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MACROSCOPIC AND PHYSIOCHEMICAL DESCRIPTION OF *KARVIRADYA TAILA*

Dr. Shipra Sharma[1]* Dr. Abhishek Kangoo[2] and Dr. Vijayant Bhardwaj[3]

[1]PG Scholar, Dept. of Shalakya Tantra, Rajiv Gandhi Government Post Graduation Ayurvedic College and Hospital, Paprola, Distt. Kangra, Himachal Pradesh.
[2]PG Scholar, Dept. of Shalakya Tantra.
[3]H.O.D, Dept. of Shalakya Tantra.

***Corresponding Author: Dr. Shipra Sharma**

PG Scholar, Dept. of Shalakya Tantra, Rajiv Gandhi Government Post Graduation Ayurvedic College and Hospital, Paprola, Distt. Kangra, Himachal Pradesh.

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ABSTRACT

Sneha Kalpana (oleaginous preparations) is a commonly prescribed Ayurvedic dosage form and is the preparation of various medicated oils and ghee. *Karviradya taila* is a medicinal oil preparation that is applied externally to treat nasal polyposis as nasal drops, or *Nasya*. Preparing and executing the *Karviradya Taila* physio-chemical analysis are the goals. The general method of *Taila Kalpana* was used to make *Karviradya Taila*. Analytical studies, including character and physio-chemical parameter analyses, were conducted using the references found in the laboratory guide for analysis of Ayurvedic and Siddha formulations. *Karviradya Taila's* organoleptic characteristics included a reddish-yellow liquid with a characteristic smell. Tests were conducted on physio-chemical parameters such as specific gravity, loss on drying, refractive index, saponification value, and acid value. The rate of absorption is indicated by the higher saponification value of *Karviradya Taila*, whereas the lower acid value of the *Taila* suggests a lower likelihood of *Taila* decomposition. In conclusion, *Karviradya Taila* is mostly recommended for *Nasarsha* as a *Sneha Kalpana*. Because local applications shield the mucosal barrier, facilitate the percutaneous absorption of the integrated medicine, and are rapidly absorbed, they are advantageous. The preliminary standards for manufacturing *Karviradya Taila* can be derived from the findings of the pharmaceutical and analytical investigation conducted on the plant. The findings of this study can be used as a standard reference while making *Karviradya Taila*.

KEYWORDS: *Karviradya Taila, Sneha Kalpana, Nasarsha,* Macroscopic parameters, Physio-chemical parameters.

INTRODUCTION

Sneha Kalpana (oleaginous formulations) are potent drugs with a noticeably prolonged shelf life. It is one of the most widely advised Ayurvedic dosage forms that are used daily, and these have a wide range of therapeutic efficacy in almost all conditions and age groups. The benefits of oleaginous preparations, or *Sneha Kalpana*, are considered to outweigh those of other dosage forms. These benefits include improved absorption and extraction of an active ingredient that is simultaneously soluble in fat and water in a single formulation. *Sneha Kalpana* consists of two ingredients: *Ghrita Kalpana* (medicated ghee) and *Taila Kalpana* (medicated oils).

Karviradya Taila is mentioned in *Bhaishjya Ratnavali*, chapter 63, *Shlokh* 21 for the treatment of *nasarsha*. *Karviradya Taila panchaka* shows that it has *katu-tikta* rasa predominance, *laghu, teekshna* guna predominance and *Vata-kapha shamaka dosha karma*. Keeping this in mind, *Nasya* with *Karviradya taila* has been taken for *Nasarsha* as it is *Vatakaphaja pradhan vyadhi*, in which the main pathology is the genesis of *masa ankur* in the nasal cavity.[1]

METHODOLOGY

Pharmaceutical study and Collection of drugs

The raw materials like *Rakta karvir, Jati, Vijayasar* and *Mallika* (Table 1) were collected for the preparation of *Karviradya taila*, from the market and after proper verification in the Dept. Of *Dravya Guna*, the final drug was prepared under the guidelines of the Dept. Of *Rasa Shastra* and *Bhaisajya Kalpana* in Rajiv Gandhi Government Postgraduate Ayurvedic Medical College pharmacy, Paprola.

Table 1: Ingredients of *Karviradya Taila.*[2]

Sr. No.	Name of plants	Generic name	Family	Dosha Karma	Part used	Qty.
1	*Rakta Karvir*	*Nerium oleander* L.	Apocynaceae	*Vata – Kapha shamaka*	Flower	1 part
2	*Jaati/ Chameli*	*Jasminum officinale* Linn.	Oleaceae	*Tridosha shamaka*	Flower	1 part
3	*Asana/ Vijaysar*	*Pterocarpus marsupium* Roxb.	Fabaceae	*Kapha – Pitta shamaka*	Flower	1 part
4	*Mallika*	*Jasmine sambac* (L.) Aiton	Oleaceae	*Tridosha shamaka*	Flower	1 part
5	*Murchit Til Tailam*	-	-	-	-	4 parts

Preparation of *Karviradya Taila*

Karviradya Taila was prepared in the pharmacy of the department of *Rasa Shastra* and *Bhaishajya Kalpana*, Rajiv Gandhi Government Postgraduate Ayurvedic Medical College pharmacy, Paprola.

Preparation of the *Karviradya Taila* was done as per the general method of preparation of *Taila* i.e. 1/4th part of *Kalka* (paste), 1 part of *Til Taila* (sesame oil) and 4 parts of *drava dravya* (liquid) (1/4:1:4).

METHOD OF PREPARATION

1. 10 L of *Til Taila* was taken and heated till it became froth-free and added with ingredients as mentioned in Table no. 1.
2. Heating was carried out in *Mandagni* for 24 hours.
3. This *Murchit Til Tail* was used as a base for the preparation of *Karviradi Taila*.
4. As the ratio is not mentioned in the formulation, firstly decoction of *four ingredients* as per the rule made and ingredients were taken according to *Sneha Kalpna Vidhi* of *Kwatha Dravya*.
5. Heating process was carried out in *Mandagni* for 20 hours.
6. Heating was continued till the attainment of *Samayak Pak Lakshna* of *Taila*.
7. The prepared *Taila* was filtered through a clean cloth and stored in clean airtight containers of 100ml each.

Taila Siddhi Lakshana

- *Vartivat sneha kalka* - able to role the *varti* of *kalka*
- *Shabdahino agni nikshipta*- No crackling sound heard on heating over the fire
- *Phenodgama taila siddhi lakshana*: frothing at the end of *taila*
- *Gandha utpatti* - mild alkaline odour was appreciated
- *Varna utpatti* - green colour of taila noted
- *Rasa utpatti* - not tasted.[3]

Table 2: Quantity of *Taila* taken and loss.

Taila	Quantity
Total *Til taila* taken	2.5L
Obtained T*aila*	2L
Loss	0.5L

Analytical study

A. Macroscopic Description (Organoleptic characters)

Various parameters of the material such as appearance, colour, odour of the formulations was absorbed and recorded.

B. Physio-Chemical Analysis

Physio-chemical analysis was carried out based on following parameters

1. Loss on drying
2. Specific gravity
3. R.I.
4. Saponification value
5. Acid value.

C. Identification Tests

1. Qualitative test
2. Thin layer chromatography.

1. Loss on drying (Determination of Moisture Content)

The Procedure here determines the amount of volatile matter (i.e., water drying off from the drug). For substances appearing to contain water as the only volatile constituent, the procedure given below is appropriately used. Place about 10 g of the drug (without preliminary drying) after accurately weighing (accurately weighed to within 0.01 g) it in a tared evaporating dish. After placing the above said amount of the drug in the tared evaporating dish, dry at 105^0 C for 5 hours, and weigh. Continue the drying and weighing at one-hour intervals until the difference between two successive weighing corresponds to not more than 0.25 percent. Constant weight is reached when two consecutive weighs after drying for 30 minutes and cooling for 30 minutes in a desiccator, show not more than 0.01 g difference. The petri dish was taken out, self-cooled and weighed

immediately. The weight loss i.e. loss on drying was calculated and expressed as % w/w.[4]

2. Specific gravity

The specific gravity of a liquid is the weight of a given volume of the liquid at 25^0C (unless otherwise specified) compared with the weight of an equal volume of water at the same temperature, all weighing being taken in air. Method: Proceed as described under wt. per ml. Obtain the specific gravity of the liquid by dividing the weight of the liquid contained in the pycnometer by the weight of water contained, both determined at 25^0 C unless otherwise directed in the individual monograph.[5]

3. RI (Refractive Index)

The refractive index (η) of a substance regarding air is the ratio of the sine of the angle of incidence to the sine of the angle of refraction of a beam of light passing from air into the substance. It varies with the wavelength of the light used in its measurement. It is measured with an Abbemat refractometer.[6]

4. Saponification value

The saponification value is the number of mg of potassium hydroxide required to neutralize the fatty acids, resulting from the complete hydrolysis of 1 g of the oil or fat, when determined by the following method: Dissolve 35 to 40 g of potassium hydroxide in 20 ml water, and add sufficient alcohol to make 1,000 ml. Allow it to stand overnight, and pour off the clear liquor. Weigh accurately about 2 g of the substance in a tared 250 ml flask, add 25 ml of the alcoholic solution of potassium hydroxide, attach a reflux condenser, and boil on a water-bath for one hour, frequently rotating the contents of the flask cool and add 1 ml of solution of phenolphthalein and titrate the excess of alkali with 0.5 N hydrochloric acid. Note the number of ml required (a)Repeat the experiment with the same quantities of the same reagents in the manner omitting the substance. Note the number of ml required (b)Calculate the saponification value from the following formula

$$\text{Saponification Value} = \frac{(b-a) \times 0.02805 \times 1.000}{W}$$

Where 'W' is the weight in g of the substance taken.[7]

5. Acid value

The acid value is the number of mg of potassium hydroxide required to neutralize the free acids in 1 g of the substance, when determined by the following method: Weigh accurately about 10 g of the substance (1 to 5) in the case of a resin into a 250 ml flask and add 50 ml of a mixture of equal volumes of alcohol and solvent ether, which has been neutralized after the addition of 1 ml of solution of phenolphthalein. Heat gently on a water bath, if necessary until the substance has completely melted, titrate with 0.1 N potassium hydroxide, shaking constantly until a pink colour which persists for fifteen seconds is obtained. Note the number of ml required. Calculate the acid value from the following formula

$$\text{Acid Value} = \frac{a \times 0.00561 \times 1000}{W}$$

Where 'a' is the number of ml of 0.1 N potassium hydroxide required and 'W' is the weight in g of the substance taken.[8]

Identification tests

1. Qualitative test

It is a chemical test for the screening and identification of bioactive chemical constituents like alkaloids, carbohydrates, glycosides, saponins, phenolic compounds phytosterols, proteins, amino acids, flavonoids, and tannins in drugs. Different methods are used for different constituents.

2. Thin layer chromatography (TLC)

Thin-layer chromatography is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. The adsorbent is a relatively thin, uniform layer of dry finely powdered material applied to a glass, plastic, or metal sheet or plate. Precoated plates are most commonly used. Separation may also be achieved based on partition or a combination of partition and adsorption, depending on the particular type of support, its preparation, and its use with different solvent. Identification can be effected by observation of spots of identical Rf value and about equal magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation.[9]

OBSERVATIONS AND RESULTS

The analytical studies like macroscopic and physio-chemical were carried out results are given in Table 3.

Table no. 3: ***Karviradya Taila.***

Sr. No.	Test	DTL Result
1.	**Macroscopic tests**	
a.	Appearance	Medicated oil
b.	Colour	Reddish yellow
c.	Odour	Characteristics
2.	**Physicochemical tests**	
a.	Loss on drying	0.25%
b.	Specific Gravity	1.470

c.	RI	0.918
d.	Saponification Value	186
e.	Acid Value	0.558
3.	**Identification tests**	
a.	Qualitative test	-ve for Mineral Oil
b.	Thin Layer Chromatography	Rf Value 0.12, 0.19, 0.26, 0.34, 0.46, 0.57, 0.73 0.82, 0.86 Shows the presence of *Til oil*

DISCUSSION

The results of the physicochemical tests indicate that *Karaviradya Taila* has a high saponification value, which suggests its potential for quick absorption and penetration into the skin. The low acid value indicates the oil's stability and minimal risk of decomposition. The TLC results confirm the presence of *Tila* oil, which is a key ingredient in the preparation of *Karaviradya Taila*. The Rf values obtained are consistent with the expected values for *Tila* oil, further validating the identity of the oil. The absence of mineral oil in the identification tests ensures the safety and efficacy of the preparation. Overall, the results demonstrate the quality and authenticity of *Karaviradya Taila*, supporting its traditional use in Ayurvedic medicine for various conditions.

CONCLUSION

The macroscopic tests revealed that the medicated oil, *Karaviradya Taila*, has a reddish-yellow color and a characteristic odor. The physicochemical tests showed a loss on drying of 0.25%, specific gravity of 1.470, and refractive index (RI) of 0.918. The saponification value was found to be 186, and the acid value was 0.558. The identification tests confirmed the absence of mineral oil, and the Thin Layer Chromatography (TLC) revealed the presence of Til oil, with Rf values of 0.12, 0.19, 0.26, 0.34, 0.46, 0.57, 0.73, and 0.86.

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