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Ksheerabala Taila- A Pharmaceutico-Analytical Study w.s.r to its *Trividha Paka*

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ABSTRACT

Sneha kalpana is one of the pharmaceutical preparations where both aqueous and lipid soluble active principles are extracted. In *Ayurvedic* classics we find the references regarding the importance of 3 *pakas* of *sneha*. All of them are told to have their own therapeutic utility be it internal or external. In the present study, *Ksheerabala Taila* was subjected to pharmaceutical and analytical parameters in the 3 stages- *Mrudu*, *Madhyama* and *Khara paka*. Pharmaceutically, it was found that *Mrudu paka* had more output and *Khara paka*; the least. The analytical values got for each *paka* may be justified by considering the therapeutic uses of each *paka*.

KEYWORDS

Ksheerabala Taila, Trividha paka, Pharmaceutico-analytical study

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INTRODUCTION

In classics, we come across administration of drugs in the different forms like *Panchavidha Kashaya kalpana, Churna, Vati, Avaleha, Sneha, Sandhana* etc. *Panchavidha Kashaya kalpana* form the basis for all these *kalpanas*. As these have shorter shelf life, other *kalpanas* like *Sneha kalpana* are preferred. Due to its shelf life, varied internal and external therapeutic applicability; *Sneha kalpana* is widely used. *Ksheerabala Taila* is one such formulation explained in the context of *Vatarakta*. The formulation is commonly used in neurological disorders and claimed to be having property of *rasayana*. So it was taken up for pharmaceutical and physicochemical analysis.

AIMS AND OBJECTIVES

- Preparing 3 *pakas* of *Ksheerabala taila* as per standard operative procedure.
- To do Pharmaceutico-analytical study of *trividha paka* of *Ksheerabala taila*.

MATERIALS AND METHODS

Preparation of *Ksheerabala Taila* was done in practical hall of Dept. of Rasashastra and Bhaishajya Kalpana, SDM College of Ayurveda, Udupi after collecting the materials from SDM Pharmacy, Udupi. *Ksheerabala Taila* was prepared according to the reference of *Sahasrayoga*[1] and AFI. The ingredients are *Tila Taila, Balamoola Kalka, Go ksheera, Balamoola Kashaya* and *jala* as explained in Table 1. *Trividha sneha paka* was assessed according to *Sharangadhara Samhita*[2]. These 3 *pakas* were subjected to physicochemical analysis[3].

Table 1 Quantity of ingredients

Ingredient	Quantity
Taila	1 litre
Kalka	250g
Ksheera	1 litre
Balamoola Kashaya	4 litre
Jala	4 litre

Pharmaceutical study of *Ksheerabala Taila* was divided into 4 parts, namely

- *Churna* preparation.
- *Kalka* preparation.
- *Kashaya* preparation.
- *Taila Paka*

1. ***Churna* preparation**: *Balamoola* was collected, washed and dried. Then it was cut into small pieces and made into fine powder with the help of pulverizer.

2. ***Kalka* preparation**: To the above fine powder, sufficient quantity of water was added and grinded to prepare homogenous and smooth *Kalka*.

3. ***Kashaya* preparation**: *Yava koota choorna*(coarse powder) of *Balamoola* was prepared with the help of pulverizer. To this 8 parts of water was added and boiled on mild fire until it reduced to 1/4th.

4. ***Taila Paka***: At first *Tila Taila* was heated and cooled. Then *Go ksheera*, *Balamoola Kalka*, *Balamoola Kashaya* and *jala* were added to it and heated in *mandagni*. Heating was continued with stirring until *sneha sidhi lakshanas* were observed for the respective 3 *pakas*.

OBSERVATION AND RESULTS

PHARMACEUTICAL STUDY:

Table 2 Quantity of drug gain and loss during *Choorna* preparation

Quantity of drug taken	Final product	Loss
150 g	135g	15g

Table 3 Quantity of drug gain and loss during *Kalka* preparation

Quantity of drug	Water added	*Kalka*
110g	70ml	250g

Table 4 Quantity of drug for *Kashaya* preparation

Quantity of drug	Water	*Kashaya*
2 kg	16kg	4 litre

DISCUSSION

Four different types of *Ksheerabala Taila* have been mentioned in the classics[4]. Only in *Sahasrayoga*, the name is *Ksheerabala Taila*. Quantity of drug gain and loss during *Choorna* and *Kalka* preparation has been tabulated in Table 2 and 3 respectively.

Table 5 Observations in *Taila Paka*

Time	*Kalka Lakshana*	*Sneha Lakshana*
Before heating the *Taila*		No bubbles, colour was light yellow
After adding all the ingredients and stirring	*Kalka* got uniformly distributed	Mixture became light yellow.
After 1 hour	*Kalka* sinks to the bottom	Colour of mixture still yellow
After 3 hours	Homogenous mixture	Colour changed to light brown, with greenish tinge
After 6 hours	*Kalka* became brown	Colour was light brown, vapours visible
After 12 hours	*Kalka* still brown	Colour became little darker
After 24 hours	*Kalka* dark brown	Visible difference in quantity of mixture
After 36 hours	*Kalka* dark brown	Mixture became reddish brown
After 40 hours	*Kalka* slightly sticking to ladle	Marked decrease in quantity, frothing present
After 45 hours	*Kalka* was very dark, *Taila* started to separate from *Kalka*	Frothing present, *Taila* was dark
After 59 hours	*Kalka* was soft, rolled with fingers but collapsed on pressing, produced sound on putting to fire	*Taila* produced no sound on putting to fire.
On further heating	*Kalka* rolled in to wick did not collapse on pressing and didn't produce sound when put in fire.	Colour of *Taila* was still dark, froth began to reduce.
On further heating	*Kalka* became very rough, not rolled into wick, powdery	Froth absent, dark reddish brown *Taila*.

The drugs taken up for pharmaceutical study is in Table 4. The observations seen during the preparation have been mentioned in the Table 5. It was found that the output was maximum in the *Mrudu paka* and minimum in case of *Khara paka*.

ANALYTICAL STUDY:

Table 6 Organoleptic characters of *Taila*

Paka lakshana	***Mrdupaka***	***Madhya paka***	***Khara paka***
Colour	Light reddish brown	Dark reddish brown	Very dark
Odour	Weakly aromatic	Characteristic odour	Strong odour
Taste	*Tikta, madhura*	*Tikta, madhura*	*Tikta, madhura*
Froth	Present ,very dense	Reduced	Absent
Varti	Rolled into *varti* but collapsed on pressing	Formed strong *varti*	Not rolled into *varti* due to *kalka* being powdery
Sound on putting in fire	Absent	Absent	Absent

Table 7 Standardization parameters of *Ksheerabala Taila*

Parameter	***Mrudu paka***	***Madhyama paka***	***Kharapaka***
Acid value	9.253	11.242	5.342
Saponification value	137.813	140.320	140.877
Refractive index at 29°c	1.4725	1.4715	1.4716
Iodine value	89.38	106.738	98.209
Viscosity	116.359	94.23	97.780
Loss on drying	-	-	-

When compared to *khara paka* the duration for *mrudu paka* was less. Slight amount of moisture was present in *mrudu paka* and absent in *madhyama paka*. In *Khara paka*, *Kalka* could not be rolled into *varti* and there was complete absence of moisture in it. This according to the *lakshanas* mentioned for each *paka*[2]. The organoleptic characteristics of the three *pakas* of *Ksheerabala Taila* have been mentioned in Table 6.

In Analytical study (Table 7), the acid value was more in *madhyama paka* (11.242) than *mrudu* (9.253) and *khara paka* (5.342). It depicts that *madhya paka* is more susceptible for rancidity. *Mrudu paka* had less saponification value (137.813) wheras *madhyama* (140.320) and *khara paka*(140.877) values were very similar. This suggests better drug absorption and bioavailability in *madhyama* and *khara paka*. Even though *mrudu paka* has less saponification value, as it is used for nasya where nasal membranes have more permeability, its bioavailability is maintained. Refractive index decreased in the order from *mrudu paka*, *khara paka* to *madhyama paka* suggesting more solutes in *mrudu paka* and least in *madhyama paka*. While looking at the iodine value, *madhyama paka* showed high iodine value (106.738) compared to others indicating its better quality. Viscosity was high in *mrudu*

paka and least in *madhya paka* supporting the claim of the latter for external application. Loss of drying was nil in all the three *pakas* indicating the absence of moisture.

CONCLUSION

In the classics we can clearly find the pharmaceutical and therapeutic differences between the three *pakas* and the study only confirmed the same. *Mrudu paka* of sneha is used for *nasya*, *Madhyama paka* for *pana*, *nasya*, *basti*; i.e for all purposes and *Khara paka* for *abhyanga*[5]. Looking at the analytical values we can say that whatever is explained in our *samhitas* holds true. So the therapeutic utility of each *paka* is justified based on its pharmaceutico-analytical observations.

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