

PHARMACEUTICAL AND ANALYTICAL STUDY OF KARANJADI TAILA

Tumram Arvind C¹, Gramopadhye N.G.²¹Assistant Professor, Department of Agadtantra, Government Ayurved College, Nagpur²Professor, Department of Agadtantra, J.J. Magdum Ayurved Medical College, Jaisingpur, District Kolhapur.Corresponding Author: atumram@gmail.com<https://doi.org/10.46607/iamj05p7032023>

(Published Online: March 2023)

Open Access

© International Ayurvedic Medical Journal, India 2023

Article Received: 12/04/2023 - Peer Reviewed: 29/04/2023 - Accepted for Publication: 30/04/2022.



ABSTRACT

Sneha Kalpana is an integral part of *Ayurvedic* treatment, and it can be used both externally as well as internally. Standardization of formulation is an important step for the establishment of biological activity, consistent chemical profile, or quality assurance for production. *Karanjadi Taila* is the formulation described in *Bhaishajya Ratnavali* in *Visarparogadhikar*. Aim- Pharmaceutical and analytical study of *Karanjadi Taila*. **Objectives**-1. To study the pharmaceutico – analytical aspect of *Karanjadi Taila*, 2. To develop standard manufacturing procedures for *Karanjadi Taila*. Material and Method- Classical reference of *Karanjadi Taila* is *Bhaishajya Ratnavali*. Contents of *Karanjadi Taila* are *Karanja Beeja*, *Saptaparna Twaka*, *Langali Mula*, *Arka Dugdha*, *Snuhi Dugdha*, *Chitrak Mula Twaka*, *Bhrungaraj Panchang*, *Haridra Kanda*, *Gomutra*, *Visha Kanda (Vatsanabha)* and *Tila Taila*. The entire process was carried out methodically, and observations and results were recorded. **Discussion**- This study discusses the causes and effects of the pharmacological and analytical findings. The purpose of this study is to establish a standard manufacturing process by evaluating all analytical and medicinal characteristics, including Refractive index, viscosity, acid value, iodine value, specific gravity, saponification value, and peroxide value. **Conclusion**- To ensure the quality and purity of *Karanjadi Taila*, a standard manufacturing technique was developed using the thorough pharmaceutical analysis of *Karanjadi Taila* in a logical, sequential manner. Data obtained from this study may be helpful in the standardization of *Karanjadi Taila*.

Keywords: *Ayurved*, *Sneha Kalpana*, Standardization, *Karanjadi Taila*, Eczema.

INTRODUCTION

Various formulations described by our *Acharyas* are based on primary *Kalpana* like *Swarasa* (self-expressed herbal juice), *Kwatha* (specially prepared decoction in accordance with *Ayurvedic* principles), *Kalka* (herbal paste of different parts of botanicals), *Hima* (cold infusion), and *Phanta* (hot infusion). For more self-life and more palatability, other secondary *Kalpanas* are also explained in *Samhita*. *Sneha Kalpana* (a group of products of medicated oil and ghee) is among one most common which are widely used. It is a pharmaceutical process where *Kalka Dravya*, *Drava Dravya* like *Kwatha*, *Swarasa*, *Dugdha* (milk), *Gomutra* (cow's urine) or anything as per the reference and *Sneha Dravya* is taken in specific proportion and by subjecting them to unique heating pattern and duration for the preparation of oleaginous medicaments (oil and ghee).⁽¹⁾ It is used to extract the fat-soluble active principles from the raw material, enhance and the absorption of drugs when used topically in fat media.⁽²⁾ The *Sneha Dravya* not only acts as a base but also as a vehicle. It ensures the transformation of the active therapeutic properties of the ingredients to the solvents to make the preparation therapeutically more potent. Medicated *Dravya Siddha Sneha* (medicated oil/ghee) has better pharmacokinetic action in comparison to other dosage forms due to its lipid-soluble substances rapidly permeating into the cells and it ensures the transformation of the active therapeutic properties of the ingredients to the solvent. In ancient scripture, various drugs have been mentioned for the treatment of eczema and *Karanjadi Taila* is one of them. In

Bhaishajya Ratnavali, *Karanjadi Taila* has been mentioned for the treatment of *Visarpa* (Herpes zoster), *Visphota* (blisters), and *Vicharchika* (eczema).⁽³⁾ In this study *Karanjadi Taila* was prepared according to the reference of *Bhaishajya Ratnavali*. Contents of the *Karanjadi Taila* are *Karanj Beeja*, *Saptaparna twaka*, *Langali Mula*, *Arka Dugdha*, *Snuhi Dugdha*, *Chitrak Mula Twaka*, *Bhrungaraj Panchang*, *Haridra kanda*, *Gomutra*, *Visha Kanda* (*Vatsanabha*)(Purified) and *Tila Taila* (Sesame Oil). In these contents some are *Visha* (toxic), some are *Vishaghna* (antitoxic), and some are *Kushthaghna* (Skin disease). This study is aimed to set the standard manufacturing procedure of *Karanjadi Taila* by *Ayurvedic* and modern parameters.

Aim and objectives: -

1. To study the pharmaceutico – analytical aspect of *Karanjadi Taila*
2. To develop standard manufacturing procedures of *Karanjadi Taila*

Material and methods:

This study has been done in the following two steps – 1. Pharmaceutical study 2. Analytical study

1. **Pharmaceutical study:** The preparation of *Karanjadi Taila* was done according to the reference of *Bhaishajya Ratnavali*, *Visarparogadhikar*. All the raw material for this study was procured from an authentic source and examined by the expert to confirm the identity, purity, and strength.

Ingredients: (Table no. 1)

Sr. No.	Contents	Latin Name	Part used	Quantity
1	<i>Karanja</i>	<i>Pongamia pinnata</i>	Beeja	10 gm
2	<i>Saptachhad</i>	<i>Alsatonia scholaris</i>	Twaka	10 gm
3	<i>Langali</i>	<i>Gloriosa superba</i>	Mula	10 gm
4	<i>Nal (Chitraka)</i>	<i>Plumbago zeylanica</i>	Mula Twaka	10 gm
5	<i>Bhrungaraj</i>	<i>Eclipta alba</i>	Panchang	10 gm
6	<i>Haridra</i>	<i>Curcuma longa</i> Linn.	Kanda	10 gm
7	<i>Vatsanabh</i> (purified)	<i>Aconitum ferox</i>	Kanda	10 gm
8	<i>Snuhi</i>	<i>Euphorbia nerifolia</i> linn.	Ksheera	10 ml
9	<i>Arka</i>	<i>Calotropis procera</i>	Ksheera	10 ml
10	<i>Murchhit Tila Taila</i>			600 ml
11	<i>Gomutra</i>			2400 ml

Procedure-

A) Tila Taila Murchhana:

➤ Ingredients: (Table no. 2)

Sr.No.	Ingredients	Quantity taken
1.	<i>Tila Taila</i>	1536 ml
2.	<i>Manjishtha Choorna</i>	96 gm
3.	<i>Amlaki Choorna</i>	24 gm
4.	<i>Haritaki Choorna</i>	24 gm
5.	<i>Bibhitak Choorna</i>	24 gm
6.	<i>Musta Choorna</i>	24 gm
7.	<i>Haridra Choorna</i>	24 gm
8.	<i>Hriber Choorna</i>	24 gm
9.	<i>Lodhra Choorna</i>	24 gm
10.	<i>Suchipushpa Choorna</i>	24 gm
11.	<i>Tamalpatra Choorna</i>	24 gm
12.	<i>Vatankura Choorna</i>	24 gm
13.	Water	6.144 litre

a) Preparation of *Kalka* of *Murchhana Dravya*:

All *Murchhana* drugs from no. 2-12 (table no. 2) were collected from the local market in dry form. For *Kalka* preparation, all finely powdered drugs were taken in mentioned quantity and mixed well in a stainless steel container, converted into a homogeneous blend by adding 210 ml of water & weighed it.

b) *Snehapaka* of *Tila Taila Murchhana*: 1536ml of *Tila Taila* was taken in the stainless steel container and heated slightly. Prepared *Kalka* was added to that slightly heated *Tila Taila* and constant stirring was done to mix properly. 6144 ml of potable water i.e., 4 times that of *Tila Taila* was added slowly into the vessel. heating on a slow flame to maintain a temperature range upto 85°C-98°C without a lid over the vessel with continuous stirring was done. The temperature was recorded after every 15 minutes with a mercury thermometer. On 1st day, after 3 hrs of heating, it was allowed to self-cooling and the plate was covered over the vessel to prevent the entry of any foreign particle. The heating continued again on 2nd day for 3 hrs with continuous stirring and maintained flame. Again, it was allowed to self-cooling. On 3rd day, the heating was continued for 2 hrs. till *Taila* became moisture free and all *Snehasiddhi Lakshanas* were observed that *Kalka* attained perfect *Varti* shape when rolled between thumb and index finger, and no sound was produced when *Kalka* was put on fire, the

foam produced and Colour, odour, and taste of ingredients were appreciable. Then the vessel was taken out from the fire after observing all qualities of *Snehasiddhi*. Finally, after slight cooling at 65°C, prepared *Murchhita Taila* was filtered through a clean white cotton cloth and stored in a cleaned and dried SS container.

B) Preparation of *Karanjadi Taila*:

Preparation of *Kalka*: For *Kalka* preparation all fine powdered drugs (sr.no.1 to 7 of table no. 1) were taken in mentioned quantity and mixed well in a stainless steel container, then added 10 ml of each *Snuhi Ksheera* and *Arka Ksheera* and mixed well, converted into homogeneous blend by adding required amount of *Gomutra* & Weighed it. (150 gm) 600 ml of *Murchhit Tila Taila* was taken in a stainless steel container and heated over a slow flame until *Phenashanti* was observed. Prepared *Kalka* i.e., 150 gm. was added to well-heated *Tila Taila*, and constant stirring was done to mix properly. 2400 ml of *Gomutra* i.e., 4 times that of *Tila Taila* was added slowly into the vessel. The heat was given to the mixture on a slow flame to maintain a temperature range upto 80°C-95°C without a lid over the vessel and continuous stirring was done. The temperature was recorded after every 15 minutes with the help of a mercury thermometer. On 1st day, after 4 hrs of heating, it was allowed to self-cooling and the plate was covered over the vessel to prevent dust fall. On 2nd day,

Snehpaka (medicated oil/ghee) attained various stages like separation of *Kalka*, *Mrudupaka* (oil/ghee has an equal quantity of medicinal plant at the end of processing), *Phenodgam* (Appearance of froth), *Madhyampak* (the remnants at the bottom are smooth and doesn't adhere to the stirrer), etc. After heating first attained the *Mrudupaka* stage which was confirmed by water content in *Kalka* after testing it on flame producing a crackling sound and could not be rolled into proper *Varti* shape. The heating was further continued till *Taila* became water free and all *Snehasidhi Lakshanas* ⁽⁴⁾ of *Madhyampaka* were observed. *Kalka* attained perfect *Varti* shape when rolled between thumb and index finger. No crackling sound was produced when *Kalka* was put on fire, *Phenodgama* was obtained, Colour, odour, and taste of the ingredients were appreciable. The vessel was taken out from fire when after observing all qualities of *Snehasiddhi*. Finally, after slight cooling, *Karanjadi Taila* was filtered through a clean white cotton cloth and stored in a cleaned and dried SS container. 560 ml of *Karanjadi Taila* was obtained.

Table no.3: -Showing the analytical parameters of *Karanjadi Taila*

Sr.No.	Parameters	Values obtained	
		<i>Murchhit Tila Taila</i>	<i>Karanjadi Taila</i>
1.	Refractive index	1.46532	1.46605
2.	Viscosity	26.91 c Ps	30.77 cPs
3.	Acid Value	1.70 mg KOH/g	1.13 mgKOH/g
4.	Iodine Value	108.12 gI /100g	110.72 gI/100g
5.	Specific Gravity	0.8545	0.8549
6.	Saponification Value	190.64 mg KOH/g	189.226 mgKOH/g
7.	Peroxide Value	3.72 milliequivalent/1000g	3.13 milliequivalent/1000g

DISCUSSION

The pharmaceutical study aims to provide safe, effective, and quality drugs. Any formulation can attain therapeutic potential only after being processed with standard pharmaceutical processing. As doubts are often raised on the quality and safety of *Ayurvedic* medicine, the pharmaceutical study is an essential mandatory step towards validation of *Ayurvedic* medicine to stand on the global ground. *Karanjadi Taila* was prepared according to the reference of *Bhaishajya Ratnavali*, *Visarparogadhikar*. *Karanjadi Taila* is

Showing Time required for the pharmaceutical procedure –

Tila Taila Murchhana – 1st day- 3 hrs

2nd day- 3 hrs

3rd day- 2 hrs

1st day of *Snehpaka* – 4 hrs

2nd day of *Snehpaka* – 2:30 hrs

Total Duration – 14 hrs 30 min

Precautions

1. *Mandagni* should be maintained throughout the procedure.
2. Continuous stirring should be maintained to avoid sticking *Kalka* to the vessel and maintained the temperature throughout the procedure.
3. The vessel was taken out from the *Agni* (fire) immediately after observing *Sneha Paka Lakshanas* (chief desired characteristics).

2. Analytical Study

Analysis of *Murchhit Tila Taila* and *Karanjadi Taila*

prepared by *Snehakalpana* procedure, and it took 14 hrs 30 min for complete *Snehpaka* maintaining temp. 90-100°C throughout the procedure, so that the active constituents of drugs are came into the final drug.

1) Pharmaceutical Study (Preparatory Aspect):

a. Raw Material Identification and Authentication: The quality of raw material used in formulation directly affects the quality of the final product, so good quality raw material should be used in any formulation.

- Collection: All the drugs required for the preparation of the *Taila Murchhana* and *Karanjadi Taila*

preparation procedures were collected from the local authentic raw drug dealer. *Arka Ksheera* and *Snuhi Ksheera* were freshly collected on the day of *Snehapaka*.

- Identification: All the raw materials were identified by experts from the *Dravyaguna* dept. of our institute and watched for the purity of the drug.
- Authentication: Authentication of raw materials was done with Ayurvedic parameters as well as physiochemical from an Authorized drug testing laboratory for its identity, purity, and strength.

b. In-process quality parameter assessment:

During the preparation of *Murchhita Tila Taila* and *Karanjadi Taila* same stainless-steel vessel (capacity 10 lit), SS spatula, and SS containers were used considering suitability and inertness towards the chemical reaction of ingredients during *Snehapaka*.

I. *Murchhana* of *Tila Taila*: *Murchhana Sanskara* was done as it enhances the absorption and shelf life, and also promotes the therapeutic efficacy of *Tila Taila*.

- *Snehapaka* was done at a temperature range of 85 to 98°C. The *Agni* was not exceeded this limit to preserve the phytoconstituents of the herbal drugs used.
- *Snehapaka* was done for 2 days with self-cooling patterns after heating for a maintained duration for more extraction of an active constituent of ingredients.
- The color of the *Murchhita Tila Taila* is reddish brown, the change in color may be due to the *Manjishtha* present in *Murchhana Dravyas*.

II. *Karanjadi Taila* Preparation: *Karanjadi Taila* was prepared as per the reference of *Bhaishajya Ratnavali Visarparogadhikar*.

- Excessive frothing saw on the surface of the mixture due to the addition of *Gomutra*. The characteristic pungent odour of *Gomutra* was present throughout the *Paka*, it may be due to the presence of Ammonia in *Gomutra*.
- Stirring was done continuously, throughout the whole procedure, especially after *Kalka* started to separate to avoid sticking *Kalka* to the vessel as well as for maintenance of temperature. Also, it

produces a continuous circulation in media, thus helping in increasing the concentration of media and the particles of *Kalka* start coalescing together due to the evaporation of water.

- On 2 nd day, at the *Mrudupaka* stage consistency of the *Kalka* became sticky, and not easily moulded in *Varti* form, which means still some moisture (water content) is present in *Kalka*.
- After attaining *Snehasiddhi Lakshanas* i.e., soft touch of *Kalka*, *Kalka* can be easily moulded to *Varti*, and no appearance of crackling sound on fire test indicating *Madhyampaka* at 98°C, *Agni* was stopped.
- *Taila* was filtered while hot at 70°C to prevent absorption of *Taila* by *Kalka* and yield more products without *Kalka* particles into it.
- *Snehapaka* for *Karanjadi Taila* preparation was done for 2 days for more extraction of an active constituent of ingredients.

2) Analytical Test: By using Analytical parameters, we can confirm the quality of the prepared formulation. Parameters like Refractive index, Viscosity, Acid value, etc. to determine the standard of the formulation.

Refractive index: It is the ratio of the velocity of light in a vacuum to its velocity in the substance. The refractive index of a medium is a measure of how much the speed of light is reduced inside the medium. ⁽⁵⁾ Refractive index of *Karanjadi Taila* is 1.46605 which is due to the addition of the *Gomutra* and *Murchhana* processes of *Tila Taila*.

Viscosity: Viscosity is a measure of a fluid's resistance to flow. It describes the 8 internal frictions of moving fluid. ⁽⁶⁾ It depends upon intermolecular bonding and the length of the hydrocarbon chain. Viscosity of *Karanjadi Taila* is 30.77 cPs. Increased viscosity allows better efficacy of *Karanjadi Taila* as it enhances absorption.

Acid Value: The acid value is the mass of KOH in milligrams that required neutralizing one gram of chemical substance. It normally reflects the amount of acidity which is due to free fatty acids. ⁽⁷⁾ Acid value of *Karanjadi Taila* is 1.13 mgk OH/g which is below 2 indicates better quality.

Iodine Value: Iodine value indicates the degree of unsaturation contains in fatty acids. ⁽⁸⁾ Higher the iodine number, the more unsaturated fatty acids present in fat, greater will be the possibility of rancidity due to atmospheric oxidation. The iodine value of the *Karanjadi Taila* is 110.72 g/100g. **Specific Gravity:** Specific gravity is the ratio between the densities of an object to a reference liquid. ⁽⁹⁾ Specific gravity of *Karanjadi Taila* is 0.8549. It occurs due to the incorporation of ingredients during *Snehapaka*.

Saponification Value: It is the number of KOH or NaOH necessary to saponify one gm of fat under the conditions specified. ⁽¹⁰⁾ Saponification value suggests more content of short-chain fatty acids beneficial in the absorption of oleaginous compound leading to its increased efficacy. The saponification value of *Karanjadi Taila* is 189.226 mgKOH/g which may be due to the addition of *Kalka* and *Gomutra*.

Peroxide Value: peroxide is an indicator of products of primary oxidation and thus measures the rancidity or degree of oxidation. ⁽¹¹⁾ Peroxide value of *Karanjadi Taila* is 3.13 milliequivalent/1000g may be due to the addition of *Gomutra* as a *Drava Dravya*.

CONCLUSION

Karanjadi Taila is mentioned in *Bhaishajya Ratnavali* under *Visarparogadhikar* which is indicated for *Visarpa*, *Visphota*, and *Vicharchika* (eczema). The formulation has not yet been the subject of a Pharmaceutico-analytical investigation. The study's findings suggest that the thorough pharmaceutical and analytical evaluation described step-by-step explanation and scientific, logical approach aids in the development of standard manufacturing procedure

and the standardisation of *Karanjadi Taila*. The standard values for *Karanjadi Taila* are not given in Ayurvedic Pharmacopeia of India, so further study is necessary for the standardization of the formulation. This is a very potent formulation that is not seen that much in therapeutic use, so it is necessary to perform clinical studies to evaluate its role in the indications explained like *Visarpa*, *Vicharchika*, etc.

REFERENCES

1. Singh N, Chaudhary A, A comparative Review Study of Sneha kalpana (Paka) vis-à-vis liposome. Ayu.2011 Jan-Mar; 32(1): 103-108.
2. Choudhary N, Rao N, Pharmaceutical review of sneha kalpana and its importance in Ayurveda. Int. J. Res. Ayurveda Pharm. 2015; 6(5): 568-572.
3. Shastri A, Editor. Bhaishajyaratnavali of Sree govindadas with vidyotini hindi commentary, Visarpa chikitsa adhyaya. 5th ed. Chaukhamba orientalia: 935
4. Parashar S. Sharangdhara Samhita, Sneha Kalpana. Reprinted ed. Nagpur: Shree Baidyanath Ayurved Bhawan; 2012. p.318
5. Sharma D. et al, Pharmaceutico-Analytical Study of A herbal cosmetic I.E. Varnak Ghrita, International Journal of ayurvedic and Herbal Medicine. 2020; 10(2):3734-3743.
6. Viscosity, Available from: <https://www.britannica.com/science/viscosity>
7. Acid Value, Available from: https://en.m.wikipedia.org/wiki/Acid_value
8. Iodine Value, Available from: <https://www.britannica.com/science/iodinevalue>
9. Specific Gravity, Available from: <https://www.britannica.com/science/specific-gravity>
10. Saponification Value, Available from: https://en.m.wikipedia.org/wiki/Saponification_value
11. Peroxide Value, Available from: <https://aquadocs.org/mapping/26834/1/C-07.pdf>

Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Tumram Arvind C & Gramopadhye N.G: Pharmaceutical and Analytical Study of Karanjadi Taila. International Ayurvedic Medical Journal [online] 2023 {cited March 2023} Available from: http://www.iamj.in/posts/images/upload/227_232.pdf