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STANDARD MANUFACTURING PROCESS OF *SHATAPAKA GUDUCHI* *TAILA* WITH SPECIAL REFERENCE TO *TAILA AAVARTANA*

SHARMA P¹, SHETTY SK^{1*} AND RAVI NARGIS NR²

- 1: Department of *Kayachikitsa – Rasayana evam Vajikarana Tantra*, Shri BM Kankanawadi Ayurveda Mahavidyalaya, PG Studies and Research Centre, A Constituent Unit of KLE Academy of Higher Education & Research (Deemed-to-be-University), Belagavi, Karnataka, India
- 2: Medical Superintendent, Indian Medical Practitioners' Co-operative Pharmacy and Stores (IMPCOPS) Ltd., Chennai, Tamil Nadu, India

*Corresponding Author: Dr. Suhas Kumar Shetty: E Mail: drsuhasshetty@gmail.com

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ABSTRACT

Background: In contemporary times, the relevance of herbal medicine is increasingly acknowledged, particularly as we face various challenges in managing chronic diseases. Traditional herbal knowledge is dispersed globally, especially among indigenous populations. Unfortunately, this valuable knowledge of conventional medicine is at risk of being lost, highlighting the urgent need for scientific documentation of herbal practices. The concept of *Aavartana* aims to enhance the potency of oils through the process of *Samskara*, allowing for the extraction of fat-soluble active principles from herbs into the oil. **Aim and Objective:** This research aims to record the step-by-step process of preparing *Shatapaka Guduchi Taila* and to document the preparation and pharmaceutical observations of both *Guduchi Taila* and *Shatapaka Guduchi Taila* using scientific methods. **Materials and Methods:** *Shatapaka Guduchi* was prepared based on the *Chakradutta Vataraktam Chikitsa* reference, utilising *Guduchi* (*Tinospora cordifolia* [Willd.] Miers), *Tila Taila* (*Sesamum indicum* L.), and *Goksheera* (Cow Milk). The *Guduchi Taila* mentioned in this context was transformed into *Shatapaka* by implementing the *Aavartana* processing, which involved processing it 100

times. **Results:** The *Shatapaka Guduchi Taila* prepared from *Aavartana vidhi* had a pale yellow-white oil with a bitter taste and a ghee-like odour. **Conclusion:** The current study outlines the standard manufacturing process of *Shatapaka Guduchi Taila* utilising the *Aavartana* methodology.

Keywords: *Aavartana, Guduchi, Shatapaka Guduchi Taila*

INTRODUCTION

Ayurveda is an ancient system of medicine that encompasses a variety of preparations to manage a wide spectrum of diseases. The majority of medications used in Ayurvedic therapeutic interventions are derived from plants, animals, minerals, or metals. According to *Ayurvedic* principles, raw materials require specific modifications to enhance their absorption and bioavailability, thereby increasing their effectiveness and potency. The term "*Samskara*," which comes from two root words "*sam*" meaning complete, and "*kara*" meaning action, refers to the techniques of drug potentiation employed in *Ayurveda Bhaishajya Kalpana*. These procedures play a significant role in the pharmaceutical processing of medicinal materials. *Taila Kalpana*, a part of *Sneha Kalpana*, involves the techniques of *Agnipaka* and *Adityapaka*, which utilise fire and sunlight for heating, respectively. *Agnipaka Vidhi* is commonly employed to prepare medicines until the *taila siddhi lakshanas* are achieved.

The formulation in this paper is derived from *Charadutta Vataraktam Chikitsa* made utilising *Guduchi* (*Tinospora*

cordifolia [Willd.] Miers), *Tila Taila* (*Sesamum indicum* L.), and *Goksheera* (Cow Milk) [1]. This mixture is processed once to get *Guduchi Taila* as a *Sneha Kalpana* and, then through one hundred cycles (*Aavartana*) to enhance its bioavailability, reduce required dosage, and provide *Rasayana* (rejuvenation) effects, to get ***Shatapaka Guduchi Taila***. The term "*Aavartana*" refers to the concept of repetition, essentially stirring or churning a substance repeatedly. This process is designed to enhance the properties of the ingredients through this repetitive action. *Ayurveda* provides various examples of *Aavartana Tailas*, including *Shatapaka Bala Taila* (100 cycles), *Sahasrapaki Bala Taila* (1000 cycles), *Bhallataka Taila* with 100 *Aavartanas*, *Shatapaki Vataghna Taila*, *Vacha Shatapaki Taila*, *Dashapaki Bala Taila* (10 cycles), *Anutaila*, and *Shatapaki Trivrit Sneha* [2].

This paper details the standard manufacturing process for *Guduchi Taila* prepared with one hundred *Aavartana*, referred to as *Shatapaka Guduchi Taila*. Additionally, it presents comparative organoleptic and pharmaceutical

parameters observed during both the first and hundredth preparations.

MATERIALS AND METHODS

Collection and authentication of samples

Guduchi (*Tinospora cordifolia* [Willd.] Miers) dried matured *Kanda* (stem) (**Figure 1**) was sourced by IMCOPS Ltd. from a reliable supplier in Vasavi, Chennai, Tamil Nadu, as mentioned in the authentication report (*Report No. IMP/BL/RM-78*). A sample of 500 grams was taken for testing. The sample met the standards of the

Ayurvedic Pharmacopoeia of India in both macroscopic and microscopic characteristics. The analysis revealed that foreign matter comprised 1.85% (not exceeding 2%), total ash was found to be 7.97% (not exceeding 16%), acid-insoluble ash was 1.77% (not exceeding 3%), alcohol-soluble extractives measured 5.63% (not less than 3%), and water-soluble extractives were 16.53% (not less than 11%).



Figure 1: *Guduchi* Sample for Preparation of Taila

Preparation of *Shatapaka Guduchi Taila*

The *Shatapaka Guduchi Taila* was prepared at The Indian Medical Practitioners Co-operative Pharmacy & Stores (IMPCOPS) Ltd., Chennai-41, following the guidelines of the Ayurvedic Formulary of India for the

preparation of this oil, under the supervision of pharmacy experts. Sesame/gingelly oil was sourced from a reliable supplier in Chennai, and milk was obtained from the resident cows at IMCOPS Ltd. (**Figure 2**).

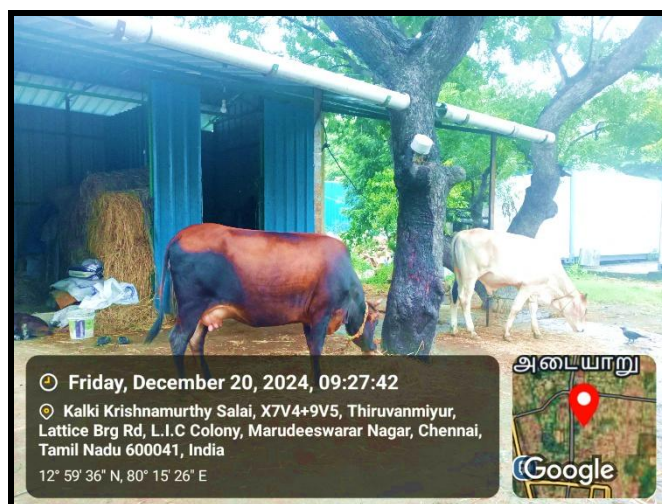


Figure 2: Cows in IMPCOPS from where milk was obtained

The ingredients and their quantities for *Shatapaka Guduchi Taila* are presented in **Table 1**. The characteristics of the prepared oil, as per *Sneha Siddhi Lakshana*, are described in **Table 2**. Organoleptic and physicochemical parameters are detailed in **Tables 3 and 4**, respectively.

Table 1: Ingredients and Quantity used for *Shatapaka Guduchi Taila*

Ingredients	Prescribed Quantity	Ingredient Used	Quantity taken for one <i>Paka</i>	Quantity taken for 100 <i>Paka</i>
<i>Kalka Dravya</i> (paste drug)	¼ Parts	<i>Guduchi</i> (<i>Tinospora cordifolia</i> [Willd.] Miers)	375 grams	37.5 Kg
<i>Sneha Dravya</i> (Oil base)	1 Part	<i>Tila Taila</i> (<i>Sesamum indicum</i> L.),	1.50 Litre	1.50 Litre
<i>Drava Dravya</i> (<i>Kashaya</i>)	4 Part	<i>Guduchi Kashaya</i> (Decoction made from <i>Guduchi</i>)	6.00 litre	600 Litres
<i>Avapa Drava Dravya</i> (Milk)	1 Part	<i>Goksheera</i> (Cow Milk)	1.50 Litre	150 Litres

Table 2: *Sneha Siddhi Lakshana* of *Shatapaka Guduchi Taila* [3]

<i>Sneha Siddhi Lakshana</i>	<i>Kalka</i>	<i>Taila</i>
<i>Sanyav eve niriyase</i>	+	-
<i>Madhye darvi vimunchati</i>	+	-
<i>Shabda hino agni nikshipta</i>	-	+
<i>Phenodgama</i>	-	+
<i>Gandha, Varna, Rasotpatti</i>	-	+

(+): Positive, (-): Negative

Sneha Dravya

In the formulation of *Shatapaka Guduchi Taila*, 1.5 litres of *Tila Taila* was used as *Sneha Dravya*. The *Tila Taila* was procured from a reliable supplier in the Chennai market, ensuring the authenticity and quality of the product.

Kalka Dravya

The dry, matured stem of *Guduchi* was used as a *Kalka Dravya*. A total of 37.5 kg of *Guduchi* stem was ground into a *Yavakuta* form, which was then utilized as the *Kalka* for further processing (**Figure 3**).

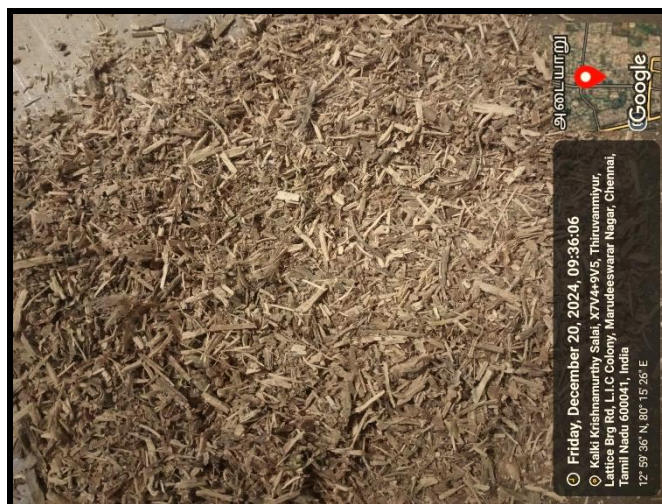


Figure 3: Yavakuta form of Guduchi stem for Taila Preparation

Drava Dravya

In this formulation, *Guduchi Kashaya* (decoction prepared with *Guduchi*) and *Goksheera* (cow milk) were utilized as the *Drava Dravya*. A total of 37.5 kg of raw *Guduchi* was ground into *Yavakuta* form and prepared as *Kashaya*. The quantity of *Drava Dravya* used is four times that of *Sneha* (1.5 litres x 4), resulting in 6 litres of *Guduchi Kashaya* for a single preparation. Overall, a total of 600 litres of *Guduchi Kashaya* was used for 100 cycles of *Paka* in the *Shatapaka Guduchi Taila*. While the *Goksheera* was sourced from the indwelling cows of IMPCOPS Ltd., which was filtered before utilization. For the preparation of single *Paka* (one cycle), 1.5 litres of milk was utilized, while a total of 150 litres of milk was used for the 100 *Paka* (100 cycles).

Sneha Paka Patra (vessel)

A stainless-steel container was utilized for *Taila Paka*. A ladle (*Darvi*) was used to continuously and carefully stir the mixture

to ensure that the *Kalka* does not stick to the bottom of the vessel, as this could lead to carbonization.

Type of Heat

Mandagni was used for the preparation of *Shatapaka Guduchi Taila* as backed by the classical *Ayurveda* literature.

Duration of Sneha Paka

The *Sneha Paka* process continued until the classical *Sneha Siddhi Lakshana* were observed, maintaining temperatures between 60° and 90° Celsius. The stages of *Sneha Siddhi Lakshana*, also known as *Taila Paka Lakshanas*, are as per the *Sharangadhara Samhita* [3].

Procedure of Taila Paka for First Cycle

1.5 litres *Tila taila* was first heated until it reached a boil, then allowed to cool. Next, 375 grams of *Guduchi Kalka* was added to the oil, and the mixture was gently heated together over a low flame. Following this, 6 litres of *Guduchi Kwatha* was added to a stainless-steel vessel, and the mixture was heated again. 1.5 litres of milk was also

then added into the mixture and heated until the water content of both the oil and milk evaporated, leaving only the oil behind. The oil was allowed to rest and cool to facilitate the proper absorption of the constituents. The first *Paka Guduchi Taila* was filtered and stored in a clean vessel.

Procedure of *Taila Paka* for Hundred Cycles

The following day, the prepared and filtered oil from the first *Paka* was placed in a heating vessel, where it was added with 375 grams of *Guduchi Kalka*, 6 litres of *Guduchi Kashaya* and 1.5 litres of milk. No

oil was added to this mixture. The mixture was heated until all the water content from the oil and milk had evaporated, leaving only the oil. Once the oil rested and cooled, allowing for proper absorption of the constituents, the second *Paka* of *Guduchi Taila* was filtered and stored in a clean vessel. This process was repeated in the same manner until 100 *Pakas* were achieved. Upon reaching the 100th *Paka*, the oil was filtered, and the entire *Kalka* was pressed hydraulically to maximize the yield of the *Taila*. All the oil was then filtered and collected for packaging.

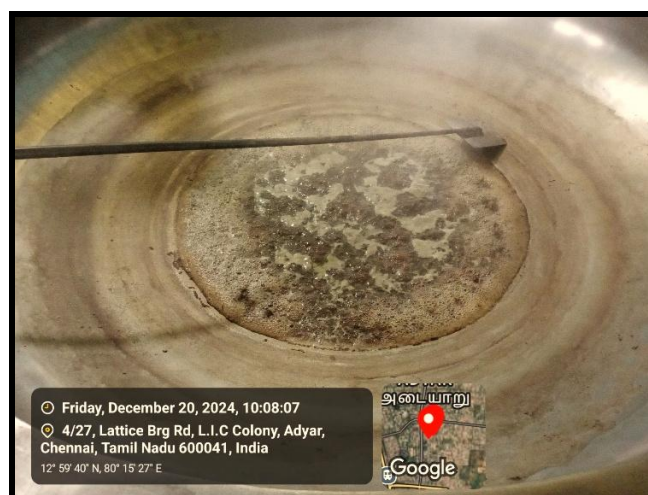


Figure 4: Procedure of *Taila Paka* in Stainless Steel Vessel



Figure 5: Mixture of *Taila*, *Kalka* and *Kashaya*

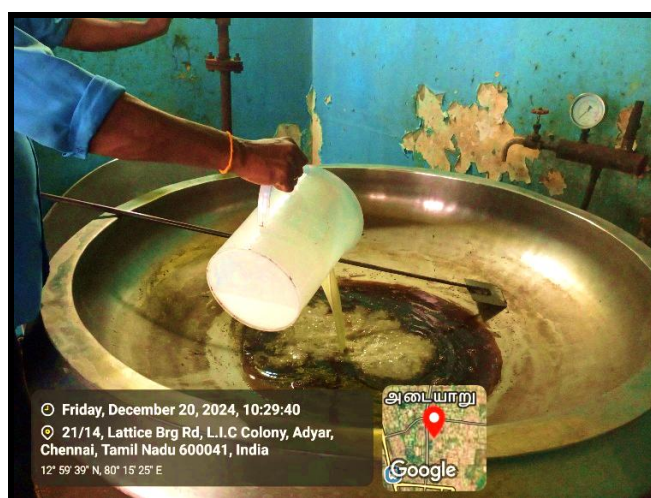


Figure 6: Adding *Goksheera* to the Mixture of *Taila*, *Kashaya* and *Kalka*



Figure 7: *Taila* after *Paka* attaining *Sneha Siddhi Lakshanas*

Figure 8: Filtration process of *Taila* after *paka*

Packaging

The final prepared oil was packed in 15ml dropper bottles and 50ml glass bottles

(equipped with a dropper) to facilitate dispensing and ensure proper dosage.

Figure 9: Packed *Taila*- First *Paka* and *Shatapaka Guduchi Taila*

Type of *Sneha Paka* Used

Madhyama Paka oil is regarded as the most suitable for *Pana*; therefore, *Madhyama Paka* was chosen for the formulation in this case.

RESULTS

In the *Sneha Paka* process, the total yield of *Shatapaka Guduchi Taila* amounted to

2.5 litres, derived from 37.5 kg *Guduchi*, 1.5 litres of oil, 600 litres of *Guduchi Kashaya*, and 150 litres of milk, with a significant loss of oil throughout the entire procedure. Organoleptic and physicochemical parameters are detailed in **Tables 3** and **4**, respectively.

Table 3: Organoleptic Changes of Oil Documented

Organoleptic Characters	First <i>Paka</i>	Hundredth <i>Paka</i>
Description	Golden Yellow colour oil, unctuous liquid; Odour-Gingley oil odour; taste- very bitter	Pale yellow white colour, oily unctuous viscous liquid; ghee like odour; taste- bitter taste
Colour under UV Rays	Light sky blue	Whitish blue

Colour with solvent under UV (Petroleum ether)	Light sky blue	Whitish blue
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Table 4: Standardisation Parameters of First and Shatapaka Guduchi Taila documented

Parameters	First Paka	Hundredth Paka
Loss on drying at 105 °C	0.0956%	0.2693%
Refractive index	1.4679 @ 25.1 °C	1.4609 @ 24.9 °C
Specific gravity	0.9166	0.9152
Acid value	0.4512 mg/KOH	1.4655 mg/KOH

DISCUSSION

Guduchi Taila is a formulation described in *Chakradutta Vataraktam Chikitsa*, made of *Guduchi*, *Tila Taila*, and *Goskheera*, for the management of *Vataraktam* and *Kushtha* conditions. *Guduchi*, recognized as the best (*Shrestha*) *Dravya* for *Vataraktam*, serves as the key ingredient in this preparation. The *Vataraktam* spectrum encompasses a range of diseases, including rheumatological, musculoskeletal, and connective tissue disorders. *Guduchi Taila* is an oleaginous compound formulation that comprises *Guduchi* (*Kalka Dravya*), *Tila Taila* (*Sneha Dravya*), and *Goskheera* (*Drava Dravya*). It is prepared as per the principles of *Sneha Kalpana* as outlined in the *Sharangdhara Samhita*. In *Ayurveda*, there exists a methodology known as *Aavartana*, which involves the repeated processing of substances. This concept can be applied to *Guduchi Taila*, allowing for variations such as seven-*Aavartana*, twenty-one-*Aavartana*, forty-one-*Aavartana*, or *Shatapaka-Aavartana* (processed one hundred times). These methods enhance its therapeutic and

rejuvenating properties while also facilitating easier dosage management [2].

Ayurveda pharmaceutics is grounded in the principles of *Samyoga* (union) and *Vishlesha* (analysis). One notable technique described by ancient *Ayurvedic* scholars is *Aavartana*, which embodies the principle of *Samyoga*. In this method, *Sneha* is subjected to repeated processing with the same ingredients to enhance the therapeutic efficacy of the formulation. The *Aavartita Sneha* formulation is primarily noted for its use in *Rasayana* (rejuvenation) therapies [4]. *Siddha Taila* formulations typically require higher doses, which can be inconvenient for patients, especially if given for internal administration. Hence, the role of the *Aavartana* process is to potentiate these formulations, thereby increasing their therapeutic efficacy and reducing the dose. Repeated processing cycles of lipids with similar ingredients may induce thermogenic changes, simplifying the compounds within the medicament and maximising the surface area for absorption. This enhances both bioavailability and efficacy. Common processes in *Taila Kalpana* (oil preparation)

facilitate the absorption of active ingredients and essential molecules from medicinal plants through oil. During this process, the *Kwatha* (decoction) enhances water-soluble content, while the oil itself absorbs fat-soluble components [2].

The *Shatapaka Guduchi Taila* for this experimental batch has been prepared to analyse its effectiveness in treating *Vataraktam* (NAMC Code ED-8 Rheumatoid Arthritis). The dosage of the oil was adjusted to 15 drops, which was quantified to 500 mg at KLE Ayurveda Pharmacy, a GMP-certified pharmacy located in Belagavi, Karnataka. It needs to be administered before meals with an *Anupana* (warm water or milk as an adjuvant).

Guduchi has been researched for its numerous beneficial properties, including antioxidant, anti-inflammatory, immune-modulatory, anticancer, antimicrobial, antiviral, antidiabetic, neuroprotective, anti-stress, anti-ulcer, antipyretic, anti-diarrheal, cardioprotective, hepatoprotective, and adaptogenic effects. Similarly, *Tila Taila* offers antidiabetic, anticancer, antioxidant, cardioprotective, neuroprotective, anti-inflammatory, hepatoprotective, nephron-protective, wound healing, antimicrobial, antifungal, antibacterial, pro-fertility, and antinociceptive properties. Additionally, *Goksheera* is noted for its antioxidant, anti-carcinogenic, anti-inflammatory, immune-

stimulatory, and antimicrobial properties. Collectively, these components make this formulation potentially effective in addressing a range of conditions associated with *Vataraktam* (ED-8 Rheumatoid Arthritis) [5].

Pharmaceutical and analytical studies are crucial for determining the quality and efficacy of prepared oil. Physical tests indicate that *Shatapaka Guduchi Taila* is pale yellow in colour, possesses a *Ghee*-like odour, and has a bitter taste. Quantitative chemical analysis was performed, revealing values in accordance with pharmacopeial standards. The oil was manufactured in December 2024 and has an expiry date of November 2027, provided it is stored in a sealed container in a cool place. Therefore, both the physical and chemical parameters of *Shatapaka Guduchi Taila* were found to be within acceptable limits. These reported values from the analytical study can serve as standard parameters for *Shatapaka Guduchi Taila*.

CONCLUSION

Shatapaka Guduchi Taila underwent standardisation methods to assess its modified process, specifically through the 100 *Paka Aavartana* technique. Upon completion of the *Taila Paka*, the final product was a pale yellow-white oil with a bitter taste and a ghee-like odour. In the analytical study, two samples were made to compare the changes in the pharmaceutical

processes of the *Guduchi Taila* with *Shatapaka Guduchi Taila*. The resulting analytical data was found to be comparable with other *Taila* formulations described in the Ayurvedic Pharmacopoeia of India (API). This entire process enhances the oil's effectiveness in trials and highlights its utility as both a medicinal agent and a *Rasayana* for conditions such as *Vataraktam* (ED-8 Rheumatoid Arthritis). The *Aavartana* technique not only aids in drug potentiation but also allows for dose minimization, thus improving outcomes. Additionally, *Shatapaka* extends the shelf life of the oleaginous medicine. The *Aavartana* process contributes to the overall potency of the formulation. The developed *Shatapaka Guduchi Taila* process will serve as a valuable foundation for future scientific research.

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Nil.

Conflicts of Interest

There are no conflicts of interest.

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