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PHARMACOGNOSTICAL AND PHARMACUETICAL STUDY OF *SHADBINDU TAILA*: AN AYURVEDIC OIL BASED MEDICINE

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ABSTRACT

Background: *Shadbindu Taila* is a *Sneha Kalpana*, indicated in the management of *Badhirya*. In present study, it has been used as *Nasya* in *Karnaroga*. **Objective:** Present study is aimed to look out on herbal drugs used in the preparation of *Shadbindu Taila* and standardization of pharmacognostical, physicochemical parameters and HPTLC evaluation. **Methods:** Identification and authentication was done by pharmacognostical study i.e. organoleptic characters and powder microscopy. Physicochemical evaluation and HPTLC study was carried out of final product. **Results:** Pharmacognostical study shows starch grains, bordered pitted vessel oil globules, group of fibers oleoresins etc. are the diagnostic characters. Pharmaceutical evaluation showed results specific gravity 0.9451, Refractive Index 1.47, Acid Value 11.175, Saponification Value 243.69, Iodine Value 14. High Performance Thin Layer Chromatography at 254nm and 366 nm results in to 11 and 4 spots after spray respectively. **Conclusion:** Identification, Authentication of Herbal drug used in the preparation. Physicochemical evaluation has been carried out of prepared drug which is further useful for standardization of *Shadbindu Taila* and other researches.

KEYWORDS: Herbal formulation, *Shadbindu Taila*, Pharmcognosy, Standardization.

INTRODUCTION

Medicated oils occupy an important section of *Ayurveda* pharmaceutics described under heading of *Sneha Kalpana*. *Shadbindu Taila* is one of the herbal formulations prescribed in Ayurvedic text Bhaishajya Ratnavali *Shirorogadhikara.*[1] This preparation contains many herbal drugs. *Sneha Kalpana* contains *Kalka Dravya*, *Drava Dravya* and *Tila Taila* as *Sneha Dravya*. The *Paka* of formulation was done for two days, P*aka* of medicated oil as per classics.[2] It is specially indicated as in *Shiro Roga*. *Shadbindu Taila* is one of the herbal medicated oil easily prepared oil which can be used as *Nasya* to treat *Badhirya*. Present study is focus on first attempt to develop quality parameters of *Shadbindu Taila* on the basis of pharmacognostical, physicochemical parameters, and chromatographic study. Hence, there is need to scientific proof for standardization of quality parameters. The pharmacognostic and physico-chemical parameters can be used for checking the adulteration and purity of drug. Therefore, the present study was designed to evaluate the pharmacognostical, physicochemical parameters and develop the TLC fingerprint profiles of *Shadbindu Taila.*

AIM AND OBJECTIVE OF STUDY

Present study, is aimed to look out on herbal drugs used in the preparation of *Shadbindu Taila* and standardization of Pharmacognostical, Physicochemical parameters and HPTLC. The purpose of standardization of raw drugs and final product is to ensure therapeutic efficacy. Therefore, maintaining the quality of this product is very essential.

MATERIALS AND METHODS

Collection, identification, authentication of raw drugs

Collection of raw materials

Raw drugs were procured from pharmacy Gujrat Ayurved University, Jamnagar. The raw drugs were identified and authentified and powder microscopy was done in the Pharmacognosy laboratory, IPGT & RA, GAU, Jamnagar. The study includes organoleptic evaluation and microscopic evaluation as per API standards for authentication. *Shadbindu Taila* was stored in well filled closed glass containers away from the light.

Table 1: Composition of formulation *Shadabindu Taila. (Bhaishajya Ratnavali Shiro Rogadhikara).*[3]

Sr. No.	Drugs Name	Latin Name	Part used	Proportion
1.	*Eranda*	*RicinusCommunis.*Linn	*Moola*	1/10 part
2.	*Tagara*	*VelerianaWallichi. Dc*	*Moola*	1/10 part
3.	*Shatpushpa*	*AnethumSowa.*Kurz	*Phala*	1/10 part
4.	*Jivanti*	*LeptedeniaReticulata.WA*	*Moola*	1/10 part
5.	*Rasna*	*PlucheaLanceolata.*C.b Clarke	*Moola*	1/10 part
6.	*Saindhav*	*Rock Salt*	-	1/10 part
7.	*Vidanga*	*EmbeliaRibes.*Burn f	*Phala*	1/10 part
8.	*Yashtimadhu*	*GlycyrrhizaGlabra.*Linn	*Moola*	1/10 part
9.	*Shunthi*	*GingiberOfficinale.*Rosc	*Moola*	1/10 part
10.	*Darusita*	*Cinamommum Zaylnicum.* Brlyn	*Patra*	1/10 part
11.	*Tila Taila*	*Sessamum Indicum.*Linn	*Taila*	1 part
12.	*Aja Ksheera*	*Goat Milk.*	*Dugdha*	4 part
13.	*Bhringraja Swarasa*	*Eclipta Alba.*Hassk	*Swarasa*	4 part

***Shadbindu Taila* was prepared in Rasa shastra & Bhaishajya Kalpana Laboratory of IPGT & RA, GAU, Jamnagar**

Preparation of *Shadbindu Taila*

The mentioned quantity of *Tila Taila* was taken in a stainless steel vessel and heated over mild flame (80°C for 5 min) till complete evaporation of moisture and then bolus of *Kalka* were added in it. After mixing of *Kalka*, the specified quantity of *Drava Dravya (Bhringraj Swarasa)* was added and the mixture was subjected to heat. Heating was continued maintaining the temperature in between 95-100°C with continuous stirring. Contents were stirred continuously to avoid the possibility of settling down. Fresh goat milk was added on next day. Heating was continued on 2nd day till *Sneha Siddhi Lakshanas* were obtained. After obtaining desired *Sneha Siddhi Lakshanas*, the vessel was taken out from heat and oil was filtered through two folded cotton cloth in its hot stage. The prepared oil was stored in a properly labeled air tight bottle after cooling.

Pharmacognostical Study

Herbal drugs used was identified and authenticated by Pharmacognosy department, IPGT & RA**,** Gujarat Ayurved University, Jamnagar. The identification was carried out on the basis of organoleptic features, morphological features and powder microscopy of herbal drug.

PHARMACEUTICAL EVALUATION

Physicochemical Parameters

Shadbindu Taila was analyzed by using qualitative and quantitative parameters at Pharmaceutical Laboratory, IPGT & RA**,** Gujarat Ayurved University, Jamnagar. The common parameters mentioned in Ayurvedic Pharmacopeia of India[4] and CCRAS guidelines[5] i.e. Refractive index[6], Specific gravity[7], Acid value[8], Iodine value[9], Saponification value[10] were taken.

High Performance Thin Layer Chromatography (HPTLC)

Sample preparation

0.1 Ml of oil was taken and 1 ML of hexane was added .The Solution was prepared used for chromatography. Thereafter pre chromatographic derivatization was done. Alcoholic KOH (base) and thereby heated for 10-15 minutes in CAMAG TLC plate heater. Sample application was done using CAMAG linomat 5.

HPTLC of *Shadbindu Taila* was carried out using the solvent system petroleum Ether: Diaethyl ether: Aceitic Acid (9:1:0.1v/v).HPTLC study was performed for the normal phase separation of components of product. Post chromatographic derivatization was done with vanillin sulphuric acid spray reagents.[11]

OBSERVATIONS AND RESULTS

Pharmacognostical

Powder microscopic characteristics: *Shadbindu Taila* powder microscopy shows epidermal cell with oil content of *Darusita,* starch grain with hilum of *Eranda,* border pitted vessel of *Jeevanti, Rasna* group of fiber, oil globule of *Shatpuspa,* olioresine content of *Shunthi,* olioresine + starch of *Tagara,* brownish colouring content matter of *Vidanga,* rhamboidal crystal of *Yashtimadhu.*

Organoleptic characters: Organoleptic characters like Taste, Colour, Odour, Touch and Texture were scientifically studied are as per detailed in Table 2.

Table 2: Organoleptic characters of prepared Drug (*Shadbindu Taila).*

Sr no.	Various parameters	Results
1	Colour	Dark brown
2	Odour	Pungent
3	Taste	*Katu,Tikta*
4	Touch	Viscous
5	Texture	Liquid

Pharmaceutical Analysis

Comparative Physicochemical Analysis of *Shadbindu Taila* i.e. Refractive index, Specific gravity, Acid value, Iodine value, Saponification value were scientifically studied and results were detailed in respectively Table 3.

Table 3: Physicochemical Parameters of *Shadbindu Taila.*

Sr. No.	Parameters	*Shadbindu Taila*
1.	Specific Gravity at room temp. at 32˚C	0.9451
2.	Referactive Index at 40˚C	1.47
3.	Acid value	11.175
4.	Iodine Value	14
5.	Saponification Value	243.69

HPTLC Study

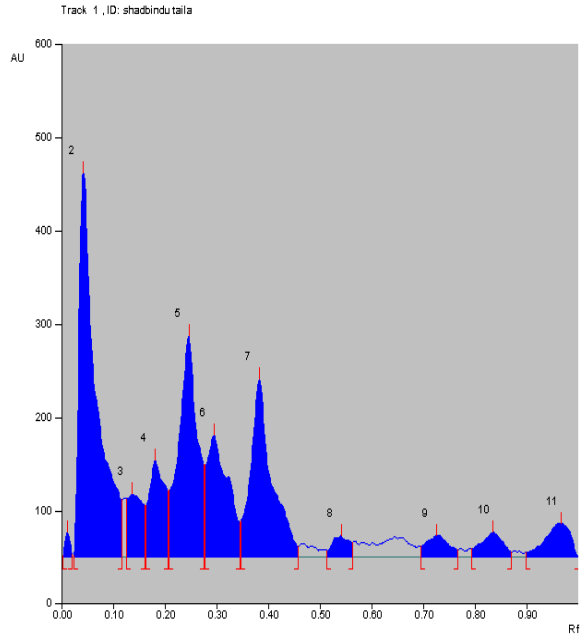
Chromatographic study (HPTLC) was carried out under 254nm and 366nm to establish fingerprinting profile. It showed 11 spots are detected at 254 nm and 4 spots are detected at 366nm.

Table 4: Results of *Shadbindu Taila.*

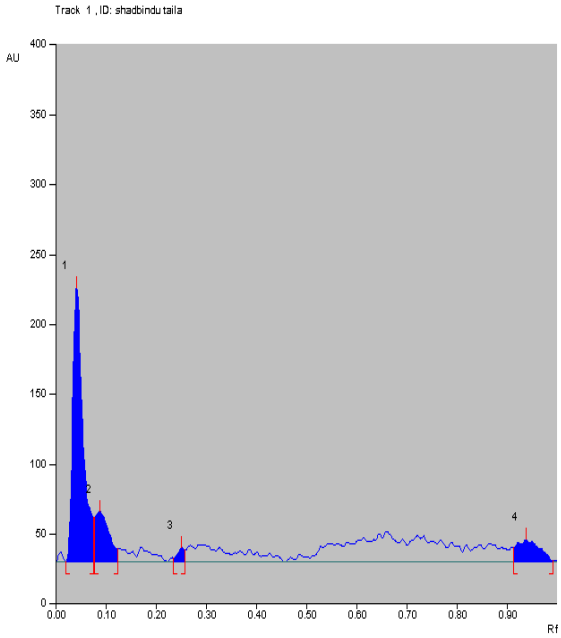
Track	Solvent system	Observation under UV radiation			
		254 nm		366 nm	
		No. of spots	Rf value	No.of spots	Rf value
Shadbindu Taila	Toluene (7ml) : Ethyl acetate (2ml): Acetic acid (1ml)	11	**0.01**,0.13,0.29, 0.5,0.65, 0.84,0.91	4	**0.01**,0.83, 0.95

DENSITOGRAM OF *SHADBINDU TAILA*

Peak display at 254 nm



Peak display at 366 nm



DISCUSSION

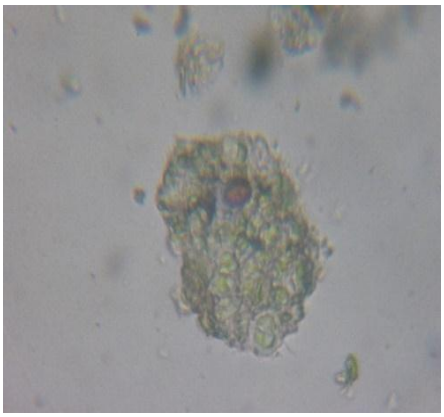
Normally oils give different characteristics like colour and odor relative to ingredients which were used to prepared the medicated oil. In this herbal oil, dark brownin colour is given due to ingredients used in the preparation of *Shadbindu Taila*. The characteristic odor is due to *Tila Taila* which was used in preparation. Authentication of used drugs was done by powder microscopical characters. This can prevent misuses of drug adulteration. The pharmacognostical evaluation showed that it contains ingredient which were observed in the powder microscopial characters. This shows the purity and quality of product. Specific gravity of plain *Tila Taila* is 0.90- 0.92.[12] Specific gravity of *Shadbindu Taia* in present study was 0.945 (Table 3). When the specific gravity is less than one, then the object will float.[13] Specific gravity is varying according to density of liquid. Specific gravity in present study denotes that density of *Shadbindu Taila* is more than plain *Tila Taila*. Refractive index describes how fast light propagates through the material.[14] The refractive index decreases by increasing of the temperature. The interaction between molecules decreases as the temperature increases.[15] In present study refractive index was 1.47 (Table 3). The acid value determines the amount of free fatty acids in a fat.[16] Acid value of *Tila Taila* is 3.4.[17] In present study acid value was 11.175 (Table 3). It may be increases because of heating process and the ingredients added to it. There are different methods for checking the unsaturation level in fatty acids, one among them is by determining the iodine value of fats. A

higher iodine value indicates a higher degree of unsaturation.[18] The higher the iodine number, the more C=C bonds are present in the fat.[19] In present study iodine value was 14 (Table 3). According to present study, saponification value of *Shadbindu Taila* was 243.69(Table 3). It is the measure of average molecular weight of all fatty acids present in it. The long chain fatty acids found in fats have low saponification value because they have a relatively fewer number of carboxylic functional groups per unit mass of the fat and therefore high molecular weight.[20] TLC finger print profile consists of 8,5 prominent spots under UV light at 254nm and 366nm respectively before spray and 6 were after spraying. Total Area under curve was occupy 15100.4 under UV light at 254nm and 366nm HPTLC fingerprint profile helps in identification of various phytochemical constituent present in the crude drug thereby substantiating and authenticating of product, This profile helps in identify and isolate the important phytoconstituents. These findings could be helpful in identification and authentication.

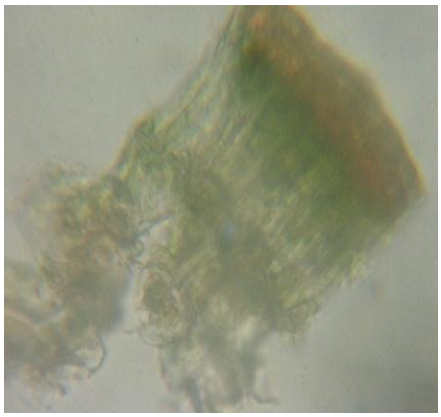
CONCLUSION

Present study reveals that quality of *Shadbindu Taila* as per pharmacognostical and physico chemical parameters, which helps in justifying the quality of formulation and meet the desired quality. In the present work, the obtained results were found within normal prescribed limits. For first time, this profile of *Shadbindu Taila* was established. On the basis of observations and experimental result, the evaluation of research of *Shadbindu Taila* may be used as standard reference for further quality control research works and clinical studies.

MONOGRAPHS



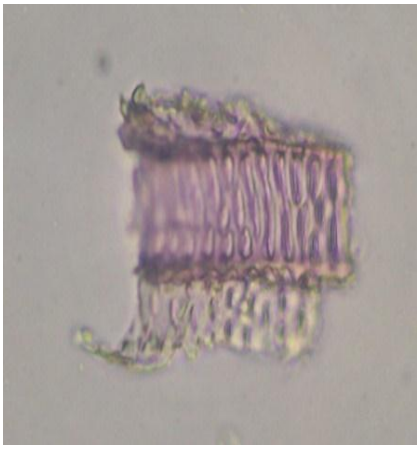
Epidermal cell with oil content of *Darusita*



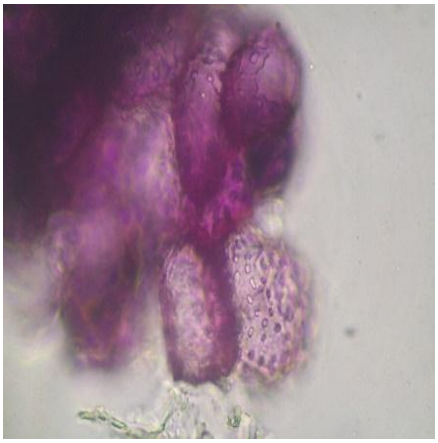
Palisaed cell with spongyparynchyma of *Darusita*

***Eranda* starch grain with hilum**

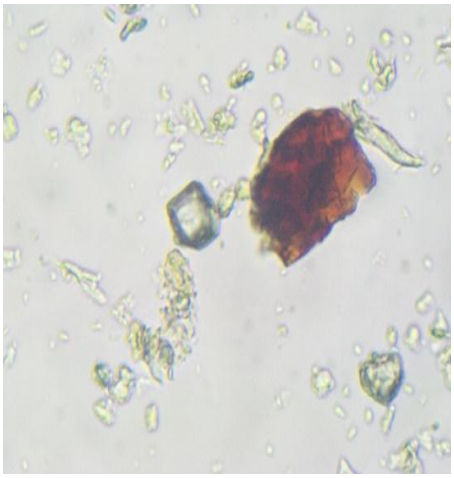
Group of lignified fiber of *Eranda*



Border Pitted vessel of *Jeevanti*

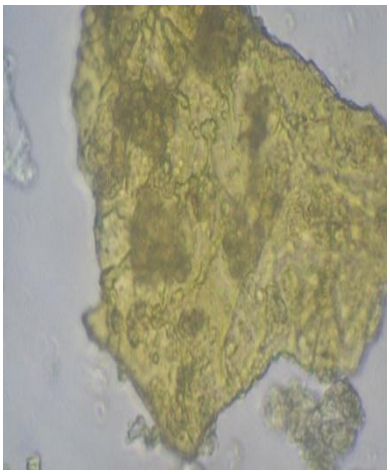


Lignified pitted parynchyma of *Jeevanti*

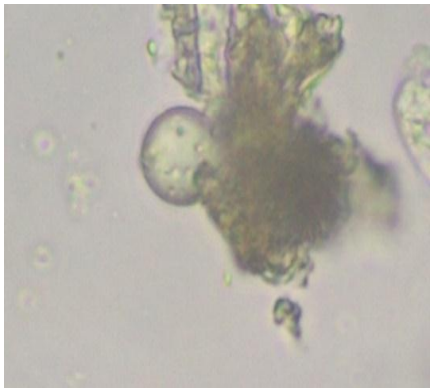


***Rasna* brown content**

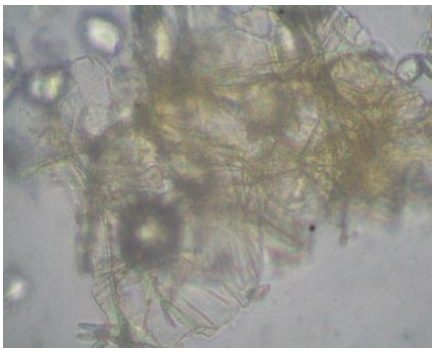
Group of fiber of *Rasana*



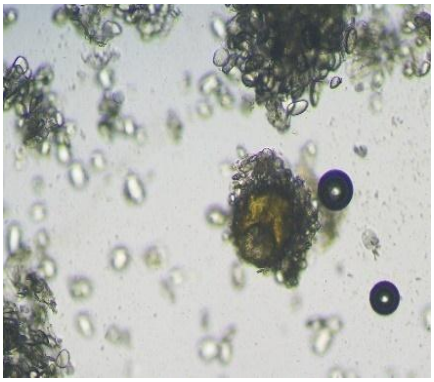
Shatpuspa



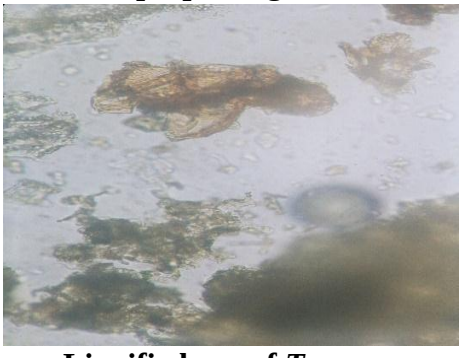
***Shatpuspa* oil globule**



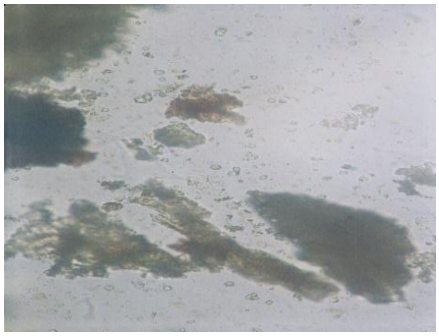
Cork in surface view of *Shunthi*



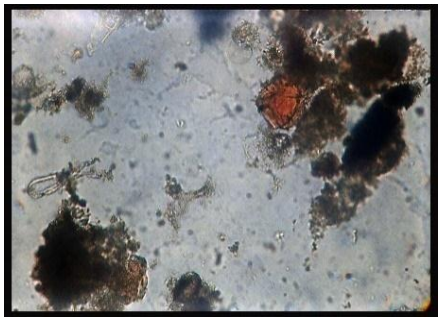
Olioresine content of *Shunthi*



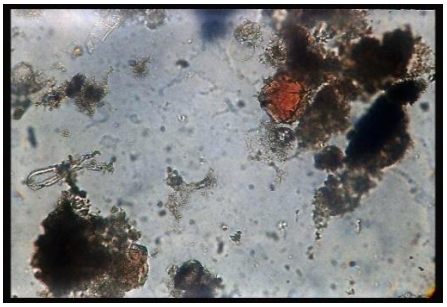
Lignified oar of *Tagara*



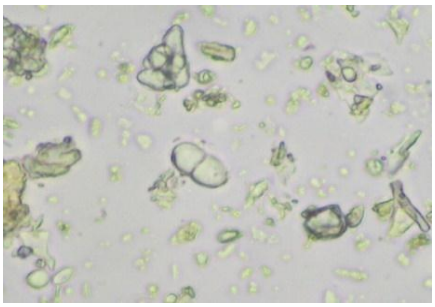
Olioresine + starch of *Tagara*



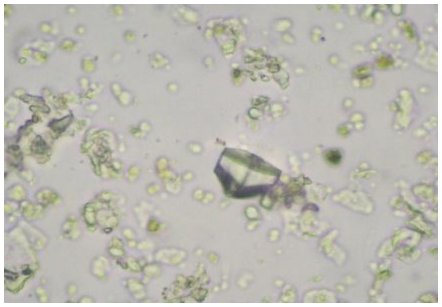
Brownish colouring content matter of *Vidanga*



Scleroid of *Vidanga*



Starch grain of *Yashtmadhu*



Rhamboidal crystal of *Yashtimadhu*

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