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INGREDIENTS IDENTIFICATION AND PHARMACEUTICAL EVALUATION OF SVALPAMASHA TAILA: AN AYURVEDIC OIL BASED MEDICINE

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ABSTRACT

Background: *Svalpamasha Taila* is a *Sneha Kalpana*, indicated in *Bahushirshgata Roga* in *Vatavyadhi Chikitsa*. In present study, it has been used for *Nasya* in *Manyastambha*. **Objective:** Present study is aimed to look out on herbal drugs used in the preparation of *Svalpamasha Taila* and standardization of Pharmacognostical, Physico-chemical parameters and HPTLC evaluation. **Methods:** Raw Drug identification and authentication was done by pharmacognostical study i.e. Morphological features, organoleptic characters and powder microscopy. Physico-chemical evaluation and HPTLC was carried out of final product. **Results:** Pharmacognostical Study showed presence of Scleroids, trichomes, epicarp cells, starch grains, Oil globules, fibres etc. Pharmaceutical evaluation showed results loss on drying 0.026, specific gravity 0.920, Refractive Index 1.487, Acid Value 1.683, Saponification Value 182.255, Iodine Value 30.37. High Performance Thin Layer Chromatography at 254nm and 366 nm results in to 15 and 3 spots before and after spray respectively. **Conclusion:** The results showed that all the physico-chemical parameters were within the normal range and the quality of the preparation is standard which may be used as a reference standard in the further quality control researches in future.

Keywords: *Svalpamasha Taila*, Pharmaceutical, *Manyastambha*, Pharmcognosy, *Nasya*, Standardization.

INTRODUCTION

Ayurveda is an ancient medical system widely used in Indian subcontinent since ages. Various dosage forms were prescribed for treatment of various pathological manifestations in Ayurveda and medicated oil is one amongst them. *Svalpamasha Taila*[1] is one of the medicated formulations mentioned in Ayurvedic text Cakradatta for the treatment of *Bahushirshgata Vata*. It is an Ayurvedic herbal oil which is used in the form of *Nasya*, *paan*, *Abhyanga* as remedy for various *bahu shirogata* disorders such as *Avbahuka*, *Manyastambha* etc. *Svalpamasha Taila* is an important Ayurvedic formulation containing the drugs like *Masha*, *Saindhav*, *Til Taila* as its main ingredients and is used for the many ailments caused especially due to Vata vitiation like *Manyastambha*. Cervical Spondylosis can be correlated with *Manyastambha* described in classics by various Acharya. Symptoms like stiffness of neck, pain found in *Manyastambha* have resemblance with Cervical Spondylosis. It is prepared using *Masha* (Phaseolus mungo). This oil has *analgesic*, anti-inflammatory and astringent properties. This preparation contains Single herbal drug. *Saindhav Lavana* is used as *Prakshepa Dravya* and *Tila Taila* as *Sneha dravya*. It is specially indicated as in *Bahushishgata Roga*. Quality of final product mainly depends on genuinity of raw material. This can be possible through pharmacognosy of raw ingredients by proper identification of material. Analytical procedure helps in determination of trace elements or compounds in the test drug. It is commonly used in chemical, clinical and pharmaceutical research laboratories as a part of quality control measures. Present study is focus on first attempt to develop quality parameters of *Svalpamasha Taila* on the basis of pharmacognostical, physicochemical parameters and chromatographic evaluation. Hence, there is need to scientific proof for standardization of quality parameters. Thus, for the present study the formulation was prepared and analyzed to develop the standards for the formulation through physico-chemical analysis, pharmacognostic parameters and chromatographic profiling of prepared drug. So, this *Taila* preparation has been taken for the study, to analyse the quality of *Svalpamasha Taila* subjected for Pharmacognostical study of individual components and physico-chemical analysis of *SvalpamashaTaila.* Test drug was prepared by using classical guidelines as described in Sharangdhara Samhita.[2]

Objective of Study

Present study is aimed to look out on *Masha* (Raw drug) used in the preparation of *Svalpamasha Taila* and Standardization of Pharmacognostical, Physico-chemical parameters and HPTLC evaluation. The purpose of Standardization of *Masha* (Raw drug) and final product is to ensure therapeutic efficacy.

Materials & Methods

Collection, identification, authentication of raw drugs:

Saindhav lavana & *Til Taila* (*Sesamum indicum* Linn.) were procured from the pharmacy of Gujarat Ayurveda University, Jamnagar. *Masha* was purchased from local market of Jamnagar (Gujarat). The ingredients of *Svalpamasha Taila* and its part used are given at Table No 1. The *Masha* (Raw drug) was identified and authenticated by Pharmacognosy Laboratory, IPGT & RA, Gujarat Ayurved University, Jamnagar. Identification was done on basis of organoleptic characters [Table No 2,3], morphological features and microscopy of Raw drug as per API standards for authentication. *Svalpamasha Taila* was stored in well filled closed glass containers away from the light.

Table 1: Formulation composition *Svalpamasha Taila*

S. No.	Ingredients	Latin name	Family	Part used	Proportion
1	*Mash*	*Phaseolus mungo* Linn.	Leguminosae	Seed	4 Part
Prakshepa dravya					
2	*Saindhav*	*Sodi chloridium*	-	-	1/4 Part
Sneha Dravya					
3	*Til Taila*	*Sesamum indicum* Linn.	Pedaliaceae	Seed	1 Part

Method of Preparation of *Svalpamasha Taila*[3]

Drug was prepared in the pharmacy of Gujarat Ayurved University, Jamnagar. *Tila Taila* in the mentioned quantity 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 *Saindhav Lavana* was added in it. After mixing, the specified quantity of *Masha Kwath* 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. Heating was continued for three days till *Sneha Siddhi Lakshana* were obtained. After obtaining desired *Sneha Siddhi Lakshana*, 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 label airtight bottle after cooling.

Pharmacognostical Study

Masha (Raw drug) 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.[4,5]

Powder microscopy

The powders of respective parts of all the ingredients of *Svalpamasha Taila* studied separately with and without staining covered with cover slip and observed under the Carl Zeiss Trinocular Microscope. The microphotographs were taken by using Carl Zeiss Trinocular attached with camera.

Organoleptic Study

The prepared drug *Svalpamasha Taila* was evaluated by organoleptic characters like colour, taste, odour etc., and was carefully noted down.

Pharmaceutical Evaluation

Physicochemical Parameters:

Svalpamasha 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 and CCRAS guidelines[6] i.e. Refractive index[7], Specific gravity[8], Acid value[9], Iodine value[10], Saponification value[11] were determined.

High Performance Thin Layer Chromatography (HPTLC):

Methanol extract of *Svalpamasha Taila* was used for High performance thin layer chromatography (HPTLC) study. Extract of *Svalpamasha Taila* was spotted on pre-coated silica gel GL60254 aluminium plate as 10mm bands by means of a Camag Linomate V sample applicator fitted with a 100µL Hamilton syringe. Toluene: Ethyl acetate: Acetic acid (7:2:1) was used for *Svalpamasha Taila* as a mobile phase. The development time was 30 minutes. After development, Densitometry scanning was performed with a Camag TLC scanner III in reflectance absorbance mode at 254 nm and 366 nm under control of Win CATS software (V1.2.1. Camag).12, 13 Then the plate was sprayed with Vanillin sulphuric acid followed by heating and then visualized in day light.[12]

Observations And Results

Powder microscopy

Powder microscopy of all the ingredients of *Svalpamasha Taila* was studied and microphotographs were placed at respective figures. [Plate-1 (Fig. 1-8)].

Organoleptic characters

Organoleptic characters like Taste, Colour, Odour, Touch and Texture were scientifically studied are as per detailed in Table 2,3.

Table 2: Organoleptic characters of raw herbal materials used in formulation

Sr. No.	Ingredient	Colour	Taste	Odour	Touch
1	*Masha*	Black	Astringent	Characteristic	Rough
2	*Saindhav Lavana*	Light Pink	Salty	Pungent	Rough
3	*Til Taila*	Dark red	Astringent	Aromatic	Rough

Table 3: Organoleptic characters of prepared Drug (Svalpamasha Taila)

Sr. No.	Various parameters	Results
1	Colour	Light yellow
2	Odor	Mild Smell of *Tila Taila*
3	Taste	*Tikta Kashaya Rasa*
4	Touch	Sticky
5	Texture	Liquid

Physico-chemical Analysis

Physicochemical Analysis of *Svalpamasha Taila* i.e. Refractive index, Specific gravity, Acid value, Iodine value, Saponification value were scientifically studied, and results are detailed in Table no-4.

Table 4: Physicochemical Parameters of *Svalpamasha Taila*.

S. No.	Test	Sample Results %W/W
1	Loss on drying	0.026
2	Refractive Index	0.920
3	Specific gravity	1.487
4	Acid Value	1.683
5	Iodine Value	30.37
6	Saponification Value	182.255

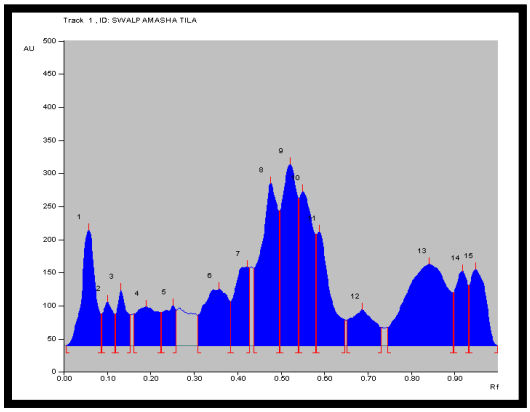
HPTLC Study

Chromatographic study (HPTLC) was carried out under 254nm and 366nm to establish fingerprinting profile. On performing HPTLC, the chromatogram of *Svalpamasha Taila* showed 15 spots at corresponding R_f values 0.06, 0.10, 0.13, 0.19, 0.25, 0.36, 0.42, 0.48, 0.52, 0.55, 0.59, 0.69, 0.84, 0.92, 0.95 in short wave UV 254 nm and 03 spot corresponding Rf value 0.05, 0.25, 0.95 obtained in long wave UV 366 nm. Table 5.

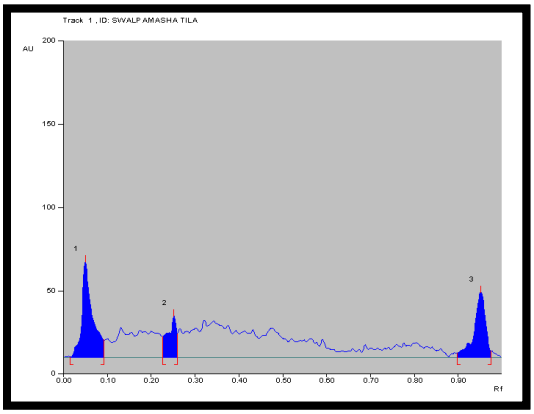
Table 5: Results of *Svalpamasha Taila*.

S. No	UV light	No of Spots	Max. R_f value
1.	254 nm	15	0.06, 0.10, 0.13, 0.19, 0.25, 0.36, 0.42, 0.48, 0.52, 0.55, 0.59, 0.69, 0.84, 0.92, 0.95
2.	366 nm	3	0.05, 0.25, 0.95

Densitogram Of *Svalpamasha Taila* (Before Spray)



At 254nm



At 366nm

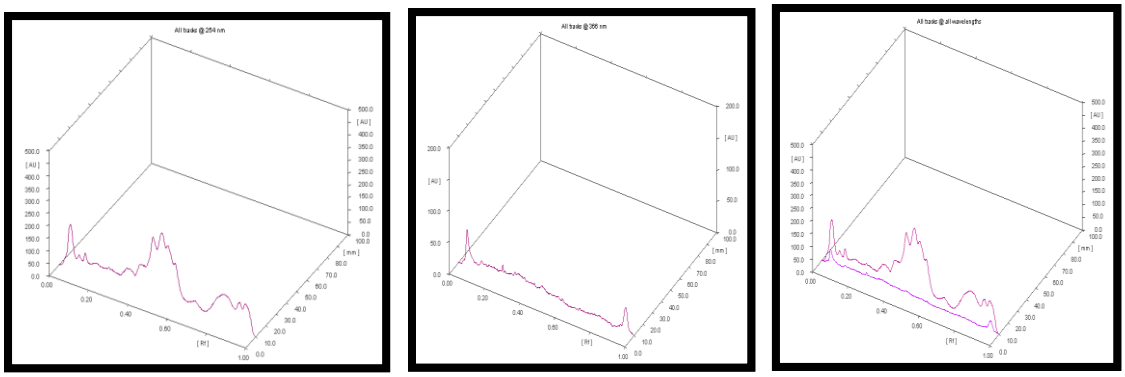


Plate 4: (Fig. a, b) HPTLC fingerprints at (a) 254nm (b)366nm (c) after spray

DISCUSSION

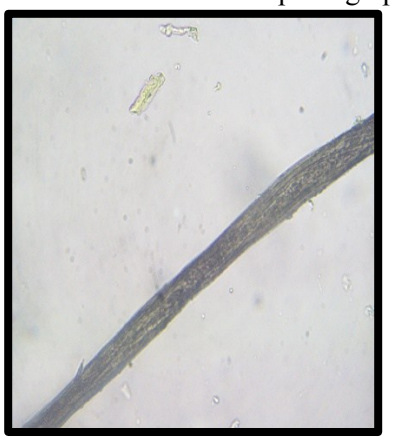
Normally oils give different characteristics like colour and odour relative to ingredients which were used to prepare the medicated oil. This medicated oil had, light yellowish colour due to *Masha* and *Tila taila.* The characteristic odor is due to *Tila Taila* which was used in preparation. Authentication of used drugs was done by morphological and histological. This can prevent misuses of drug adulteration. Pharmacognostical evaluation showed that the *Svalpamasha Taila* contains all the ingredients which were observed in the microscopically characters, this shows that 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.

According to analytical study, Saponification value of *Svalpamasha Taila* was 182.255 mg/g. It is more than normal saponification value of *Tila taila* (169.5).[13] Its due to heating process with intermediate drugs. It is the measure of average molecular weight of all fatty acids present in it. The short chain fatty acids found in fats have more saponification value. Relatively, more numbers of carboxylic functional group per unit mass of the fat. Acid values are used to measure the extent to which glycerides in the oil has been decompose by lipase and other physical factors like heat and light. Minor changes were observed in acid value suggests that medicated *taila* is very saturated. The iodine value is a measure of the degree of unsaturation in oil and could be used to quantify the amount of double bonds present in oil which reflects the susceptibility of oil to oxidation. Refractive index is an important parameter to assess quality of oil as it is change according to its compounds. Specific gravity is varying according to density of liquid. So, it suggests that the more heating gives more Saponification value, Acid value and Specific gravity. TLC fingerprint profile consists of 15,3 prominent spots 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. These findings could be helpful in identification and authentication.

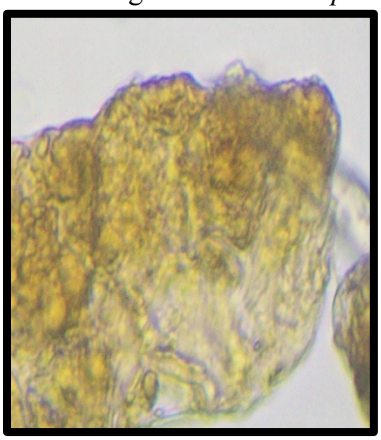
CONCLUSION

Present study reveals the quality of *Svalpamasha Taila* as per pharmacognostical and physico chemical parameters, which helps in justifying the quality of formulation and meet the desired quality. First time, this profile of *Svalpamasha Taila* was established. On the basis of observations and experimental result, the evaluation of research of *Svalpamasha Taila* may be used as standard reference for further quality control research works and clinical studies. All the physico-chemical parameters like acid value, saponification value, iodine value, refractive index, specific gravity analysed were within the normal range. All the results showed the quality of the preparation is standard. 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.

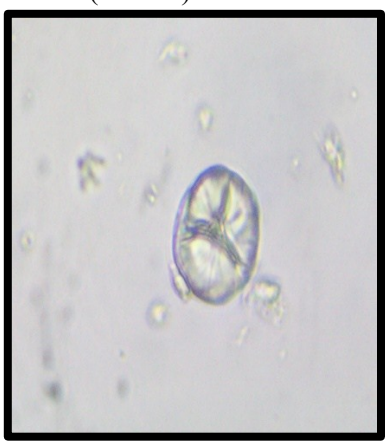
Microphotographs Of The Ingredients Of *Svalpamasha Taila* (Plate-1)



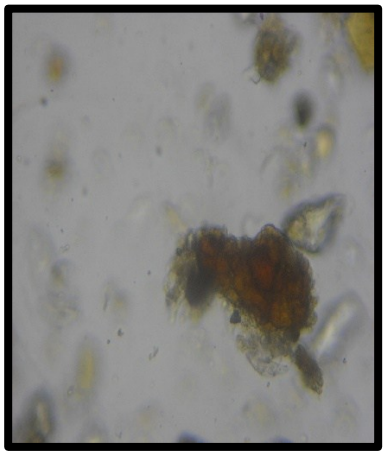
1. Fibres of *Masha*



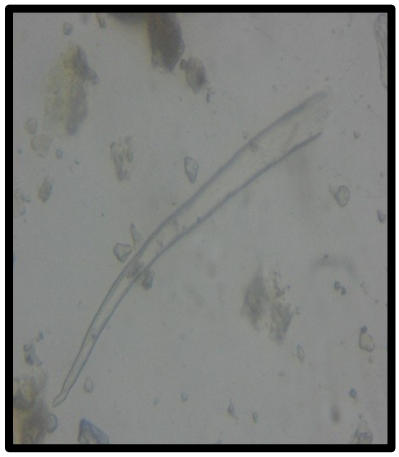
2. Epicarp cells of *Masha*



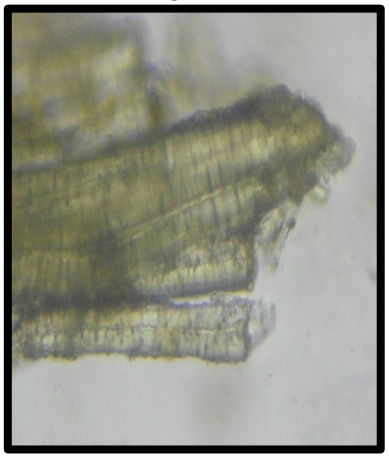
3. Starch grains of *Masha*



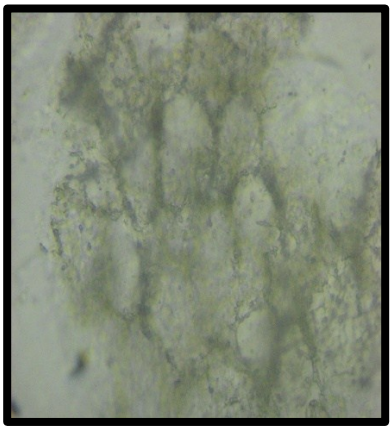
4. Brown content of *Masha*



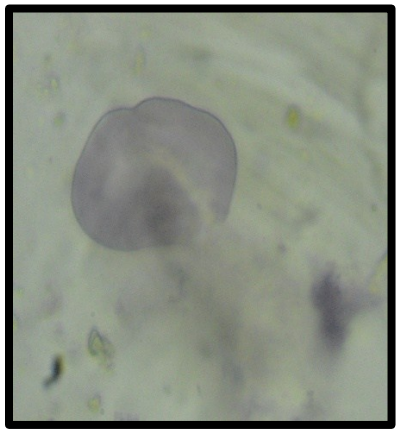
5. Trichome of *Masha*



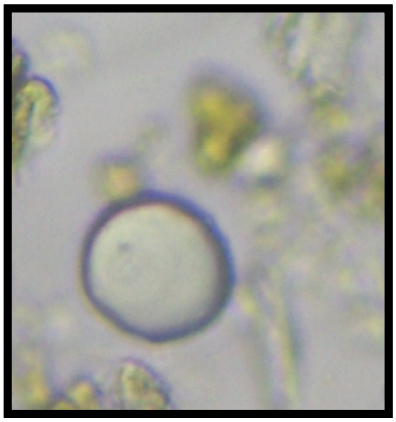
6. Scleroids of *Masha*



7. Parenchyma cells with starch grains



8. Iodine stained starch grain



9. Oil globules of *Tila*

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