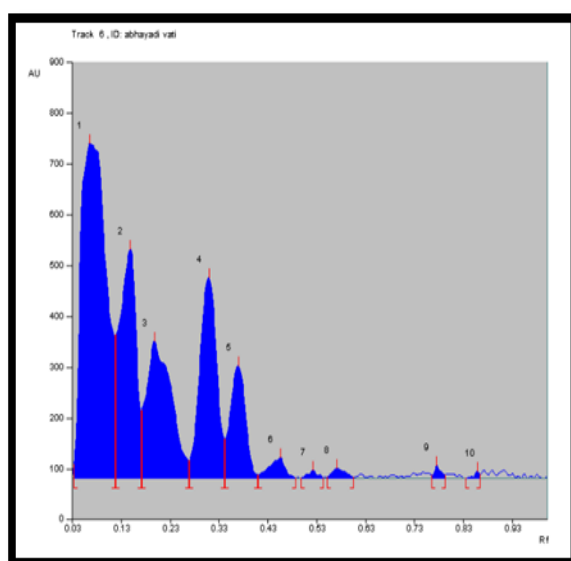


Unicellular trichome of Haritaki

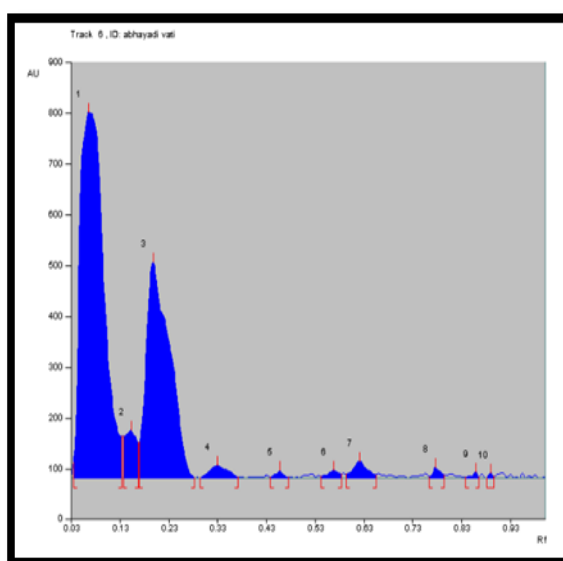


Lignified stone cells of Pippali

HPTLC OF ABHAYADI VATI



Peak display at 254 nm



Peak display at 366 nm

DISCUSSION

Pharmacognostical evaluation showed that organoleptic characters of the sample was Blackish in chocolate brown, *Triphala* odour, sweet astrigent in taste, Hard in touch and soft in texture. Microscopical study showed that presence of simple group of stone cells and unicellular trichome of *Haritaki*. Oil globule and epicarp cells in surface view of *Draksha*. Simple starch grain, prismatic crystal and fragment of boarder pitted vessels of *Dhanvyavas*. Scleroids and simple starch grain with hilum of *Pippali*, shows that all the ingredients were present in the finished product and also proven that the purity of the finished product. Physicochemical values obtained in the present research work for *Abhayadi vati* may be useful in similar future research works. The HPTLC showed that 10 and 10 spots at 254nm and 366nm each.

CONCLUSION

Study on *Abhayadi vati* is a step towards pharmacognostical, physico-chemical standardisation of poly herbal formulation in *Vati* form. As there is no published information available on pharmacognostical and physico-chemical profiles of *Abhayadi vati*, this preliminary information can be used for reference in future for similar research works.

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