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PHARMACEUTICAL AND ANALYTICAL STUDY OF PRIYANGWADI TAILA.

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Abstract

The present work focused on the development of a *Priyangwadi Taila* formulation from a traditionally used *Priyangwadi Churna* and its subsequent pharmaceutical and analytical evaluation. The conversion was undertaken to obtain a convenient oil-based dosage form that could be easier to apply and handle than the powdered form. The *Priyangwadi Taila* was prepared using the ingredients of the *Priyangwadi Churna* according to an appropriate pharmaceutical procedure. The prepared formulation was examined for its physical appearance and various physicochemical parameters, including pH, specific gravity, refractive index, acid value, saponification value, iodine value, peroxide value, unsaponifiable matter and viscosity. The prepared batches showed satisfactory physical characteristics and comparable analytical profiles. The findings provide useful baseline data for assessing the quality and consistency of the developed *Taila*. The study also highlights the practical potential of converting a classical *Priyangwadi Churna* into an oil-based dosage form and provides a basis for further standardisation and therapeutic evaluation.

Keywords: *Priyangwadi churna, Taila, Panchvidh kashay, Sneha*

Introduction

Ayurveda can be called as science of life. *Ayurveda* has greatest emphasis on comprehensive knowledge of drug. This science of manufacturing drugs is divided under two branches(1) as *Ras Shastra* and *Bhaishajya Kalpana*.

Bhaishjya means medicine and *Kalpana* means forms of medicine. *Ayurveda*. *Panchvidh Kashay kalpana* is mentioned in *Bhaishjya Kalpana*. *Panchvidh Kashay Kalpana* (2) includes *Swaras, Kalka, Kwath, Hima, Phanta*. *Churna Kalpana* is basically considered as *upkalpana* of *churna Kalpana*. *Sneha Kalpana* (3) is one of the commonly used form of medicine in *Ayurveda*. *Sneha kalapana* is incorporating medicinal extracts of herbs into *Sneha*. Among four ty es of *Sneha* i.e *Ghrut, Tail, Vasa, Majja*, *Taila* is most commonly used in practice.

Priyangwadi Churna (4) is a classic formulation mentioned in *Bhavprakash Samhita* by *Bhavmishra* in *Vran adhyay*. *Avdhulnaat* is the mode of application described in the reference, that is dusting of churna over wound which is not feasible way to apply now a days. As a feasible way of application study was carried out to modify *Priyangwadi Churna* into *Priyangwadi Taila*. *Taila* is easy and convient to apply and also have better adherence to skin surface and also reduces loss of formulation during application. Therefore, the present study aimed to standardize the formulation through pharmaceutical and analytical evaluation.

Material and Method.

The pharmaceutical study of *Priyangwadi Taila* was carried out through the following steps:

- A. Collection of raw drugs for *Priyangwadi churna* and *Priyangwadi Taila*.
- B. Preparation of *Priyangwadi churna*.
- C. Preparation of *Priyangwadi Taila*
- A. Collection of raw drugs for *Priyangwadi churna* and *Priyangwadi Taila*.

The raw materials of *Priyangwadi Churna*, namely *Dhataki*, *Laksha*, and *Yashtimadhu*, were procured from the local market. Til *taila* was also procured from local market.

All ingredients are mentioned below in (Table no. 1)

Table no. 1: Ingredients of the *Priyangwadi churna*.

Sr. no	Ingredients	Latin name	Part used	Quantity
1	<i>Priyangu</i>	<i>Callicarpa tomentosa</i>	Seed	1 part
2	<i>Dhataki</i>	<i>Woodifordia Fruticosa kurz</i>	Flowers	1 part
3	<i>Laksha</i>	<i>Laccifer lacca Kerr</i>	Resins	1 part
4	<i>Yashtimadhu</i>	<i>Glycerrizha Glabra Linn.</i>	Bark	1 part

Preparation of *Priyangwadi churna*

- A. Drugs mentioned in the *Yoga* are cleaned and dried properly.
- B. They are finely powdered and seived.
- C. Each one of them (powder) is weighed separately, and well mixed together.



Fig no 1: Preparation of *Priyangwadi churna*

Preparation of *Priyangwadi Taila*.

For preparation of *Priyangwadi tail*, *kalka* is made up of *Priyangwadi churna* by adding adequate amount of water to make prepare a homogenous blend

Equipment's required: Gas stove, Wide mouthed stainless-steel vessel, Spatula for stirring, Tongs, Measuring Cylinder, Weighing Machine, *Khalva Yantra* (Mortar and Pestle), Cotton cloth, Thermometer.

Tab No.2: Ingredients of *Priyangwadi Churna*

Sr.no	Name of Ingredients	Quantity as per classical reference
1	<i>Kalka dravya -Priyangwadi churna</i>	1 part
2	<i>Sneha Dravya – Eranda Taila</i>	4 parts
3	<i>Drava Dravya – Water</i>	16 parts

Preparation of *Priyangwadi Taila*:

Day 1

- *Til Taila* was taken in a wide mounted stainless-steel vessel and heated over the mild fire (Temperature 50°C to 60°C) to remove the moisture content for 10 min.
- Paste of *Kalka Dravya* was added to the heated *Taila* slowly and continuous stirring was done for homogenous mixture.
- *Taila* was heated over *Mandagni* with slow stirring for homogenous mixing.
- After the mixture was homogeneously mixed, later four times of Water was added to that of *Taila* slowly.
- Heating was done for 3 hours with constant stirring and maintaining temperature between 97°C - 98°C
- Heating was stopped after 3 hours and it was allowed standing overnight.
- A clean cloth was covered after self-cooling.

Day 2

- Heating was started and continued for 1 hour and 20 minutes and stirring was done to avoid *Kalka* sticking on base and over spilling of frothing mixture.
 - Heating was continued till *Phenodgama* that boiling mixture appeared frothing without watery bubbles and *Kalka* was checked for formation of *Varti* (Wicked), *Sneha* was checked by putting it on fire, which burned without cracking sound (*Madhyama Paka Siddhi Lakshana*).
 - Heating was discontinued after attending all the *Sneha Siddhi Lakshana*, and the vessel was taken out from fire.
 - At about 78°C - 80°C *Siddha Taila* was filtered through double layer cotton cloth and measured the obtained *Sneha* with measuring glass.
 - After measuring it is poured in a clean labelled Glass container and was stored.
 - In whole procedure, at various stages organoleptic tests were done.
 - Pyrometer was used for recording temperature.
 - *Siddha Taila* is stored in the air tight container.
- Types of Agni: *Mandagni*.

In Process Observation of *Priyangwadi Taila*:

Day 1

- 1) *Taila* Kept on Low Flame: Light Yellow Colour.
- 2) Due to heating, bubbles and fumes from *Til Taila* emerged with characteristic odour.

- 3) Addition of *Kalka* to *Taila*: Microbubbles formed as *Kalka* was introduced.
- 4) A lot of bubbles was formed in *Ama Paka* having Light yellowish brown to *Sneha*.
- 5) *Mrudu Paka*: Plenty of bubbles, Yellowish- brown in hue. Bubble Size decreased. *Kalka* became Dark brown and began to adhere to the vessel's bottom. Thick and viscous consistency started to from giving Reddish brown texture to *Mrudu Paka*.

Day 2

1. On second day again *Mandagni* was given for achieving *Madhyama Paka Avastha*.
2. *Madhyama Paka*: *Kalka* began to float and separated from *Taila* as the bubbles emerged prominently (*Phenodgama*), and a Dark Yellow colour emerged.
3. After achieving *Madhyama Paka Avastha* and *Sneha Siddhi Lakshana* Yellow Coloured *Taila* with Dark brown coloured *Kalka* was procured.

Table No. 3: Table showing Time, duration, Temperature during various stages in preparation of *Priyangwadi Taila* (1st – 2nd day).

Days	Stage of heating	Time duration	Temperature recorded
Day1	<i>Taila</i> was heated over <i>Manda Agni</i>	10 min	Initial Temperature (before heating)- 32°C After heating- 50°C 60°C
	Addition of <i>Kalka</i> and heating started	5 min	80°C
	Addition of <i>Jala</i> (<i>Drava Dravya</i>) and heated	2 hours 40 minutes	Temperature immediately after adding of water - 50°C. Boiling stage (maximum Temp) 92°C - 98.2°C.
Day 2	<i>Taila</i> heated over <i>Mandagni</i> till <i>Taila</i>	1 hour 20 minutes	Initial temperature (before heating) - 30°C
	<i>Siddhi Lakshana</i> were Observed.		Max. Temp. - 98°C 105°C

Confirmatory Test (*Sneha Siddhi Lakshan*): (5)

- 1) The consistency of *Kalka* became soft and rolled between the fingers, resembling *Varti*.
- 2) The froth emerges i.e. (*Phenodgama*) was observed resembling the end of *Paka*
- 3) When the cotton dipped in *Taila* was burnt, there was no crackling sound audible.
- 4) *Gandha*, *Appearance*, *Varna* were imparted to *Taila* according to its ingredients.

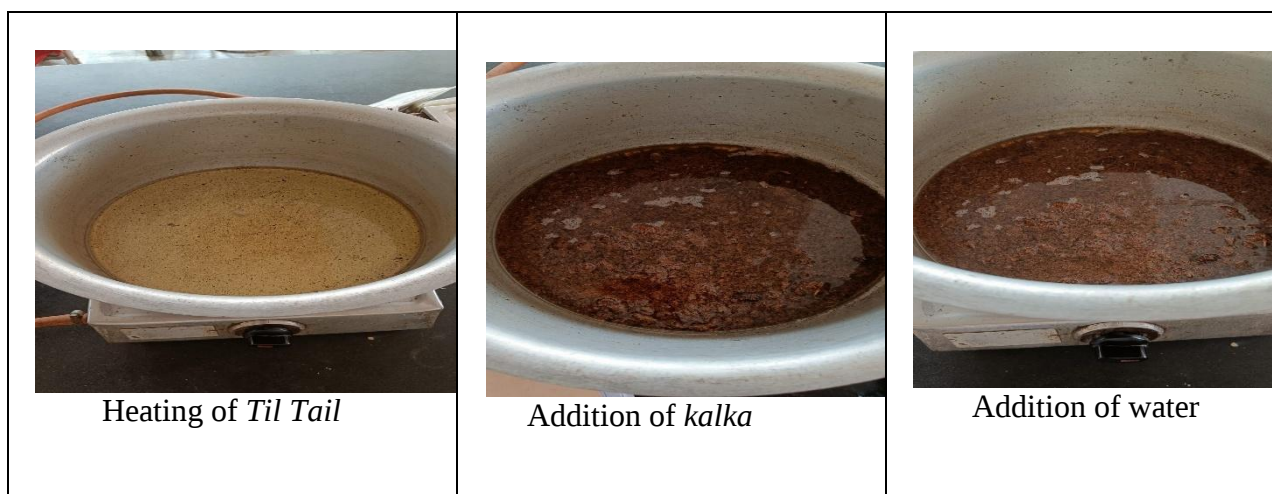
Table No. 4: Table showing *Sneha Siddhi Lakshana* of *Priyangwadi Taila*

Nature	<i>Priyangwadi Taila</i>
<i>Varti</i>	<i>Vartivat Kalka</i> . <i>Varti</i> was made it was smooth, homogenous and Sticky.
Sound	<i>Shabdhino Agni niskhiptaha</i> . When <i>Sneha</i> is put on fire sound disappear
Froth	<i>Phenodgama</i> Yellowish-red froth appeared



Fig no. 4: Raw material for preparation of *Priyangwadi Tail*

Preparation of *Priyangwadi Taila*



Analytical Study

A. Refractive index:(6)

Refractive index at 300 c was checked by Abbe's refractometer

B. Weight per ml:(7)

Calculate the weight per millilitre by dividing the weight of the liquid (g) by the calibrated capacity of the pycnometer (mL) at 25°C.

C. Specific gravity: (8)

Specific gravity is the ratio of the weight of the substance in air at a specific temperature to that of an equal volume of water at the same temperature to that of an equal volume of water at the same temperature. Specific gravity = Weight of the substance in air / equal volume of water.

D. Saponification Value (9)

The saponification value (or saponification number) is calculated using a laboratory chemistry method known as residual titration (also called back titration).

E. Unsaponification value (10)

The unsaponifiable value (or percent unsaponifiable matter) is calculated by extracting the non-saponifiable residue with an organic solvent after alkaline hydrolysis and weighing the dried extract.

F. Acid Value (11)

The acid value (or acid number) is primarily calculated using the standard acid-base titrimetry method. It measures the amount of free fatty acids present in a substance, such as oil, fat, or biodiesel.

G. Peroxide Value (12)

The peroxide value was calculated using the standard formula based on the difference between the sample and blank titration values.

$$\text{Peroxide Value} = 10 (a-b) / W$$

H. Iodine Value (13)

This value determines the amount of unsaturated fatty acids in the form of double bond which reacts with iodine. High iodine value indicates fats are rich in poly-unsaturated fatty acids (PUFA) which are helpful in reducing LDL cholesterol level.

I. pH (14)

pH is measured using a pH meter by determining the electrical potential difference between a glass electrode and a reference electrode. The measured pH value helps determine whether formulation is acidic, neutral, or alkaline.

Results and Observation.

➤ Results of Pharmaceutical Study

➤ Organoleptic analysis of the *Priyangwadi tail*.Table No.5: Table Showing Organoleptic Test of *Priyangwadi tail*.

Test	Sample1	Sample2	Sample3
Description	Hazy oily Liquid	Hazy oily Liquid	Hazy oily Liquid
Colour	Slight brown to yellow coloured	Slight brown to yellow coloured	Slight brown to yellow coloured
Odour	Characteristic odour	Characteristic odour	Characteristic odour

➤ Analytical analysis of the *Priyangwadi tail*Table No.6: Table Showing Analytical Test of *Priyangwadi tail*.

Test	Sample1	Sample2	Sample3
Refractive Index	1.471	1.470	1.470
Weight per ml	0.9159gm/ml	0.9162 gm/ml	0.9148gm/ml
Specific Gravity	0.9187	0.9190	0.9176
Saponification Value	185.46	200.00	188.38
Unsaponification Value	0.93%w/w	1.01 % w/w	0.57 % w/w
Acid value	3.24	3.34	3.24
Peroxide Value	1.58	2.38	1.98
Iodine Value	44.70	49.38	39.65
pH	4.55	4.65	4.58

Viscosity	51.69 Centipose	47.31 centipose	55.01 centipose
Rancidity	No colour observed	No colour observed	No colour observed

Discussion

The physicochemical evaluation of the three batches of *Priyangwadi Taila* showed a comparable pattern across the tested parameters. All batches had a hazy oily appearance, slight brownish-yellow colour, and characteristic odour, indicating consistency in their basic organoleptic properties. The refractive index, weight per mL, and specific gravity showed only slight differences between batches, suggesting uniformity in the preparation.

The saponification and unsaponifiable values showed some batch-to-batch variation, which may be related to differences in the lipid components of the formulation and the processing conditions. The acid value remained fairly consistent, indicating that significant hydrolytic changes were not evident in the tested samples. Similarly, the relatively low peroxide values suggest that the oil had not undergone marked oxidative deterioration.

A moderate variation was observed in the iodine value and viscosity among the three batches. These differences may be influenced by the composition of the oil base and variations occurring during the preparation process. The pH values remained within a narrow range of 4.55–4.65, indicating a mildly acidic formulation suitable for consideration as a topical preparation.

No colour change was observed during the rancidity test in any of the batches, indicating the absence of detectable rancidity under the test conditions. Overall, the findings demonstrated good consistency among the three batches, and the observed values may serve as useful preliminary quality-control parameters for the standardization of *Priyangwadi Taila*.

Conclusion

The study showed that the three batches of *Priyangwadi Taila* had similar physical and physicochemical characteristics, with only minor differences between batches. The uniform appearance, colour, odour, and comparable analytical values indicate consistency in the preparation. The absence of detectable rancidity also supports the satisfactory quality of the formulation. Overall, the findings provide baseline parameters for the quality assessment and standardization of *Priyangwadi Taila* and can be useful for future studies on the formulation.

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