



STANDARDIZATION OF DIFFERENT SAMPLES OF KARANJADI TAILA WITH SPECIAL REFERENCE TO PHYSIOCHEMICAL CHARACTERISTICS

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ABSTRACT

Two samples of Karanjadi Taila were prepared by using Kshira(Latex) and Swarasa(Leaf Juice) of Snuhi and Arka. The formulation was based on Karanjadi Taila in Visarpa Chikitsa of Bhaishajya Ratnawali. Though the original reference was from Visarpa Chikitsa of Bhav Prakash. Karanja Taila has a significant therapeutic effect in Vicharchika etc. but the present formulations i.e. different samples of Karanjadi Taila were prepared for the first time, so the standardization of the samples was necessary to overcome the difficulties during the pharmaceutical procedure. No significant differences were found in pharmaceutical aspects of both the samples of *Karanjadi Taila* and the current method of preparation can be considered standard. Attempts were also made to develop an analytical profile of *Taila*, which were almost similar in both samples.

Keywords: *Karanja, Taila, Kshira, Swarasa, Taila Murcchana, Kalka, Kwath, Taila Paka*

INTRODUCTION

Karanja (*Pongamia pinnata*) is a drug with multidimensional activities mentioned in Ayurvedic classics for different disease conditions like Skin diseases, Diabetes, Piles, Intestinal Worms etc¹. Ayurvedic classics hold several formulations where Karanja is one of the main components. Karanjadi Taila is one amongst them. Karanjadi Taila has 11 ingredients along with Karanja². Here two samples of Karanjadi Taila were prepared using Ayurvedic pharmaceutical methods³. **The sample I** – Karanjadi Taila was prepared by using Snuhi (*Euphorbia ligularia*) and Arka (*Calotropis Procera*) Kshira (Latex) along with other ingredients. **Sample II** - Karanjadi Taila prepared by using Snuhi (*Euphorbia ligularia*) and Arka (*Calotropis Procera*) Patra Swarasa (Leaf Juice) along with other ingredients.

Though Sample I is mentioned in Ayurvedic texts, yet it has some disadvantages such as:

- i) Collecting a large amount of latex is a tiresome and time taking process.

- ii) Preservation of latex is a difficult process.
- iii) Being poisonous handling latex is difficult.

Considering these disadvantages, it has been planned to use Leaf Juice of Snuhi and Arka in place of Latex.

Aim and Objectives: To formulate *Karanjadi Taila* with *Kshira (Latex)* and *Patra Swarasa (Leaf Juice)* of *Snuhi and Arka* and evaluate their physicochemical characteristics.

Materials and Methods:

Test Drugs: Karanjadi Taila is a formulation having 11 ingredients [Table 1] in its composition. All drugs were provided by the Post Graduate Department, Govt. Ayurvedic College, Patna, Bihar after proper authentication. All the components were separated from physical impurities like small stones, sand particles, etc. the herbal materials were authenticated by the Pharmacognosy laboratory of the Post Graduate Department, Govt. Ayurvedic College, Patna, Bihar followed by size reduction in a mixer and sieving through #72

Table 1(a) – Sample I

Ingredients	Botanical Name	Parts Used	Quantity
Murchhit Tila Taila	<i>Sesamum indicum</i>	Seed Oil	7.250 kg
Karanja	<i>Pongamia pinnata</i>	Twak	3.04 kg
Saptaparna	<i>Alstonia scholaris</i>	Twak	3.04 kg
Langali	<i>Gloriosa superba</i>	Mula	3.04 kg
Snuhi	<i>Euphorbia ligularia</i>	Kshira	3.04 kg
Arka	<i>Calotropis Procera</i>	Kshira	3.04 kg
Chitraka	<i>Plumbago zeylanica</i>	Mula	3.04 kg
Bhringaraja	<i>Eclipta alba</i>	Panchang	3.04 kg
Haldi	<i>Curcuma longa</i>	Kanda	3.04 kg
Vatsanabha	<i>Aconitum ferox</i>	Kanda	3.04 kg
Gomutra	Cow's urine	cow's urine	3.04 kg

Table 1(b) – Sample II

Ingredients	Botanical Name	Parts Used	Quantity
Murchhit Tila Taila	<i>Sesamum indicum</i>	Seed Oil	7.250 kg
Karanja	<i>Pongamia pinnata</i>	Twak	3.04 kg
Saptaparna	<i>Alstonia scholaris</i>	Twak	3.04 kg
Langali	<i>Gloriosa superba</i>	Mula	3.04 kg
Snuhi	<i>Euphorbia ligularia</i>	Patra Swarasa	6.08 kg
Arka	<i>Calotropis procera</i>	Patra Swarasa	6.08 kg
Chitraka	<i>Plumbago zeylanica</i>	Mula	3.04 kg

Bhringaraja	Eclipta alba	Panchang	3.04 kg
Haldi	Curcuma longa	Kanda	3.04 kg
Vatsanabha	Aconitum ferox	Kanda	3.04 kg
Gomutra	cow's urine	cow's urine	3.04 kg

By expert's advice, Patra Swarasa of Snuhi and Arka was taken twice that of Kshira in sample II.

Equipment's used:

1. Gas stove,
2. Wide Mouth Vessel,
3. Cloth,
4. Spatula,
5. Mortar and Pestle, Stone with Pestle, Balance
6. Mixer and Grinder etc.

Pharmaceutical Procedure:

It involves:

- ❖ Murcchana of Tila taila
- ❖ Preparation of Kalka
- ❖ Preparation of Kwath
- ❖ Taila Paka.

I) Tila Taila Murcchana⁴:

Date of Starting: -29-05-2012

Date of Completion: -02-06-2012

- The mentioned drugs in Table 2 were made into Yavkuta churna (40 meshes) and they were poured into a container having water 4 times that of Yavkuta churna a day before starting Murcchana. The next day Yavkuta churna were made to kalka by using a grinder.
- Tila Taila was taken in a vessel and heated slightly over Moderate heat till the evaporation of water content and the appearance of foam. The same amount of water as that of Tila Taila was added along with Kalka. Adding little by little, kalka mixed well.
- Paka was carried till sneha siddha Laksana (Madhyam Paka)⁵ appeared. After that vessel was taken out of the fire, Tila Taila was filtered in a warm stage with a three-layered cloth.
- The whole process was carried out in 10 hours.
- Tila Taila obtained after Murcchana was 15.2 kg.

Table 2

Ingredient	Amount
Tila Taila	20 kg
Kalka Dravya	
Manjistha	1.25 kg
Haridra kanda	315 gm
Haritaki phala beej rahit	315 gm
Vibhitaki phala beej rahit	315 gm
Amalaki phala beej rahit	315 gm
Lodhra	315 gm
Musta	315 gm
Nalika	315 gm
Ketaki pushpa	315 gm
Vatankur	315 gm
Hwiber	315 gm
Cloth	20 m

II) Preparation of Kalka³:

Sample I:

Date of Starting: -09-06-2012 Date of Completion:-
10-06-2012

- All dry herbs in Table 3 were washed and dried properly.

- All dry herbs were taken in Hammer mill and made Yavkuta powder and transferred to Cone mill and changed to a fine powder.
- The paste was made with the help of Snuhi Kshira, Arka Kshira, Gomutra, and water in a grinder.
- Time is taken in the process – 8 hrs
- Weight of kalka – 1.7 kg

Table 3 -

Ingredient	Amount
Karanja Twak	190 gm
Saptaparna Twak	190 gm
Langali Mula	190 gm
Snuhi Kshira	190 gm
Arka Kshira	190 gm
Chitraka Mula	190 gm
Bhringaraj	190 gm
Haldi	190 gm
Gomutra	190 gm
Vatsanabh	190 gm

Sample II:

Date of Starting:-09-06-2012

Date of Completion:-10-06-2012

- All dry herbs in Table 4 were washed and dried properly.
- All dry herbs were taken in Hammer mill and made Yavkuta powder and transferred to Cone mill and changed to a fine powder.
- Paste was made in grinder with the help of Snuhi Patra Swarasa, Arka Patra Swarasa, Gomutra and water.
- Time taken in the process - 8 hrs.
- Weight of kalka – 2 kg

Table 4:

Ingredient	Amount
Karanja Twak	190 gm
Saptaparna Twak	190 gm
Langali Mula	190 gm
Snuhi Patra Swarasa	380 gm
Arka Patra Swarasa	380 gm
Chitraka Mula	190 gm
Bhringaraj	190 gm
Haldi	190 gm
Gomutra	190 gm
Vatsanabh	190 gm

III)Preparation of Kwath³:

Sample I:

Date of Starting:-04-06-2012

Date of Completion:-09-06-2012

- 3.04 kg of Vatsanabh was purified in Gomutra and dried for use.
- 3.04 kg of Langali mula and 3.04 kg of Chitraka mula were washed in hot water and dried for use.

- 3.04 kg (except Snuhi and Arka Kshira, Gomutra) of each drug was washed, dried, and then changed into Yavkuta churna (small pieces).
- Water (4 times the weight of Kwath Dravya) was added to kwatha drugs in Yavkuta form (except Snuhi and Arka Kshira, Gomutra) and was left for the whole night.
- The next day water-soaked drugs, Snuhi Kshira, Arka Kshira, and Gomutra were boiled in moderate heat, till it was reduced to 1/4th.
- Then obtained kwatha was filtered twice through a clean cloth.
- Time is taken in the process – 6 hrs.
- Weight of kwath – 30.4 kg
- A list of ingredients for kwath was given in Table 5.

Table 5 –

Ingredients	Amount of Kwath Dravya
Karanja Twak	3.04 kg
Saptaparna Twak	3.04 kg
Langali Mula	3.04 kg
Snuhi Kshira	3.04 kg
Arka Kshira	3.04 kg
Chitraka Mula	3.04 kg
Bhringaraja	3.04 kg
Haldi	3.04 kg
Gomutra	3.04 kg
Vatsanabha	3.04 kg

Sample II:

Date of Starting:-04-06-2012, Date of Completion:-09-06-2012

- 3.04 kg of Vatsanabh was purified in Gomutra and dried for use.
- 3.04 kg of Langali mula and 3.04 kg of Chitraka mula were washed in hot water and dried for use.
- 3.04 kg (except Snuhi and Arka Patra Swarasa, Gomutra) of each drug was washed, dried, and then changed into Yavkuta churna (small pieces).
- Water (4 times the weight of Kwath Dravya) was added to kwatha drugs in Yavkuta form (except Snuhi and Arka Patra Swarasa, Gomutra) and was left for the whole night
- The next day water-soaked drugs, Snuhi Patra Swarasa, Arka Patra Swarasa, and Gomutra were boiled in moderate heat, till it was reduced to 1/4th.
- Then obtained kwatha was filtered twice through a clean cloth.
- Time is taken in the process – 6 hrs.
- Weight of kwath – 36.48 kg
- A list of ingredients for kwath was given in Table 6.

Table 6:

Ingredients	Amount of Kwath Dravya
Karanja Twak	3.04 kg
Saptaparna Twak	3.04 kg
Langali Mula	3.04 kg
Snuhi Patra Swarasa	6.08 kg
Arka Patra Swarasa	6.08 kg
Chitraka Mula	3.04 kg
Bhringaraja	3.04 kg
Haldi	3.04 kg
Gomutra	3.04 kg
Vatsanabha	3.04 kg

IV)KARANJADI TAILA PAKA:

Sample I:

Date of Starting:-10-06-2012

Date of Completion:-15-06-2012

- Murchita Tila Taila was taken in a clean and dry steel vessel and heated on moderate heat.
- Kwatha and Kalka were added carefully and heated on moderate heat, by adjusting the time of heating such that the process is completed in 4 nights (5 days) with continuous paka.

- Then heated on moderate heat, by adjusting the time of heating. Gentle stirring up to the appearance of Taila paka siddha Laksana (Khara Paka)⁶.
- It was allowed to cool itself and filtered with a clean and dry cloth.
- Time taken in process – 15 hrs.
- Weight of the final product – 7.18 kg.
- The ingredients of Taila Paka are given in Table 7.

Table 7:

Ingredient	Amount
Murchhit Tila Taila	7.250 kg
Kwatha	30.4 kg
Kalka Dravya	1.9 kg

Sample II:

Date of Starting:-10-06-2012

Date of Completion:-15-06-2012

- Murchita Tila Taila was taken in a clean and dry steel vessel and heated on moderate heat.
- Kwatha and Kalka were added carefully and heated on moderate heat, by adjusting the time of heating such that the process is completed in 4 nights (5 days) with continuous paka.

- Then heated on moderate heat, by adjusting the time of heating. Gentle stirring up to the appearance of Taila paka siddha Laksana (Khara Paka).
- It was allowed to cool itself and filtered with a clean and dry cloth.
- Time is taken in process – 15 hrs.
- Weight of the final product – 7.05 kg.
- The ingredients of Taila Paka are given in Table 8.

Table 8 –

Ingredient	Amount
Murchhit Tila Taila	7.250 kg
Kwatha	36.48 kg
Kalka Dravya	2 kg

Analytical Study:

Both the samples of Karanjadi Taila were subjected to Organoleptic [Table 9] and Physiochemical studies to develop an analytical profile. The following parameters were carried out in this phase:

- Organoleptic characteristics: Colour, appearance, odor, and touch.
- Physico-chemical analysis: Refractive Index, Specific Gravity, Moisture Content, Acid Value, Peroxide Value, Iodine Value, and Saponification Value.
- Qualitative test for various functional groups.

- TLC profile: Toluene: Ethyl acetate (8: 1.5 v/v) was selected as a solvent system through a trial-and-error method. The developed plate was visualized under visible daylight, short UV (254 nm), long UV (366 nm), and after spraying with Anisaldehyde-Sulphuric acid reagent and again observed in daylight. The R_f values were recorded.
- Heavy metal analysis: The tests were carried out at Dabur Research and Development Centre, 22, Site – 4, Sahibabad, Ghaziabad, Uttar Pradesh.

➤ Microbial overload: The tests were carried out at Dabur Research and Development Centre, 22,

Site – 4, Sahibabad, Ghaziabad, Uttar Pradesh.

Table 9: Comparative Organoleptic Characters

Parameters	Sample I	Sample II
Colour	Dark Brown	Brown
Appearance	Oily	Oily
Odour	Characteristic Odour	Characteristic Odour
Touch	Unctuous &Oily	Unctuous &Oily

DISCUSSION

In preparation for *Kwatha*, stable extensive froth appeared over the surface of brown menstruum. It appeared to be light brown, which may be due to the presence of saponins, and tannins present in the raw material. Initially, some of the raw material was floating over the surface, which gradually settled down to the bottom. During the boiling, the temperature was maintained between 85-95°C. During the process, the froth started to limit to the edges of the container. Continuous stirring was done for proper extraction and to lessen the possible chances of degradation of some active constituents which may be decomposed due to hydrolysis. Continuous stirring is also needed to facilitate the natural circulation evaporation.

During Karanjadi Taila preparation, when Kalka was added froth, fume and sound appeared. A specific smell of Tila Taila appeared. A smell of Kalka dravya appeared during heating. In the final stage of taila paka Phenodgama⁷ was observed. Kalka at the bottom of the container made to varti but break after a while. Throughout the process, care was taken not to cross madhyam paka temperature. After observing

the *Siddhi Lakshanas*, the container was removed from the heat source and allowed to become cool. Then the taila was filtered through three layered cotton cloths. The average time taken for completion of the practical was 15 hrs for each sample.

Constant observation and continuous stirring are essential in obtaining a good quality of *Kwatha* and *Taila*. Particularly, during the initial stages of the procedure and during the addition of kalka in taila preparation to avoid sticking kalka to the bottom of the container.

Variations in the analytical profile of both samples were insignificant [Table 10]. The samples were analyzed for the presence of heavy metals, which were found to be below the detection limit [Table 11]. All the heavy metals were found to be under the limit for both samples [Table 11]. No Bacterial or Fungal growth was observed in both the samples, which indicates the safety of the product [Table 12]. TLC profile [figure 1(a),(b), and (c)] of *Karanjadi Taila Sample I* showed no changes in comparison to *Karanjadi Taila Sample II* indicating the presence of almost the same active components in both samples.

Table 10 –

Parameters	Sample I	Sample II
Refractive Index at 40°C	1.468	1.468
Specific Gravity at 40°C	0.924	0.924
Moisture Content by KF	0.22% w/w	0.22% w/w
Acid value	13.6	13.1
Peroxide value	7.9 meq/kg	7.9meq/kg
Iodine value	118	116
Saponification value	208	203

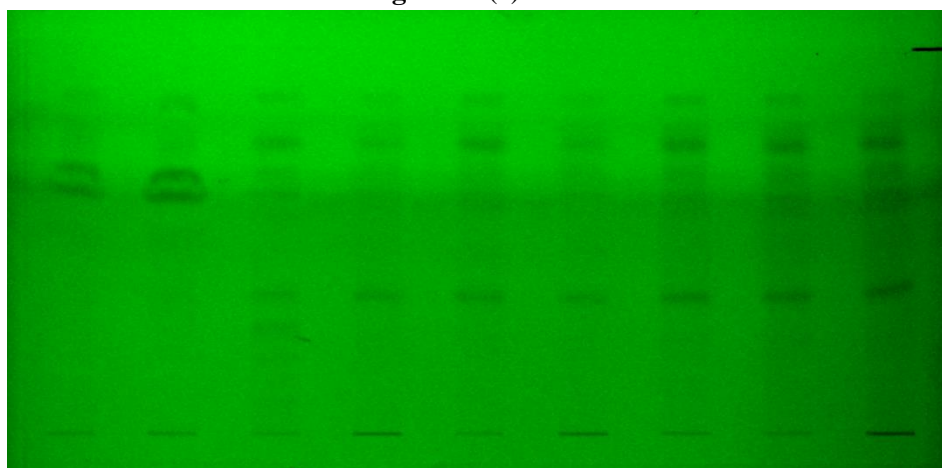
Table 11

Heavy Metals	Sample I	Sample II	Limit Value for ASU drugs*
Arsenic (As)	2.0 ppm	1.11 ppm	3 ppm
Mercury (Hg)	<0.1 ppm	<0.1 ppm	1 ppm
Cadmium (Cd)	<0.1 ppm	<0.1 ppm	0.3 ppm
Lead (Pb)	2.7 ppm	1.85 ppm	10 ppm

Table 12

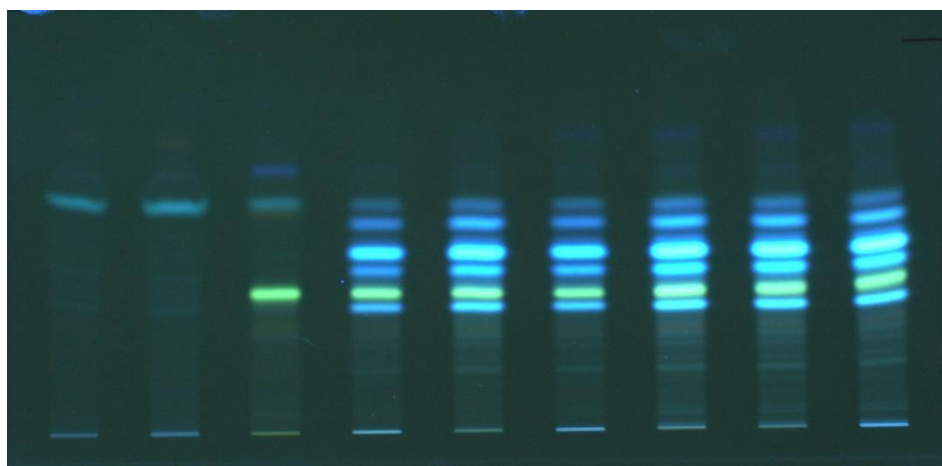
Microbes	Sample I	Sample II	The limit value for ASU drugs*
Total Yeast & Mould count	<10 CFU/ml	<10 CFU/ml	1 x 10 ³ CFU/ml
Pathogens	Absent	Absent	Absent

Figure 1: (a) 254 nm



21400 21401 21403 21405 21406 21407 21409 21422

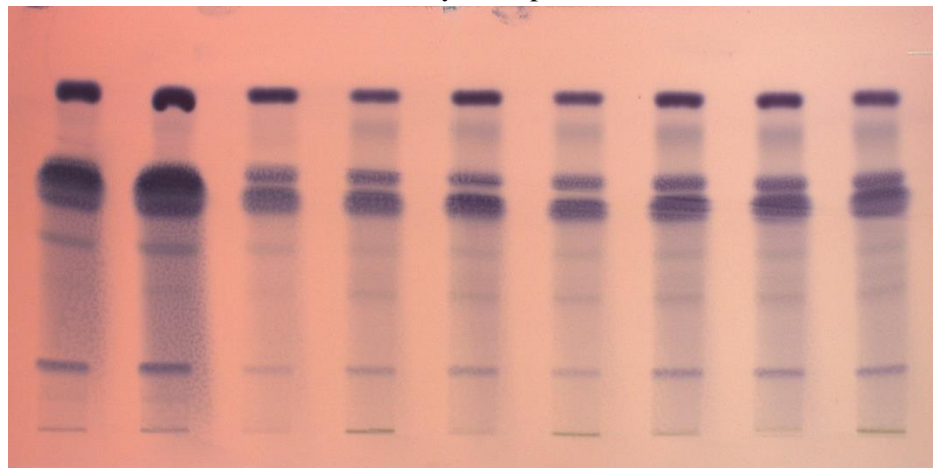
**(b)
366 nm**



21400 21401 21403 21405 21406 21407 21409 21422

(c)

Anisaldehyde Sulphuric acid



21400 21401 21403 21405 21406 21407 21409 21422

21405 – Sample I, 21409 – Sample II

CONCLUSION

No significant difference was found in the pharmaceutical aspects of both the samples of *Karanjadi Taila*. But the pharmaceutical preparation of Sample II of *Karanjadi Taila* was found to be a less tiresome process, cost-effective, and time-saving due to the easy availability of the leaves of *Snuhi* and *Arka*. The method of preparation mentioned in the current study for *Karanjadi Taila* can be considered standard. TLC profile of Sample I showed almost the same no. of spots in comparison to Sample II indicating the presence of almost the same therapeutically active ingredients. No bacterial or fungal growth could be isolated in both the samples after storing in identical conditions for 6 months, which proves the safety and stability of the product. As Sample II was observed to contain almost the same percentages of active ingredients in analytical studies, it is needed to be validated its exact nature and its respective therapeutic utilities through well stratified analytical, experimental and clinical studies.

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