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Research Article

PHARMACEUTICO-ANALYTICAL PROFILE OF *SARIVADYA TAILA* AND ITS MODIFIED DOSAGE FORM AS *SARIVADYA* GEL

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ABSTRACT

Darunaka is one among the *Kshudra Rogas* described in Ayurveda and is characterized by *Kandu* (itching), *Daruna* (roughness), *Rookshata* (dryness), and *Kesha Bhumi Prapatana* (hair fall). *Sarivadya Taila*, described in *Gada Nigraha*, is a classical formulation indicated for the management of *Darunaka*. Hence, conversion of the classical medicated oil into a topical gel was undertaken to improve cosmetic acceptability without altering its pharmaceutical quality. **Aim:** To prepare *Sarivadya Taila* according to classical Ayurvedic principles, convert it into a topical gel formulation, and evaluate the pharmaceutical and physicochemical characteristics of both formulations. **Materials and Methods:** The raw drugs required for *Sarivadya Taila* were procured from authenticated sources and identified according to the standards of the Ayurvedic Pharmacopoeia of India. First processed *Sarivadya Taila* following the classical *Sneha Kalpana* procedure described in *Gada Nigraha*. Then using *Sarivadya kashaya* converted into *Sarivadya* Gel using Carbopol 940 as the gelling agent along with glycerin, phenoxyethanol, and DM water. Organoleptic evaluation and physicochemical analyses including specific gravity, refractive index, acid value, saponification value, ester value, iodine value, peroxide value, viscosity, rancidity test, pH, spreadability, homogeneity, and stability were performed according to standard analytical procedures. **Results:** *Sarivadya Taila* exhibited acceptable organoleptic and physicochemical characteristics with specific gravity 0.961, refractive index 1.473, acid value 4.18, saponification value 212.86, ester value 208.68, iodine value 79.63, peroxide value 1.53, viscosity 29.22 cSt, and absence of rancidity. The developed gel showed uniform appearance, good homogeneity, pH value of 4.24, spreadability value of 36.87g/cm^3, appropriate viscosity, and good stability during the observation period and water soluble extractive value of 4.55%. **Conclusion:** The pharmaceutical procedures adopted for preparation of *Sarivadya Taila* and its gel formulation produced standardized formulations with acceptable analytical parameters.

INTRODUCTION

*Darunaka*is one among the *Kshudra Rogas* described in Ayurveda[1], predominantly caused by the vitiation of *Vata* and *Kapha Doshas*. It is characterized by *Daruna* (hardness or roughness of the scalp skin), *Kandura* (itching), *Rookshata* (dryness of the scalp), and *Kesha Bhumi Prapatana* (hair fall)[2].

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In contemporary science, *Darunaka* can be correlated with dandruff, a common chronic scalp disorder associated with excessive shedding of dead skin flakes from the scalp[3].

Ayurveda offers various external therapies and medicated oil preparations for the management of *Darunaka*. Among these, *Sarivadya Taila*, mentioned in *Gada Nigraha*[4], is indicated for the management of *Darunaka*. The ingredients of *Sarivadya Taila* possess properties such as *Kandughna, Keshya, Krimighna, Twachya* and *Vata-Kapha Shamaka* actions, which are considered beneficial in the management of scalp-related manifestations[5].

Pharmaceutical standardization and analytical evaluation of Ayurvedic formulations are essential for establishing their identity, quality, purity, safety and consistency[6]. In the case of medicated oils, evaluation of relevant physicochemical parameters provides important information regarding the quality and stability of the finished formulation[7]. Therefore, systematic pharmaceutical processing followed by appropriate analytical evaluation is necessary to establish reproducible quality characteristics of *Sarivadya Taila*.

Although *Sarivadya Taila* is a classical medicated oil preparation, its oily and greasy nature may make application inconvenient, difficult to wash and may influence acceptability. Conversion of the classical oil formulation into a gel dosage form can provide a contemporary pharmaceutical approach while retaining the therapeutic concept of the classical formulation. Such conversion requires appropriate pharmaceutical development and comparative analytical evaluation to assess the characteristics and quality of the developed *Sarivadya* Gel. Hence, the present study was undertaken with a focus on the pharmaceutical preparation and analytical evaluation of *Sarivadya*

Taila and its conversion into *Sarivadya* Gel, with the aim of documenting and comparing their relevant physicochemical and analytical characteristics.

MATERIALS AND METHODS

Study Design

The present study was a pharmaceutico-analytical study carried out in the Department of Rasashastra and Bhaishajya Kalpana, ALN Rao Memorial Ayurvedic Medical College, Koppa, Karnataka. The study comprised two phases: (1) pharmaceutical preparation of *Sarivadya Taila* and its modified dosage form *Sarivadya* Gel, and (2) physicochemical and organoleptic evaluation of both formulations.

Collection and Authentication of Raw drugs

All raw drugs required for the preparation of *Sarivadya Taila* were procured from authenticated raw drug suppliers. The drugs were identified and authenticated in the Department of *Dravyaguna* according to the standards of the Ayurvedic Pharmacopoeia of India.

Pharmaceutical Processing Preparation of *Yava Rasa*

The raw drug used for the preparation of *Yava rasa* mentioned in [Table 1] was procured and authenticated by the Department of *Dravyaguna*. *Yava* was thoroughly washed, tray-dried, weighed before and size reduction, and reduced to coarse powder. A total of 16kg of *Yava* was added to 64 liters of water in a wide mouthed vessel and boiled over mild to moderate heat [Figure 1] with intermittent stirring until the volume was reduced to one-fourth. The prepared rasa was filtered while warm through a clean cloth, yielding 20 liters of finished product with a 45 liters reduction during the process.

Table 1: Ingredients of *Yava Rasa*

S.No.	Ingredients	Useful part	Proportion
1.	*Yava*	*Beeja*	16 kg
2.	Water	--	65 liters



tion

Preparation of *Sarivadya Taila* [Figure 2]

The raw drugs of *Sarivadya Taila* mentioned in [Table 2] were procured, authenticated, cleaned, tray-dried, weighed and individually reduced to coarse powder. Then *Kalka* was prepared by triturating Coarse powder with required quantity of water to obtain a homogenous mixture, which was then rolled into bolus form.

For *Taila paka*, about 7.5 litres of *Murchita Katu Taila* was heated over *Mandagni* until moisture evaporated. Then added prepared *Kalka*, 20 liters of *Yava rasa*, and 40 liters of water was added, and heated till it attains *Taila Paka siddhi lakshana* were observed. The hot oil was filtered through a clean cloth; the remaining oil was extracted from the Kalka using a *Kalka Nishpeedana Yantra*. Then the filtered oil was stored in an air tight container. The yield obtained was 7.4 litres from 7.5 litres and 100ml loss observed.

Table 2: Ingredients of *Sarivadya Taila*

S.No.	Ingredients	Botanical name	Useful part	Proportion
1.	*Sariva*	*Hemidesmus indicus* L.	*Moola*	145 gm
2.	*Vacha*	*Acorus calamus* Linn.	*Kanda*	145 gm
3.	*Guduchi*	*Tinospora cordifolia*	Stem, leaf	145 gm
4.	*Yashtimadhu*	*Glycyrrhiza glabra* Linn.	*Moola*	145 gm
5.	*Haritaki*	*Terminalia chebula* Retz.	*Phala majja*	145 gm

6.	*Vibhitaki*	*Terminalia bellirica*	*Phala majja*	145 gm
7.	*Amalaki*	*Phyllanthus emblica* Linn.	*Phala majja*	145 gm
8.	*Neelotpala*	*Nymphaea alba* Linn.	*Pushpa*	145 gm
9.	*Neeli*	*Indigofera tinctoria*	*Panchanga*	145 gm
10.	*Bhringaraja*	*Eclipta alba*, Hask	*Panchanga*	145 gm
11.	*Mahanimba*	*Melia azedarach* Linn.	*Patra*	145 gm
12.	*Madanaphala*	*Randia dumetorum* Lamk.	*Patra*	145 gm
13.	*Kasisa*	*Ferrous sulfate*	--	145 gm
14.	*Katu taila*	*Brassica juncea* Linn.	--	7.5 litres
15.	*Yava rasa*	---	--	20 litres
16.	*Jala*	---	--	40 litres



Figure 2: Preparation of *Sarivadya Taila*

Preparation of *Sarivadya* Gel [Figure 3]

Ingredients of *Sarivadya* Gel mentioned in [Table 3], from that 894g of *Sarivadya Kwatha Churna* was taken in a suitable vessel and mixed with demineralized water. The mixture was heated to obtain the aqueous extract and subsequently filtered through a double-layered cloth. The filtrate was allowed to cool, after which carbopol 940 was incorporated gradually and allowed to hydrate for 24 hours. Glycerin and phenoxyethanol were then added with continuous stirring until a uniform semisolid gel was obtained. The prepared *Sarivadya* Gel was transferred into suitable containers, closed and labelled. The final yield obtained was 2.03 L.

Table 3: Ingredients of *Sarivadya* Gel

S.No.	Ingredients	Proportion
1.	*Sarivadya Kwatha Churna*	894 gm
2.	De mineralized water	6.3 litres
3.	Carbopol 940	252 gm
4.	Glycerin	294 gm
5.	Preservative (Phenoxy ethanol)	75 ml

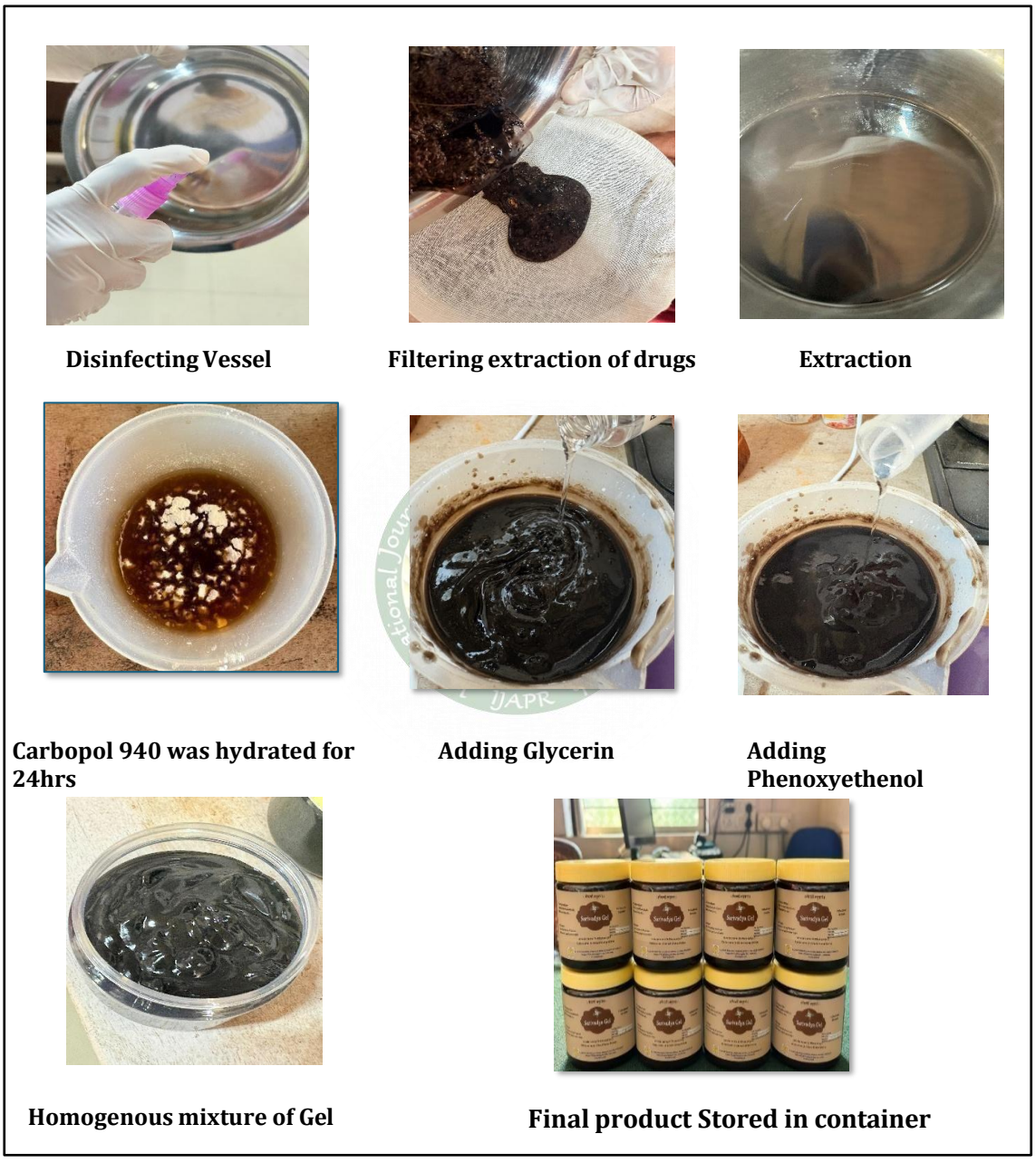


Figure 3: Preparation of *Sarivadya* Gel

OBSERVATION AND RESULT

The prepared *Sarivadya Taila* and *Sarivadya* Gel were subjected to organoleptic, physicochemical and chromatographic evaluation. The observations and analytical results obtained for both formulations are presented in [Tables 4-7]. The TLC profiles of the formulations are presented in Figure 4 & 5.

Table 4: Organoleptic Characteristics of *Sarivadya Taila* and *Sarivadya* gel

Parameter	*Sarivadya Taila*	*Sarivadya* Gel
Colour	Dark Brownish oil	Dark brownish gel
Odour	Characteristic	Characteristic
Texture	Oily	Viscous

Table 5: Physico-chemical parameters of *Sarivadya Taila*

S.no.	Parameter	Results
1.	Specific gravity	0.961
2.	Acid value	4.18 mg KOH/g
3.	Saponification value	212.86 mg KOH/g
4.	Iodine value	79.63 g I2/100g
5.	Peroxide value	1.53 meq/kg
6.	Ester value	208.68 mg KOH/g
7.	Rancidity	Not Rancid
8.	Refractive index	1.473
9.	Viscosity(cSt)	29.22 $N{\cdot}s/m^2$

Table 6: Physicochemical Parameters of *Sarivadya* Gel

S.No	Parameter	Result
1.	pH @ 5%	4.24
2.	Spreadability	36.87 g/cm^3
3.	Water-Soluble extractive	4.55%

Table 7: TLC Profile of both Formulations

Formulations	TLC Observations
Sarivadya taila	Rf 0.38, 0.48, 0.56, 0.75, 0.89
Sarivadya gel	Rf 0.97

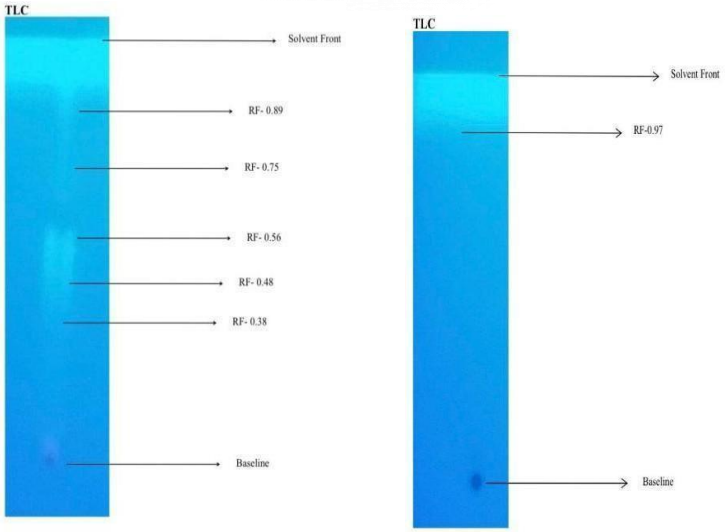


Fig 4: TLC of *Sarivadya Taila* Fig 5: TLC of *Sarivadya* Gel

RESULT

Sarivadya Taila was obtained as a dark brownish oil with characteristic odour and oily texture. The physicochemical evaluation showed a specific gravity of 0.961, acid value of 4.18, saponification value of 212.86, iodine value of 79.63, peroxide value of 1.53, ester value of 208.68, refractive index of 1.473 and viscosity of 29.22 cSt. The formulation was found to be non-rancid.

Sarivadya Gel exhibited a dark brownish appearance with characteristic odour and viscous texture. The pH at 5% concentration was 4.24, spreadability was reported as 36.87, and water-soluble extractive value was 4.55%.

TLC analysis of *Sarivadya Taila* demonstrated multiple spots with Rf values of 0.38, 0.48, 0.56, 0.75 and 0.89, whereas *Sarivadya* Gel showed an Rf value of 0.97.

DISCUSSION

The present study was undertaken to prepare *Sarivadya Taila* following the classical pharmaceutical procedure and to develop its gel dosage form as a modified topical formulation.

The pharmaceutical process involved is preparation of *Yava Rasa* and subsequent *Taila Paka* using the specified herbal ingredients. The prepared *Sarivadya Kashaya* from the ingredients of *Sarivadya Taila* was further utilized for development of *Sarivadya* Gel using Carbopol 940 as the gelling agent, glycerin as a humectant and phenoxyethanol as a preservative.

During the preparation of *Sarivadya* Taila, controlled heating and continuous stirring were maintained until the desired *Taila Paka Lakshanas* were achieved. The final *Taila* obtained was 7.4L from 7.5L of *Murchita Katu Taila.* The observed loss may be attributed to retention of oil in the *Kalka* and losses occurring during filtration and processing. The final product showed a characteristic dark brownish colour and oily consistency.

The physicochemical evaluation of *Sarivadya Taila* showed a specific gravity of 0.961, acid value of 4.18, saponification value of 212.86, iodine value of 79.63, peroxide value of 1.53, ester value of 208.68, refractive index of 1.473 and viscosity of 29.22 cSt. These parameters provide a physicochemical profile of the prepared *Taila* and can be useful for its quality assessment and future batch-to-batch comparison. The sample was also reported to be non-rancid.

Sarivadya Gel was developed to obtain a semisolid dosage form from the herbal formulation. Carbopol 940 provided the gel structure, while glycerin and phenoxyethanol were incorporated for their respective formulation functions. Adequate hydration of Carbopol was allowed before completion of the formulation to obtain a uniform gel. The prepared gel showed a dark brownish colour, characteristic odour and viscous consistency.

The physicochemical evaluation of *Sarivadya* Gel showed a pH of 4.24 at 5% concentration, spreadability of 36.87 and water-soluble extractive value of 4.55%. These parameters provide preliminary quality-control characteristics of the developed gel. The spreadability value indicates the physical behaviour of the semisolid formulation during application, while the water-soluble extractive value provides information regarding the extractable constituents present in the preparation.

TLC analysis of *Sarivadya Taila* showed multiple chromatographic spots with Rf values of 0.38, 0.48, 0.56, 0.75 and 0.89, whereas the reported TLC analysis of *Sarivadya* Gel showed an Rf value of 0.97. The chromatographic profile provides a preliminary fingerprint of the formulations and may be useful for identification and quality-control purposes.

Overall, the pharmaceutical and analytical findings demonstrate the feasibility of preparing *Sarivadya Taila* by the classical method and its subsequent conversion into a gel dosage form. The analytical parameters generated in the present study may serve as preliminary standards for quality assessment and further standardization of *Sarivadya Taila* and *Sarivadya* Gel.

CONCLUSION

Sarivadya Taila was successfully prepared following the classical pharmaceutical procedure involving *Taila Paka*. The prepared *Taila* exhibited satisfactory organoleptic and physicochemical characteristics, including a specific gravity of 0.961, acid value of 4.18, saponification value of 212.86, iodine value of 79.63, peroxide value of 1.53, ester value of 208.68, refractive index of 1.473 and viscosity of 29.22 cSt.

Sarivadya Gel was successfully developed using Carbopol 940, glycerin and phenoxyethanol. The formulation showed a pH of 4.24, reported spreadability of 36.87 and water-soluble extractive value of 4.55%. TLC profiling demonstrated chromatographically detectable constituents in the formulations.

Overall, the study established a pharmaceutically feasible gel dosage form of *Sarivadya Taila* and generated preliminary analytical parameters useful for its quality assessment and standardization.

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