ISSN 2456-3110
Vol 7 · Issue 2
March 2022

JAiMS
INTERNATIONAL

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences

Maharshi Charaka
Ayurveda

Indexed

Journal of
Ayurveda and Integrated Medical Sciences
ISSN 2456-3110
ORIGINAL ARTICLE March 2022

Comparative pharmaceutico-analytical study of *Shwet Karviradya Taila* with special reference to duration of *Taila Paka*

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ABSTRACT

Ayurveda is an old and evolved science of medicine based on unique fundamental principles. *Bhaishajya Kalpana* is a sub-discipline of Ayurveda which is devoted to herbal drug formulations like *Vati*, *Asava*, *Arishta, Taila*, *Ghrita* etc. Various minute modifications are suggested in classical texts for preparation of various *Taila* (oils). In *Bhaishajya Ratnavali*, it is said that, the duration of *Taila-Paka* (oil processing) with various *Drava-Dravyas* (liquid media) should be like: (i) *Kvatha*, *Aranala*, *Takra*, *Gomutra* etc. - 5 days (ii) *Swarasa* - 3 days (iii) *Dugdha* - 2 days (iv) *Mansa Rasa* - 1 day. *Karviradya Taila* is Ayurvedic oil mentioned in the text of *Gada-Nigraha* in *Kushtha Chikitsa*. *Karviradya Taila* contains *Gomutra* (cow's urine). In the present study, two batches of *Karviradya Taila* were prepared. In Batch A, *Taila-Siddhi* was achieved in one day and in Batch B *Taila-Siddhi* was done in 5 days. Both the batches were subjected to pharmaceutical analysis for understanding the difference in qualitative and quantitative parameters of *Taila* when the duration of *Taila-Paka* was changed.

Key words: *Shwetakarviradya Taila, Taila-Paka, Sneha Kalpana, Kushtha, Ayurveda.*

INTRODUCTION

Bhaishajya Kalpana includes preparation of various forms of medicine like *Vati, Kwath, Asava, Arishta, Taila, Ghrita* etc. Out of these, all products which are made from *Taila* (oil) and *Ghrita* (ghee), their method of preparation, dosages etc. are studied under *Sneha-Kalpana* (Oleaginous preparations). Through *Sneha-Paka* (pharmaceutical process of preparing oleaginous formulations), both the aqueous and lipid soluble contents of the herbs are infused into the formulation. These formulations have a longer shelf-life and can be administered via different routes of the body.

Various modifications while processing the *Taila* have been suggested in various texts. Some of the modifications are

- Changes in the quantity of water based on the quantity of crude drugs
- The change in the duration of *Taila-Paka* with change in liquid media
- Applicability of the final product based on its *Sneha-Paka*

The present study is aimed to study one of the above-mentioned modifications. According to the text

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Submission Date: 09/01/2022 Accepted Date: 13/02/2022

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.7.2.3

ISSN: 2456-3110 ORIGINAL ARTICLE March 2022

Bhaishajya Ratnavali, the period of *Taila-Paka* changes when the oil contains *Drava-Dravyas* (liquid media) like *Swaras* (juice), *Takra* (buttermilk), *Dugdha* (milk), *Gomutra* (cow's urine) etc. The period of *Taila-Paka* with various *Dravyas* should be as follows:

a) *Kvatha*, *Aranala*, *Takra*, *Gomutra* etc. - 5 days

b) *Svarasa* - 3 days

c) *Dugdha* - 2 days

d) *Mansa Rasa* - 1 day[1]

Shwet Karviradya Taila is an ayurvedic *Taila* mentioned in the text of *Gada Nigraha* in *Kushtha chikitsa*.[2] *Shwet Karviradya Taila* contains *Shwet Karvir*, *Chitrak*, *Vidang*, *Gomutra* and *Tila Taila*. Since this oil contains *Gomutra*, it was chosen for the present study.

Aims and Objectives

1. To prepare *Shwet Karviradya Taila* in 1 day and 5 days
2. To compare the analytical difference between the same oil prepared in different batches for different duration.

Materials and Methods

Shwet Karviradya Tail was prepared as per reference of *Gada Nigraha Kushtha Adhikar* and *Bhaishajya Ratnavali*. *Paka* assessment was done as per the reference in *Sharangdhar Samhita Sneha Adhyay*.

All the drugs were authentified by *Dravva Guna* department of APM's Ayurved Mahavidyalaya, Sion, Mumbai, before taking them into preparation. Pharmaceutical preparation was done in the department of *Rasashastra* and *Bhaishajya Kalpana* department of the same institute. Analysis was done in Shree Dhootpapeshwar Ayurvedic Research Foundation.

Preparation of *Shwet Karviradya Tail*

Table 1: Composition of *Shwet Karviradya Taila*

SN	Drug Name	Latin name / English name	Part	Quantity
1.	*Shwet Karvir*	*Nerium indicum*	16 parts	4 liters (*Kwath*)
2.	*Chitrak*	*Plumbago zeylanica*	1/2th part	125 grams
3.	*Vidanga*	*Embellia ribes*	1/2th part	125 grams
4.	*Tila Taila*	Sesame oil	4 parts	1 liter
5.	*Gomutra*	Cow's urine	16 parts	4 liters

Shwet Karviradya Taila was prepared in two batches.

Shwet Karviradya Taila has *Shwet Karvir Swaras* as one of the *Drava Dravya* but fresh *Shwet Karvir* was unavailable. Hence, 2 kg (1 part) dry coarse powder of *Shwet Karvir* was boiled on *Madhyam Agni* (moderate heating) with 16 liters (8 parts) of water till 4 litres (1/4th part) of *Shwet-Karvir Kwath* remained.[3] This *Shwet-Karvir Kwath* was used instead of *Shwet-Karvir Swaras*.

Preparation of SKT (*Shwet Karviradya Taila)* Batch A

1. *Churna* (powder) of *Chitrak* and *Vidanga* were taken total 250 grams (1 part) which was sieved through 80 no. mesh size. *Kalka* (paste) of these drugs was made by adding sufficient potable water. [Table 1]
2. *Tila Taila* (Sesame oil) was taken 1 liter (4 parts) in a clean wide-mouthed stainless steel vessel and placed over *Mandagni* (low heat flame).
3. Once it was heated, slowly, *Shwet-Karvir Kwath* - 4 liters (16 parts) followed by *Gomutra* - 4 liters (16 parts) were added. Then *Kalka Dravyas* (250 grams) were added in two bolus form one by one.[4]
4. Continuous stirring was done. Frequent stirring was done later to allow proper mixing.
5. Heating was continued for 5 hours on the same day till all the *Siddhi Lakshanas* (signs showing proper oil formation) were attained such as *Varti Pariksha* (proper wick formation without breaking), *Phenodgama* (appearance of foam in the oil) and *Agni Pariksha* (holding wick of *Kalka* upon fire does not create any cracking sound).[5] After doing all the *Parikshas* of *Taila*, oil was filtered with cotton

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cloth when it was warm and after cooling, it was packed in a sterile glass bottle and labeled for analysis.

Preparation of SKT (*Shwet Karviradya Taila*) Batch B

The same procedure as mentioned in the preparation of *Shwet Karviradya Taila* Batch A from Point 1 to Point 4 was repeated.

For Batch B, heating was continued for a short span on each day for 5 days.

- Day 1 - 90 minutes
- Day 2 - 60 minutes
- Day 3 - 60 minutes
- Day 4 - 60 minutes
- Day 5 - 75 minutes

On Day 5, heating was continued till all the *Siddhi Lakshanas* (signs showing proper oil formation) were attained such as *Varti Pariksha* (proper wick formation without breaking), *Phenodgama* (appearance of foam in the oil) and *Agni Pariksha* (holding wick of *Kalka* upon fire does not create any cracking sound). After doing all the *Parikshas* of *Taila*, oil was filtered with cotton cloth when it was warm and after cooling, it was packed in a sterile glass bottle and labeled for analysis.

Analytical study of *Shwet Karviradya Taila*

In the present study, analytical evaluation of both Batch A and Batch B of *Shwet Karviradya Taila* was carried out. The samples were analyzed first of all on the basis of organoleptic characters.

Physico-chemical parameters such as Acid value, Saponification value, iodine value, Peroxide value, TLC of Batch A and Batch B of SKT were done at Shree Dhootpapeshwar Ayurvedic Research Foundation, Panvel.

Observation and Results

The duration of *Paka* (oil preparation) of samples SKT (*Shwet Karviradya Taila*) Batch A and Batch B with yield and % loss in ml are mentioned in Table 2.

The observation of Organoleptic features of samples SKT Batch A and Batch B are shown in Table 3.

The values of results of physico-chemical analysis of samples SKT Batch A and Batch B are shown in Table 4.

The Thin Layer Chromatography (TLC) of samples SKT Batch A and Batch B are shown in Image 1.

Table 2: Showing duration of *Paka*, yield and % loss in volumetric form

SN	Name of oil sample	Duration of *Paka*	Initial volume of oil in ml	Final yield of oil in ml	% loss of oil in ml
1.	*Shwet Karviradya Taila* - Batch A	5 hours in a single day	1000 ml	750 ml	25%
2.	*Shwet Karviradya Taila* - Batch B	5 hours 45 minutes over 5 days	1000 ml	700 ml	30%

Table 3: Showing Organoleptic features

Shwet Karviradya Taila		
Parameters	**Observation**	
	Batch A (1 day)	**Batch B (5 days)**
Odour	Like Cow's urine	Like Cow's urine
Consistency	Oily, greasy	Oily, greasy
Appearance	Dark Golden brown colored	Light Golden brown colored

Table 4: Showing physico-chemical analysis

Shwet Karviradya Taila		
Parameters	**Observation**	
	Batch A (1 day)	**Batch B (5 days)**
Acid Value	6.09	6.97
Peroxide value	5.51	6.32
Saponification value	180.86	180.55

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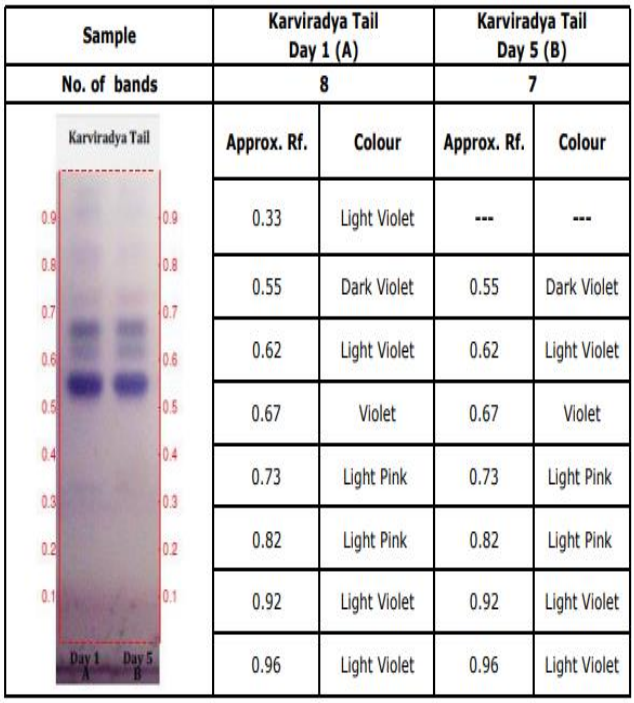
Iodine value	120.52	116.31

Image 1: Showing TLC



Sample	Karviradya Tail Day 1 (A)		Karviradya Tail Day 5 (B)	
No. of bands	8		7	
	Approx. Rf.	Colour	Approx. Rf.	Colour
	0.33	Light Violet	---	---
	0.55	Dark Violet	0.55	Dark Violet
	0.62	Light Violet	0.62	Light Violet
	0.67	Violet	0.67	Violet
	0.73	Light Pink	0.73	Light Pink
	0.82	Light Pink	0.82	Light Pink
	0.92	Light Violet	0.92	Light Violet
	0.96	Light Violet	0.96	Light Violet

DISCUSSION

The concept of modification in duration of *Sneha Paka* according to liquid media was first established by Govind Das Sen in *Bhaishajya Ratnavali*.

The reasons for the loss of oil may be due to

- Usage of dry *Dravyas* in the form of *Kalka* and cold-pressed *Tila Taila* caused more absorption of oil and there by resulting in loss of oil.
- Evaporation of oil by heating.
- Spillage of oil during processes like filtration.

The characteristic odour of cow's urine comes to both batches of SKT due to *Gomutra* being its ingredient. The colour of SKT Batch A was found slightly darker than SKT Batch B.

Acid value indicates the amount of free fatty acids present in oil and fat. A high acid value in the oil may lead to early rancidity of the oils. There was slight increase in the Acid value of SKT Batch B (6.97). The acid value of SKT Batch A (6.09) was slightly lesser than Batch B.

Peroxide value analysis is the best known test for analyzing the stability of oils. The peroxide value of SKT Batch was found to be 5.51 and in batch B it was 6.32. The decreased peroxide value of Batch A indicates increase in stability of Batch A.

Saponification value of SKT Batch A (180.86) of Batch B (180.55) was almost same. The saponification value of both the samples is high. Increased Saponification value increases stability of oil. Greater the degree of unsaturation, greater will be the possibility of oil becoming rancid due to atmospheric oxidation.

The Iodine value of SKT Batch A was 120.52 and Batch B was 116.31. Here, lesser iodine value in Batch B shows increased shelf life of oil.

In Thin Layer Chromatography, the number of bands was same but the intensity of bands on TLC of SKT Batch B was slightly less than Batch A.

CONCLUSION

Pharmaceutical study revealed that the total duration of heating for *Taila Paka* was decreased for Batch A. In Batch A, the colour of the final product of was darker than Batch B. Decreased Acid value and Peroxide value of Batch A indicates more stability of Batch A. The intensity of bands in TLC was more in Batch A. However, the lesser iodine value in Batch B indicates increased shelf life of Batch B. In analytical parameters, the Batch A of *Shwet Karviradya Taila* prepared in 1 day shows more stability than Batch B prepared in 5 days. However, it cannot be firmly concluded that Batch A is more stable than Batch B due to lesser iodine value in Batch B. Hence, further studies are required to ascertain the stability of oil prepared in different duration according to different liquid media.

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How to cite this article: Gangaprasad R. Asore, Sachin S. Sheth, Rucha P. Sawant. Comparative pharmaceutico-analytical study of Shwet Karviradya Taila with special reference to duration of Taila Paka. J Ayurveda Integr Med Sci 2022;2:16-21.
http://dx.doi.org/10.21760/jaims.7.2.3

Source of Support: Nil, **Conflict of Interest:** None declared.

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