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PHARMACOGNOSTICAL (INGREDIENTS IDENTIFICATION) AND PHARMACEUTICAL ANALYSIS OF VYAGHRI TAILA –AN AYURVEDIC POLYHERBAL FORMULATION FOR PRATISHYAYA

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ABSTRACT

Background: *Nasya* (Nasal administration of drugs) is one among *Panchakarma Chikitsa* which is specifically indicated for *Urdwajatru Gata Roga*. *Vyaghri Taila* is a *Sneha Kalpana* indicated for *Nasya Chikitsa* especially in *Nasagata Roga* (Diseases of nose). In present study, it has been used for *Virechana Nasya* in *Dushta Pratishyaya* (Chronic Sinusitis). **Objective:** To analyze the raw drug authentication, pharmacognostical and physicochemical parameters of *Vyaghri Taila*. **Materials and Methods:** Drug identification and authentication was done by Pharmacognostical study i.e. morphological features, organoleptic characters and powder microscopy of drugs. Physicochemical evaluation such as specific gravity, acid value, saponification value, iodine value, refractive index and HPTLC were carried out of the prepared drug. **Results:** Pharmacognostical study of ingredients showed presence of epicarp cells, lignified stone cells, simple trichomes, stellate trichomes and stone cells of *Vyaghri*. Pitted vessels, rhomboidal crystals, simple fibers and brown content of *Dhanti* was observed. Mesocarp cells, stone cells, black debris and simple starch grains of *Maricha* and Stone cells, oil globules and fibres of *Pippali* were noted. Stomata, trichomes, starch grains and oil globules of *Tulsi* were noted. Annular vessels, oleoresin content and starch grains of *Vacha* also noticed . On Pharmaceutical analysis, Refractive index noted at 40^0 C, 1.484, Specific gravity at room temp. at 32^0 C 0.958, Acid value 3.4, Iodine value 12.312, Saponification

value 85.6, Loss on drying noted 0.32 were noted. High performance thin layer chromatography at 254 and 366 nm resulted into 9 and 7 spots respectively. **Conclusion:** Raw drug identification and authentication has been done and evaluation of physicochemical parameters has been carried out.

KEYWORDS: *Vyaghri Taila*, *Dushta Pratishyaya*, Pharmacognosy, Pharmaceutics,

INTRODUCTION

Nasya (Nasal administration of drugs) is one among *Panchakarma Chikitsa* which is specifically indicated for *Urdwajatru Gata Roga*. *Vyaghri Taila* is an oil preparation indicated for *Nasya* in *Nasagatha Roga* (Diseases of nose) especially in *Putinasa* by *Chakradatta*[1] and *Bhaishajya Ratnavali*[2] *Dushta Pratishyaya* is explained as a complicated stage of *Pratishyaya* due to its improper and untimely management.[3] Signs and symptoms of *Dushta Pratishyaya* are almost similar to Chronic Sinusitis.

Chronic Sinusitis is an inflammation of mucosal lining of sinus which is persistent for more than 12 weeks. Deviated nasal septum, Allergic rhinitis, Respiratory tract infection, Gastro esophageal reflux, Cystic fibrosis etc are considered to be the causes of Chronic Sinusitis.[4] Acute infection destroys normal ciliated epithelium and impairing drainage from the sinus. Pooling and stagnation of secretions in the sinus forms an ideal medium for the growth of various pathogens.[5] In such condition *Virechana Nasya* helps to drain out the discharge from the sinuses by liquefying the thick purulent mucus. Here In this present study, *Vyaghri Taila* is used for *Virechana Nasya*. The pharmacological action of a drug depends on the proper identification of its raw drugs and active ingredients present in it. Thus, the present study is an attempt on this regard to make a standard parameter for an Ayurveda formulation.

AIM AND OBJECTIVE: To evaluate the quality of drugs by using different analytical methods through pharmacognostical and pharmaceutical techniques.

MATERIALS AND METHODS

Collection and Identification of raw materials

All the raw materials for *Vyaghri Taila* were procured from the Pharmacy of Gujarat Ayurved University, Jamnagar, Gujarat, India. Ingredients of *Vyaghri Taila* and part used are given in Table No 1.

Pharmacognostical study

Identification of the raw drugs were done in the Pharmacognosy laboratory, I.P.G.T & R. A Jamnagar. The identification was carried out on the basis of morphological features, organoleptic features and powder microscopy.[6] Microscopical study of the individual drug was done under the microscope attached with camera with stain and without stain.[7] The photographs were also taken under the microscope.

Method of preparation (*Vyaghri Taila)*

Preparation of *Yavakuta* (Course powder)

All the raw drugs like *Vyaghri, Danti, Vacha, Shigrubeeja, Tulsi, Shunti, Maricha* and *Pippali* were taken and made into course powder separately and mixed together to make a homogenous mixture in paste form.

Preparation of *vyaghri taila*

Appropriate quantity of *Tila Taila* was taken in a vessel and was heated on low flame for *Murchhana*. After Murchhana, mild heating of taila continued and *Kalka* was added with continuous stirring. Water was added to this as *Drava Dravya* in appropriate quantity. After proper mixing of all the ingredients, heating was carried out for two days. The *Kalka* was taken out with the help of the ladle and tested for *Sneha Siddhi Lakshana* and stage of the *Paka.* On second day after attaining *Mrudu Paka Taila Siddha Lakshana, Vyaghri Taila* was collected and powdered *Saindhava Lavana* was added to it as *Paatra Paka*. The final product of *Vyaghri Taila* filtered thoroughly through a clean cotton cloth and stored in sterile glass bottle.

Pharmaceutical evaluation

Physicochemical parameters

Analysis of *Vyaghri Taila* was done by using qualitative and quantitative parameters at Pharmaceutical Laboratory, IPGT & RA, Gujarat Ayurved University, Jamnagar. The common parameters mentioned in Ayurvedic Pharmacopia of India[8] for oil preparations are Refractive index, Iodine value, Acid value, Saponification value etc. These pharmaceutical evaluations were done. HPTLC was carried out after making appropriate solvent system with Methanolic extract of *Vyaghri Taila*. The study was performed for the normal phase separation of components of *Vyaghri Taila.*[9]

OBSERVATION AND RESULTS

Organoleptic Evaluation

Various organoleptic characters like color, odour, taste and touch of *Vyaghri Taila* were observed and recorded. This includes *Panchendriya Pareeksha* mentioned in Ayurveda except *Sabda Pareeksha* and those were carried out. The results were mentioned in Table No.2

Microscopical evaluation of drugs of *vyaghri taila*

Microscopical evaluation of *Vyaghri* showed epicarp cells, lignified stone cells, simple trichomes, stellate trichomes and stone cells. Pitted vessels, rhomboidal crystals, simple fibers and brown content of *Dhanti* was observed. Mesocarp cells, stone cells, black debris and simple starch grains of *Maricha* and Stone cells, oil globules and fibers of *Pippali* were noted. Microscopical examination of *Shigru* showed prismatic crystals and lignified stone cells. Oleoresin content, scalariform vessels, simple starch grains of *Shunti* was observed. Stomata, trichomes, starch grains and oil globules of *Tulsi* were noted. Annular vessels, oleoresine content and starch grains of *Vacha* also noticed. These were the characteristic features of individual drugs observed in powder microscopy.

Physico- chemical analysis

Physico-chemical analyses were carried out by following the parameters like Refractive index noted at 40^0 C was 1.484, Specific gravity at room temp. at 32^0 C was 0.958, Acid value was 3.4, Iodine value was 12.312, Saponification value was 85.6, Loss on drying noted was 0.32. Results were mentioned in table no. (3).

High performance thin layer chromatography (HPTLC)

HPTLC was carried out after making appropriate solvent system with Methanolic extract of *Vyaghri Taila*. On performing HPTLC, visual observation of *Taila* under UV light showed few spots but on analyzing under densitometer at 254 nm and 366 nm it showed 9 and 7 spots respectively. Results of HPTLC are given in Table no. (4) and densitogram is shown in plate 2.

Table no. 1: Ingredients of *Vyaghri Taila* (*Chakradatta, Nasaroga Chikitsa-5).*

Sr. No.	Ingredients (Sanskrit Name)	Latin / English Name	Parts	Part used
1	*Vyaghri*	*Solanum surrattense* Burn.	1/9 part	Plant
2	*Danti*	*Baliospermum montanum* Muell. Arg	1/9 part	Root
3	*Vacha*	*Acorus calamus* L.	1/9 part	Rhizome
4	*Shigru*	*Moringa olifera* Lam.	1/9 part	Root bark
5	*Tulsi*	*Ocimum sanctum* L.	1/9 part	Plant
6	*Shunthi*	*Zingiber officinale* Ros.	1/9 part	Rhizome
7	*Maricha*	*Piper nigrum* L.	1/9 part	Fruit
8	*Pippali*	*Piper longum* L.	1/9 part	Fruit
9	*Saindhava*	Rock salt.(English name)	1/9 part	-
10	*Tila Taila*	Seasom oil(English name)	4 part	-

Table no. 2: Organoleptic characters of *vyaghri taila.*

Sr. no.	Characters	Observed
1	Colour	Greenish black
2	Odour	Agreeable
3	Taste	Bitter
4	Touch	Lubricative

Table no. 3: Physico- chemical analysis of *vyaghri taila.*

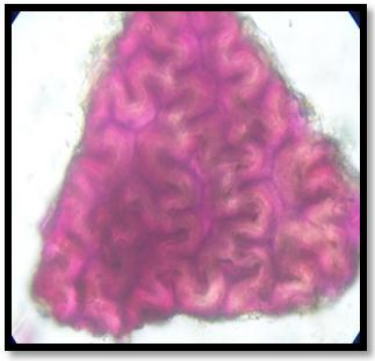
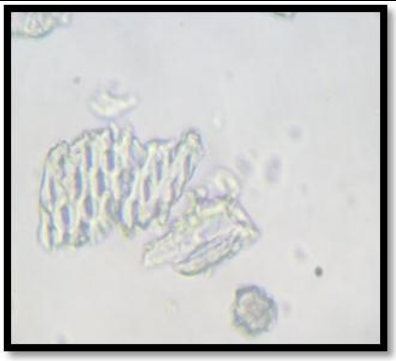
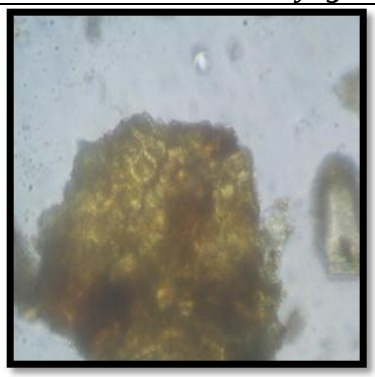
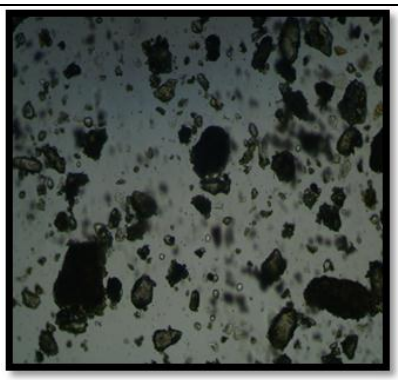
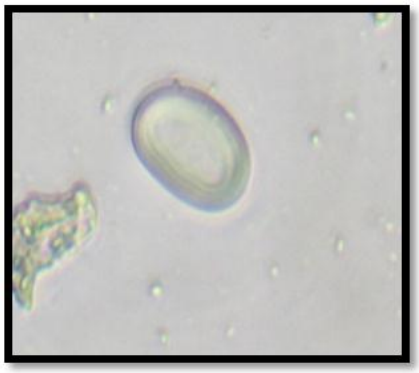
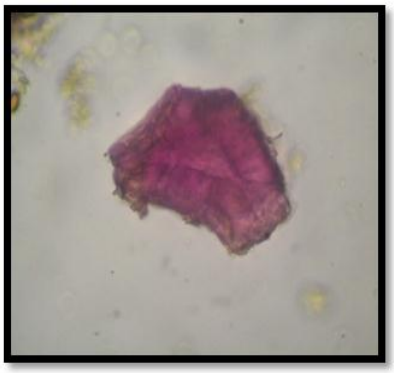
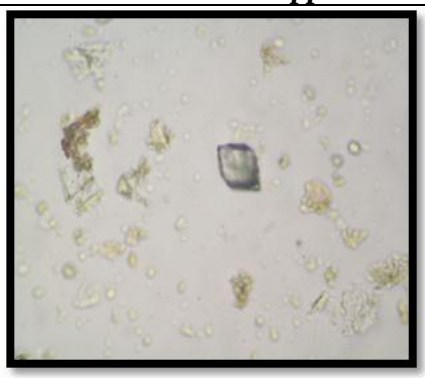
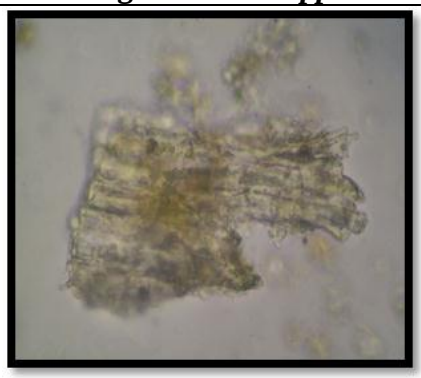
Sr. no.	Parameters	*Vyaghri Taila*
1.	Specific Gravity at room temp. at 32^0 C	0.958
2.	Referactive Index at 40^0 C	1.484
3.	Acid Value	3.4
4.	Iodine Value	12.312
5.	Saponification Value	85.6
6	Loss on Drying (%w/w)	0.32

Table no. 4: Results of HPTLC of *vyaghri taila.*

Solvent system- Toluene: Ethyl acetate: Acetic Acid (7:2:1)

Sr. No.	Samples	Conditions	No. of Spots	Rf
1	*Vyaghri Taila*	Short UV–254 nm	9	0.03, 0.10, 0.17, 0.36, 0.53, 0.59, 0.82, 0.91, 0.93
		Long UV–366 Nm	7	0.03, 0.10, 0.17, 0.45, 0.51, 0.86, 0.91

Plate no. 1: Microscopic study of raw drugs of *vyaghri taila.*

		
Epicarp cell of *Vyaghri*	**Stellate trichome of *Vyaghri***	**Pitted vessels of *Danti***
		
Rhomboidal crystal of *Danti*	**Mesocarp cells of *Maricha***	**Black debris of *Maricha***
		
Stone cells of *Pippali*	**Oil globules of *Pippali***	**Lignified stone cells of *Shigru***
		
Prismatic crystal of *Shigru*	**Stone cells of *Shigru***	**Oleoresin content of *Shunti***

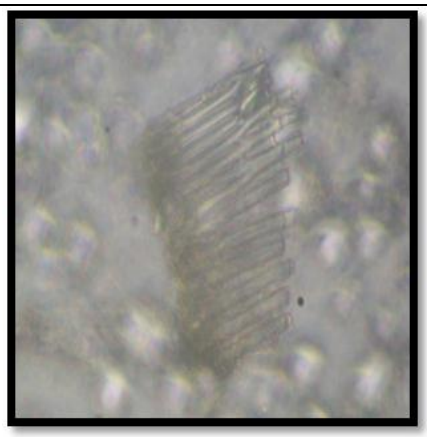
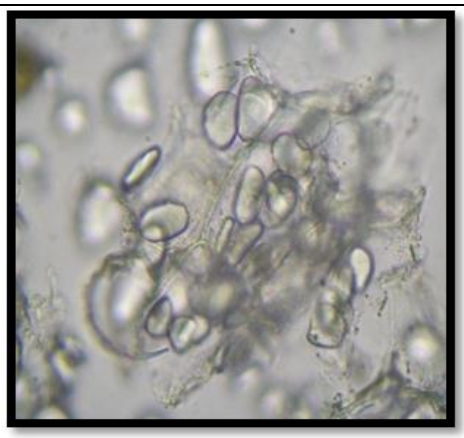
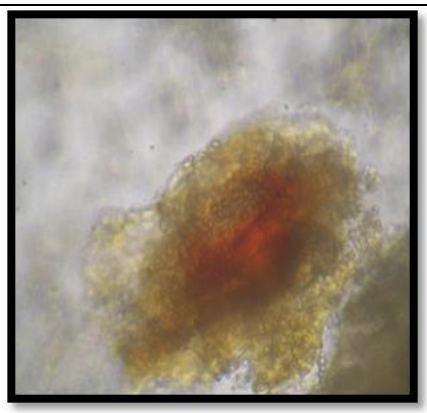
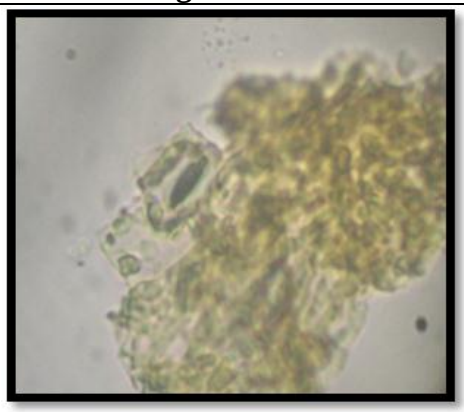
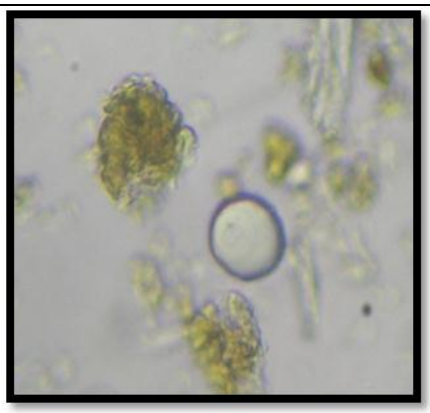
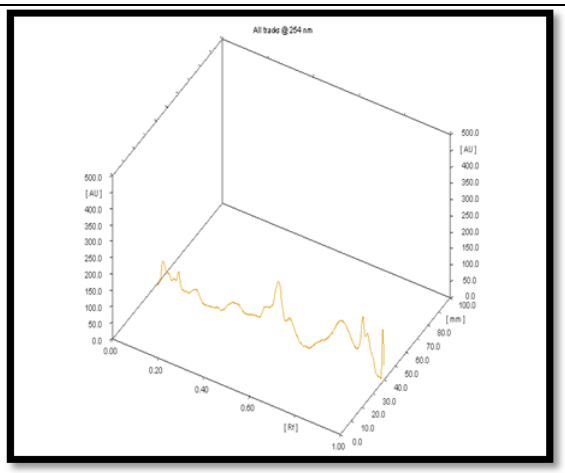
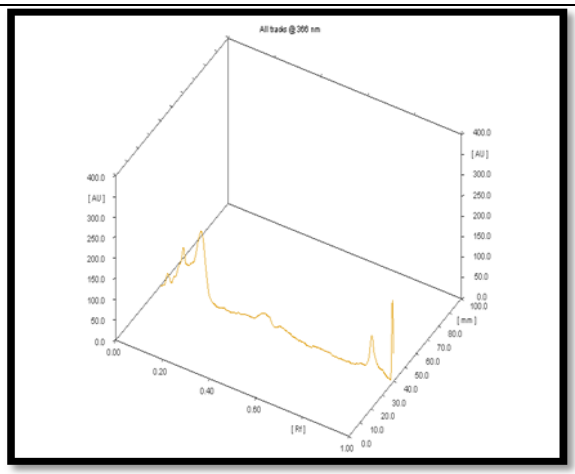
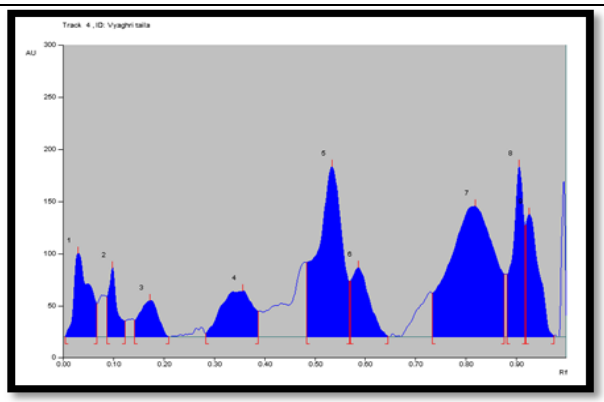
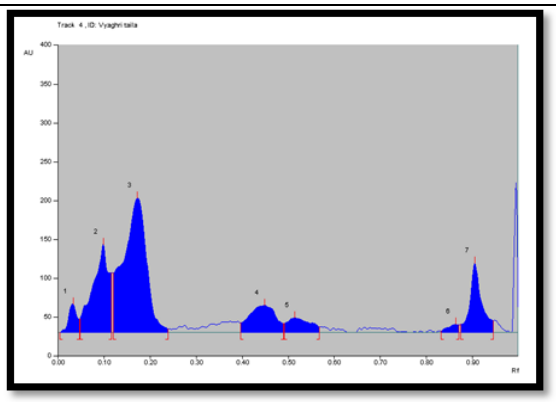
		
Scalariform vessels of *Shunti*	**starch grains of *Shunti***	**Annular vessels of *Vacha***
		
Oleoresin content of *Vacha*	**Stomata of *Tulsi***	**Oil globules of *Tulsi***

Plate no. 2: HPTLC Evaluation of *vyaghri taila.*

	
3D Graph: 254mm of *Vyaghri Taila*	**3D Graph: 366mm *Vyaghri Taila***



Peak display of *vyaghri taila* at short uv



Peak display *of vyaghri taila* at long uv

DISCUSSION

Vyaghri Taila is a formulation indicated for *Nasya* in *Nasaroga* which consists of nine herbal ingredients. Organoleptic evaluation was done of course powder of ingredients. Morphological and histological identification of the drug was carried out to prevent the adulteration of the drugs. Evaluation of Physico-chemical parameters helps to assess the quality and identifies the presence of specific ingredients in the formulation. Specific Gravity varies according to density of the liquid, so it is a qualitative parameter which is 0.958 of this oil. Acid Value is 4.35 which indicates that the number of free fatty acids present in this oil. Saponification value is the measure of the average molecular weight of all the fatty acids present in fat (i.e.oil). Here Saponification value 85.6 suggests that long chain fatty acid present in oil. Law Iodine Value (i.e.12.31) suggests that *Vyaghri Taila* is very saturated, less number of C=C bond present in the oil. Refractive Index (i.e.1.48) is a parameter to assess quality of an oil. HPTLC is a chromatographic method which separate the ingredients of a formulation. So it is a best method to detect number of active elements contained in a formulation which determines the pharmacological action of a drug. Here the results of HPTLC showed that 9 spots and 7 spots at 254nm and 366nm respectively.

CONCLUSION

Pharmacognostical study confirms that all the characters were found in ingredient drugs of *Vyaghri Taila*. The physicochemical analysis inferred that the formulation meets maximum qualitative standards and parameters. The Outcome of the study can be taken as standard references for the further studies.

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