Research Article

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PHARMACEUTICAL AND ANALYTICAL STUDY OF PATALI TAILA

Sreejith Raveendran [1]*, Prashanth B K [2]

[1]PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Alvas Ayurveda Medical College, Moodbidri, India

[2]Associate Professor, Department of Rasashastra and Bhaishajya Kalpana, Alvas Ayurveda Medical College, Moodbidri, India

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***Corresponding author**
E-mail: sree1990ktm@gmail.com

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ABSTRACT

Traditional medical systems have always played a crucial role in the maintenance of health and longevity of mankind. Taila, a potent Ayurvedic preparation, has been taken in this study, processed with the addition of certain medicinal drugs and heated for a particular period of time. The study is aimed at the detailed compilation of patali taila preparation, with pharmaceutical and analytical study. This preparation is mainly indicated for vrana ropana in Chakradutta, vrana shodha adhyaya. Literary review was done through various sources like books, journals and the analytical study was performed on the base guidelines of standardization parameters of ASU drugs for taila preparation. The observations made during the preparation of the drug are discussed in this paper.

Key words: patali taila, taila, vrana ropana, vrana shodha adhyaya

INTRODUCTION

Ayurveda is a highly evolved and codified system of health science and life based on its own unique and original concepts. Rasashastra and Bhaishaja Kalpana is the branch of Ayurvedic science that exclusively focuses on various aspects of preparation of medicines. It is known to establish change in the qualities and properties of the drug either by inducing a new property or improving the existing one and finally making the drug safe and more effective.

Sneha kalpana means medicated fatty preparations.[1] These are prepared by using oil or ghee with some decoction or other liquids and paste of the drugs by heating method. It is one of the important and prime dosage forms in Ayurveda that has been emphasized in various conditions both for its internal and external application.[2]

Aims and Objectives of the study

- To prepare patali taila as per classical sneha kalpana.
- To analyze the above said preparations physico-chemically.

MATERIALS AND METHODS

Patali taila[3] was prepared strictly as per the guidelines of the classical literature. The changes occurring during the preparation were noted keenly. The prepared sample was analysed by,

1. Organoleptic method
2. Physico-chemical characters
3. Chromatographic parameters.
4. The drugs enumerated in the recipe.
5. Wide mouthed vessel – stainless steel vessel with copper bottom was taken.
6. Khalva yantra for preparing kalka.
7. Strong spatula with long handle.
8. A clean cloth for filtering.
9. A pyrometer for recording the temperature.
10. Heating aid - Gas stove.

Steps Involved

Collection of the raw materials.
Preparation of patali kashaya.
Preparation of patali taila.

Method of Preparation

Experiment 1- Patali kashaya preparation

Table 1: Ingredients and Quantity Used for Kashaya Preparation

Sanskrit name	Parts used	Quantity
Patali	Root	600 g
Jala	-	9600 ml

Procedure

Raw drugs were collected from Alva's Ayurveda pharmacy, Mijar, Karnataka. The raw drug (Patali-600g) was cleaned and dried properly and drug was made in to coarse powder, and weighed in a clean wide mouth vessel. 9.6 L (16 times of drug) of water was measured and poured into the wide mouthed vessel, and the weighed drug was added and then placed on fire. The heating source used was LPG gas cylinder supplied gas stove. After 1/4th reduction, the water is filtered with a clean cotton cloth and the filtered Kashaya (decoction) was taken in a separate vessel. The residue got in the cloth was discarded.

Experiment 2 -Patali taila preparation

Sneha kalpana is the preparation prepared by using one part of Kalka dravya, 4 parts of Sneha dravya and 16 parts of drava dravya. The mixture is boiled until sneha sidhi lakshanas are attained.[4]

Table 2: Ingredients and Quantity Used for Taila Preparation

Name of the drug	Parts used	Quantity
Patali[5] (Kashaya) *Stereosprum sauvealens*	Root	16 parts (2400ml)
Patali (Kalka)	Bark	1 part (150gm)
Katu taila[6] (sneha) *Brassica campestris*	-	4 parts (600ml)

Procedure

1st Day: The drug patali was washed properly and pounded well in a khalva yantra (pestle and mortar). Bolus of the kalka (paste of drug) was prepared by adding jala (water). Katu taila (mustard oil) was taken in an iron vessel and heated on mild fire to remove the moisture content. Then the prepared kalka was added to the heated taila slowly with constant stirring for homogenous mixing. Patali kashaya was added to that of sneha and heated over mandagni (mild fire) with continuous slow stirring for proper mixing. Taila was heated for 1 hour 10 minutes and it was kept overnight.

2nd Day: The heating process was continued till the sneha siddhi lakshanas were attained. After attaining all the sneha siddhi lakshanas, the heating was discontinued and the taila was filtered through a clean cloth. The filtered taila was properly labelled and stored. Duration of heating was 4 hours 10 minutes and the temperature noted was142ºC. The colour of taila changed from light brown to reddish brown and frothing was appeared.

Completion Test of Taila Kalpana[7]

1. Taila – Fire test - Burns without any cracking sound
2. Kalka – Fire test - No cracking sound.

Consistency – Soft, non-sticky, made in to varti (wick) form, finger print is seen.

Colour –Blackish

RESULTS AND DISCUSSION

Table 3: Observations During Various Stages of Kashaya Preparations

Time duration	Temperature in ºC	Observation
9.40 AM	-	Started practical
After 10 min (9.50 AM)	50ºC	Kalka floats in water
After 25 min (10.05 AM)	80ºC	Kalka floats in water brownish yellow in colour
After 40 min (10.20 AM)	105ºC	Started to boil Light aromatic odor Bitter taste Light brown in color
After 3h 15 min (12.55 PM)	109 ºC	Reduced to half Smell of ingredients More bitter in taste Brown in color
After 4h 25 min (02.05 PM)	114ºC	Reduced to 1/4th Kashaya become thicker Dark brown in colour Kalka sinks completely Profuse frothing

Table 4: Observations During Various Stages of Taila Paka

Days	Stage of taila	Time Duration	Temperature in ºC	Observations
1st day	Luke warm (After adding Kalka)	At 10 min	42	Light yellow colour Frothy surface Slight Kalka floats on the surface Smell of katu taila
	After adding Kashaya	After 15 min	64	Brown colour Smell of katu taila and *Kashaya*
	Started boiling	After 25 min	126	Brown colour Initiation of boiling so kalka started floating
		After 1h 10min	128	Brown colour Kalka is floating
2nd day	Amapaka	After 2h 25min	128	Brown colour Profuse bubbling Kalka mixed fully with taila (semi-solid)
	Mrudu paka	After 2h 55 min	133	Dark brown colour Taila started separating from kalka Kalka started to stick on the spatula
	Madhyama paka	After 4h 10min	142	Dark brown colour Kalka separated completely from taila Froth reduced

Table 5: Observations of Organoleptic Characters of Taila And Kalka

Organoleptic characters	Observations			
	Taila		Kalka	
	Before	After	Before	After
Colour	Light yellow	Dark Brown	Brown	Coffee brown
Consistency	Liquid, unctuous	Oily	Pasty and soft	Soft, non-sticky
Appearance	Viscous	Viscous	Bolus form	Soft mass
Odour	Strong odour	Astringent smell	Raw medicinal odour	Cooked pleasant odour
Taste	Distinctive pungent	Slight pungent	Bitter	Bitter
Touch	Unctuous	Unctuous	Soft pasty	Smooth, unctuous

Table 6: Final Quantity of Taila Obtained

Quantity taken	Quantity obtained	% of Loss
600 ml	510 ml	15%

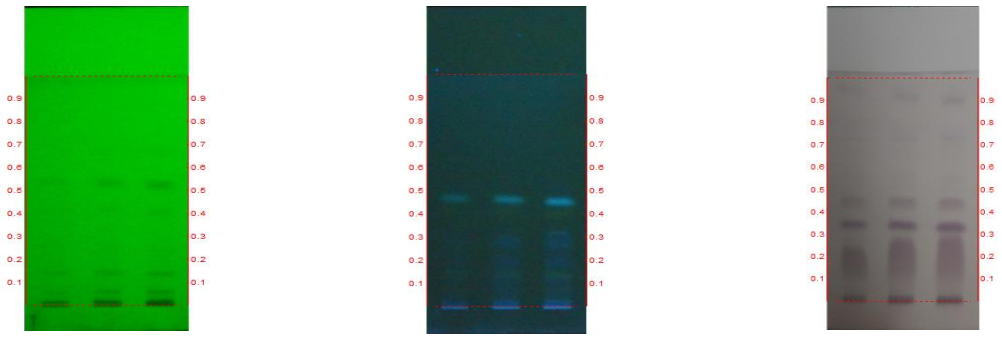
Table 7: Analytical Study[8,9]

Parameters	Patali taila
LOD	0.05%
Specific gravity at 30°C	0.925
Refractive index at 30°C	1.468
Viscosity	30 minutes/50ml
Saponification value	186.41
Acid value	4.09
Iodine value	99.19

Table 8: R_f Values of the Samples at 254nm (At 3 µl),366nm (At 6 µl) And After Derivatisation (At 9 µl)

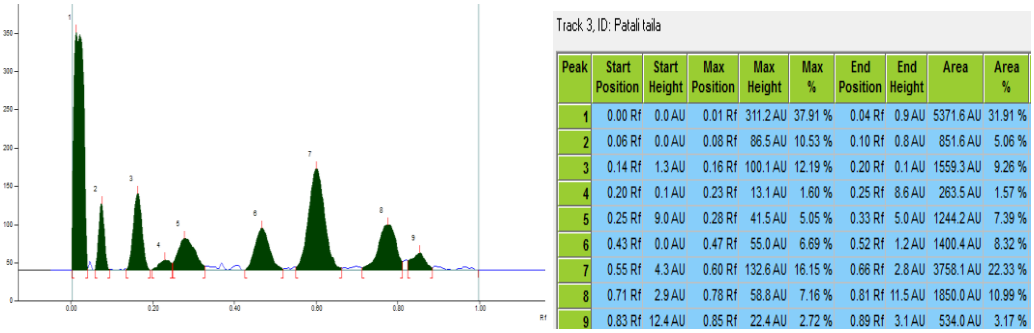
Short UV	Long UV	Post derivatisation
0.06 (D. green)	-	-
-	0.08 (F. blue)	-
0.14 (D. green)	0.14 (F. blue)	-
-	0.20 (F. blue)	-
0.24 (L. green)	-	-
-	0.27 (F. blue)	-
-	0.32 (F. blue)	-
-	-	0.34 (Purple)
0.41 (L. green)	0.41 (F. blue)	-
-	-	0.45 (Purple)
-	0.47 (F. blue)	-
-	-	0.51 (Purple)
0.53 (D. green)	-	-
-	-	0.56 (Purple)
-	-	0.73 (Purple)
-	-	0.90 (Purple)

* F – Fluorescent; L – light; D – Dark



At 254nm **At 366nm** **After derivatization**

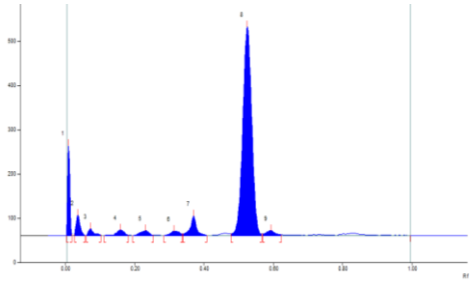
Figure 1: HPTLC Photo Documentation of Ethanol Extract of Patali Taila
Track 1- Patali taila – 3µl, Track 2- Patali taila – 6µl, Track 3- Patali taila – 9µl
Solvent system – Toluene: Ethyl Acetate (9: 1)



Track 3, ID: Patali taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	0.0 AU	0.01 Rf	311.2 AU	37.91 %	0.04 Rf	0.9 AU	5371.6 AU	31.91 %
2	0.06 Rf	0.0 AU	0.08 Rf	86.5 AU	10.53 %	0.10 Rf	0.8 AU	851.6 AU	5.06 %
3	0.14 Rf	1.3 AU	0.16 Rf	100.1 AU	12.19 %	0.20 Rf	0.1 AU	1559.3 AU	9.26 %
4	0.20 Rf	0.1 AU	0.23 Rf	13.1 AU	1.60 %	0.25 Rf	8.6 AU	263.5 AU	1.57 %
5	0.25 Rf	9.0 AU	0.28 Rf	41.5 AU	5.05 %	0.33 Rf	5.0 AU	1244.2 AU	7.39 %
6	0.43 Rf	0.0 AU	0.47 Rf	55.0 AU	6.69 %	0.52 Rf	1.2 AU	1400.4 AU	8.32 %
7	0.55 Rf	4.3 AU	0.60 Rf	132.6 AU	16.15 %	0.66 Rf	2.8 AU	3758.1 AU	22.33 %
8	0.71 Rf	2.9 AU	0.78 Rf	58.8 AU	7.16 %	0.81 Rf	11.5 AU	1850.0 AU	10.99 %
9	0.83 Rf	12.4 AU	0.85 Rf	22.4 AU	2.72 %	0.89 Rf	3.1 AU	534.0 AU	3.17 %

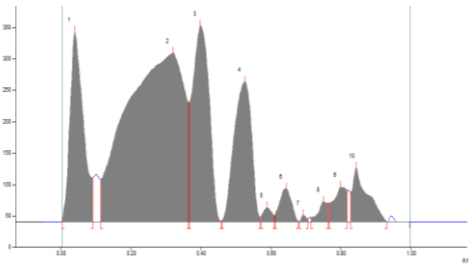
At 254nm



Track 3, ID: Patali taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	0.0 AU	0.01 Rf	204.4 AU	24.64 %	0.02 Rf	2.5 AU	1037.8 AU	8.68 %
2	0.03 Rf	3.4 AU	0.04 Rf	46.1 AU	5.56 %	0.06 Rf	0.5 AU	404.3 AU	3.38 %
3	0.06 Rf	0.3 AU	0.07 Rf	15.3 AU	1.84 %	0.10 Rf	1.5 AU	184.5 AU	1.54 %
4	0.11 Rf	0.2 AU	0.16 Rf	13.4 AU	1.62 %	0.18 Rf	1.1 AU	225.9 AU	1.89 %
5	0.20 Rf	0.0 AU	0.23 Rf	11.5 AU	1.39 %	0.25 Rf	0.9 AU	217.2 AU	1.82 %
6	0.29 Rf	0.2 AU	0.31 Rf	10.0 AU	1.21 %	0.34 Rf	3.9 AU	200.4 AU	1.68 %
7	0.34 Rf	4.0 AU	0.37 Rf	44.9 AU	5.41 %	0.41 Rf	0.7 AU	595.8 AU	4.98 %
8	0.48 Rf	4.3 AU	0.53 Rf	472.0 AU	56.90 %	0.57 Rf	4.0 AU	8867.1 AU	74.16 %
9	0.57 Rf	4.0 AU	0.60 Rf	11.9 AU	1.43 %	0.62 Rf	2.2 AU	224.5 AU	1.88 %

At 366nm



Track 3, ID: Patali taila

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	4.1 AU	0.04 Rf	302.7 AU	22.17 %	0.09 Rf	70.2 AU	8251.4 AU	12.67 %
2	0.11 Rf	67.7 AU	0.32 Rf	269.1 AU	19.70 %	0.37 Rf	90.3 AU	31634.7 AU	48.57 %
3	0.37 Rf	190.5 AU	0.40 Rf	311.6 AU	22.82 %	0.46 Rf	1.3 AU	10713.0 AU	16.45 %
4	0.46 Rf	1.8 AU	0.53 Rf	223.4 AU	16.36 %	0.57 Rf	7.5 AU	8004.1 AU	12.29 %
5	0.57 Rf	8.1 AU	0.59 Rf	22.5 AU	1.64 %	0.61 Rf	10.7 AU	413.9 AU	0.64 %
6	0.61 Rf	11.8 AU	0.65 Rf	52.9 AU	3.87 %	0.68 Rf	0.6 AU	1289.6 AU	1.98 %
7	0.68 Rf	0.0 AU	0.69 Rf	10.6 AU	0.78 %	0.71 Rf	5.0 AU	108.9 AU	0.17 %
8	0.72 Rf	6.7 AU	0.75 Rf	32.0 AU	2.34 %	0.76 Rf	29.7 AU	607.6 AU	0.93 %
9	0.77 Rf	29.6 AU	0.80 Rf	55.4 AU	4.06 %	0.82 Rf	50.5 AU	1463.3 AU	2.25 %
10	0.83 Rf	47.5 AU	0.85 Rf	85.5 AU	6.26 %	0.93 Rf	0.2 AU	2641.1 AU	4.06 %

After derivatisation

Figure 2: Densitometric Scan of Patali Taila

Patali Kashaya was prepared by adding 1 part of drug and 16 times of water and reducing to 1/4th quantity. While preparing, mandagni was maintained and stirring was done in particular intervals. The colour of the kashaya was changed into dark brown and the consistency was watery. Time taken for the preparation was 4 hour 25 minutes and the end product measured 2.4L.

As per the reference, patali taila was prepared with 1 part of katu taila, 1/4th part of patali kalka and 4 parts of patali kashaya. As per the reference of Sharangadhara Samhitha, sneha paka should not be completed in a single day. So paka of patali taila was completed in 2 days. There was continuous bubbling during the preparation due to which constant stirring was needed. In order to prevent the spillage of taila due to overflowing because of bubbling, a wide mouthed large vessel was taken for the preparation. On the 1st day, heating was done for 1 hr 10 min. Temperature noted in luke warm state before adding kalka was 42ºC and when taila started boiling it was 126ºC. On the 2nd day the colour of the taila was changing (from light yellow to dark brown) gradually after each paka which may be due to the chemical changes occurred in the taila because of the ingredients. The colour change probably is an indication of solubility of active principles more into taila with the increased contact time. The average temperature at which madhyama paka was obtained was 142ºC and the colour was dark brown. Final quantity of taila obtained was 510 ml and the percentage of loss was 15%.

For the standardization of finished products, it is essential to analyse the prepared drug or fix some standards so that the quality of the product can be established. The Physico chemical analyses of Ayurvedic formulations are very necessary in the present era to make the scientific basis of the final product stronger and to make it acceptable in the global market. So the analytical methods adopted in the present study and their applications are reviewed. In HPTLC Densitometric scan of chloroform extract of unsaponifiable matter of patali taila at 254 nm 5 spots and 7 spots at 366nm were seen respectively. In HPTLC Densitometric scan of chloroform extract of unsaponifiable matter of patali taila at 254 nm and 366 nm same number of peaks (9 peaks) were seen respectively. HPTLC study is done to obtain the fingerprints of the preparation in order to get standard markers of the sample drug.

CONCLUSION

Informative and explorative conclusion for a scientific research work can be achieved only, if it has undergone a systematic process of critical analysis of literary information, skilful practical implementation with curious observations and logical interpretations with meaningful discussion. Taila kalpana, comes under sneha kalpana, which is mentioned in the classical text books. Patali taila is a medicine meant for external application, mentioned in Chakradutta, agni dagdha vrana chikitsa. Patali taila has been prepared as per the classics and the analytical evaluation of the formulation was found to be satisfactory. HPTLC profile showed 5 spots at 254 nm and 7 spots at 366 nm and it shows same number of peaks (9 peaks) at 254nm and 366nm respectively.

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