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Pharmaceutico-Analytical study of Karaviradya taila

Research Article

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Abstract

Introduction: *Sneha kalpana* (oleaginous preparations) is commonly prescribed *Ayurvedic* dosage form and it is the preparation of various kinds of medicated oils and ghee. *Karaviradya taila* is medicated oil preparation used externally in the form of abhyanga (massage) for *lomashatana* (depilation). Objectives: To prepare and carry out the physico-chemical analysis of *karaviradya taila.* Materials and Methods: *Karaviradya taila* was prepared by general method of *taila kalpana* i.e ¼:1:4 and analytical study like organoleptic characters and physico- chemical parameters were carried out based on the references available in the laboratory guide for the analysis of *Ayurveda* and Siddha formulation. Results and Discussion: The total oil obtained was 85% and the loss was 15%. Organoleptic characters of *karaviradya taila* showed translucent green viscous liquid with alkaline odor, Physico- chemical parameters like pH, specific gravity, viscosity, total suspended solids, and refractive index were tested. The increased Saponification value of *karaviradya taila* indicates the rate of absorption, low acid value of *karaviradya taila* indicates less chance of decomposition of taila. Evaporation of moisture contents in *karaviradya taila* leads to the decrease in rancidity factors. Peroxide value and iodine value of *karaviradya taila* indicates the primary oxidation. Conclusion: *Karaviradya taila* is a sneha kalpana mainly indicated for *loma shatana* (depilation). Local applications is beneficial because they are quickly absorbable, protect the skin and promotes percutaneous absorption of incorporated drug. The results of pharmaceutical and analytical study of *karaviradya taila* can be considered as the preliminary standards for the preparation of *karaviradya taila*.

Key Words: *Lomashatana, Karaviradyataila*, *Bahirparimarjana chikitsa*, *Sneha kalpana*, Depilation, Hair Removal.

Introduction

Sneha kalpana (oleaginous preparations) is preparation of various kinds of medicated oils and ghee. *Sneha Kalpa* (oleaginous preparations) are efficacious preparations having comparatively longer shelf life. It is one of the commonly prescribed *Ayurvedic* dosage form used in day to day practice and these have very wide range of therapeutic utility in all age groups and in almost all diseases. *Sneha kalpana* (oleaginous preparations) are considered superior to other dosage forms due to its advantages such as increased absorption and extraction of fat soluble as well as a water soluble active principle at a time in a single formulation(1). *Sneha kalpana* consists of *taila kalpana* (medicated oils) and *ghrita kalpana* (medicated ghee). *Ayurveda* gives importance to both *antahparimarjana chikitsa* (internal purification) and *bahirparimarjana chikitsa* (external purification). *Bahirparimarjana chikitsa* like, *lepa* (paste), *upanaha* (poultice), *udvartana* (dry powder massage), *abhyanga* (massage) etc. *Ayurveda* not only deals with therapeutic aspects but also is concerned about preventive, curative, health promotive as well as the cosmetic needs (2).

Cosmetic plays a significant role in today's life style, Unwanted hair growth over the body is termed as hypertrichosis, which can be due to hormonal, drug induced, genetic, unhealthy lifestyle or idiopathic. Hair removal is practiced for the reasons like cultural, sexual, religion and cosmetic purpose. To eliminate unwanted hair there are numerous ways like topical depilatory creams, plucking, threading, shaving, waxing, electrolysis, laser therapy etc. These formulations or methods containing chemicals, are expensive and causes irritation, minor burns, inflammation, scarring, pain and other side effects, so there is a need of formulation for hair removal. *Ayurvedic* classical texts mentioned few formulations for hair removal and they are termed *lomashatana yoga* (3) (depilatory formulations). *Karaviradya taila* (4) is one among such formulations having depilatory effect. It contains herbal drugs such as *kadali ksharodaka, koshataki, karavira,* and *danti*, which can be prepared by general method of *taila kalpana* (oleaginous preparations) and used externally in the form of *abhyanga* (massage).

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Methodology

Pharmaceutical study

Collection of drugs

The raw drugs like *kadali kanda*, *koshataki* and *karavira* (Table 1) for the preparation of *karaviradya taila* was collected from its natural habitat. *Danti* was procured from kajrekar pharmacy, Belgaum and *tila taila* was purchased from oil pressing mill Hassan, Karnataka.

Authentication of drugs

The authentication was done in the department of Dravya guna, Sri Dharmastala Manjunatheshwara college of Ayurveda and hospital, Hassan.

Preparation of Karaviradya taila

Karaviradya taila was prepared in the teaching pharmacy of department of Rasashastra and Bhaishajya kalpana, Sri Dharmastala Manjunatheshwara college of Ayurveda and hospital, Hassan.

Table: 1 Ingredients and proportions of *karaviradya taila*

No	Drugs	Part used	Botanical name	Quantity
1	*Karavira*	*Moola churna* (root powder)	*Nerium indicum* Mill.	250g (1/4part) [83.33g each]
3	*Koshataki*	P*anchanga churna* (whole plant powder)	*Luffa acutangula* (Linn.) Roxb.	
4	*Danti*	*Moola churna* (root powder)	*Baliospermum montanum* Muell-Arg.	
5	*Tila taila*	Seeds oil	*Sesamum indicum* L	1000ml (1part)
6	*Kadali*	*Kanda ksharodaka* (stem) Alkaline water	*Musa paradisiaca* Linn.	4000ml (4parts)

Method of preparation

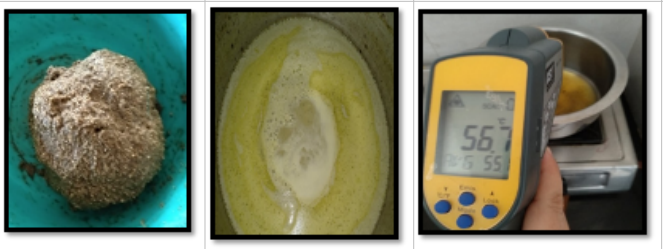
Preparation of the *karaviradya taila* was done as per the general method of preparation of *taila* i.e. 1/4th part of *kalka* (paste) of *karavira, koshataki* and *danti,* 1 part of *tila taila* (sesame oil) and 4 parts of *drava dravya* (liquid) (1/4:1:4).

Drava dravya (liquid) used in the preparation of *karaviradya taila* is *kadali ksharodaka* (alkaline liquid), which is prepared by adding 1 part of ash of *kadali kanda* to 6 parts of water (v/v) (5).

Firstly 1000ml *tila taila* was taken in a clean wide mouthed stainless steel vessel and it is kept over the fire, when fumes started appearing, 4000ml *ksharodaka* (alkaline liquid) was added slowly to it, followed by adding 250g of *kalka* (paste) of drugs. Mild heat was given throughout the procedure. The temperature was checked every half an hour with the help of infrared pyrometer. Stirring was done continuously with the help of spatula. After the observation of *sneha siddhi lakshana* (confirmatory tests for oil), the *taila* (oil) was filtered through a clean cloth, the obtained *taila* (oil) was measured and preserved in wide mouthed glass container.

Fig-1 Preparation of karaviradya taila

1. Heating of oil | 2. Adding kadali ksharodaka | 3. Frothing after adding ksharodaka



4. Kalka | 5. Color change noted after adding kalka | 6. Temperature

Analytical study

Karaviradya taila was analysed for the following parameters as per the guidelines available in authoritative book.

1) Morphological evaluation- organoleptic characters
2) Physico- chemical parameters -

pH (6), specific gravity (7), viscosity (8), total suspended solids, refractive index(9), saponification value(10), acid value (11), rancidity(12), peroxide value(13), iodine value (14).

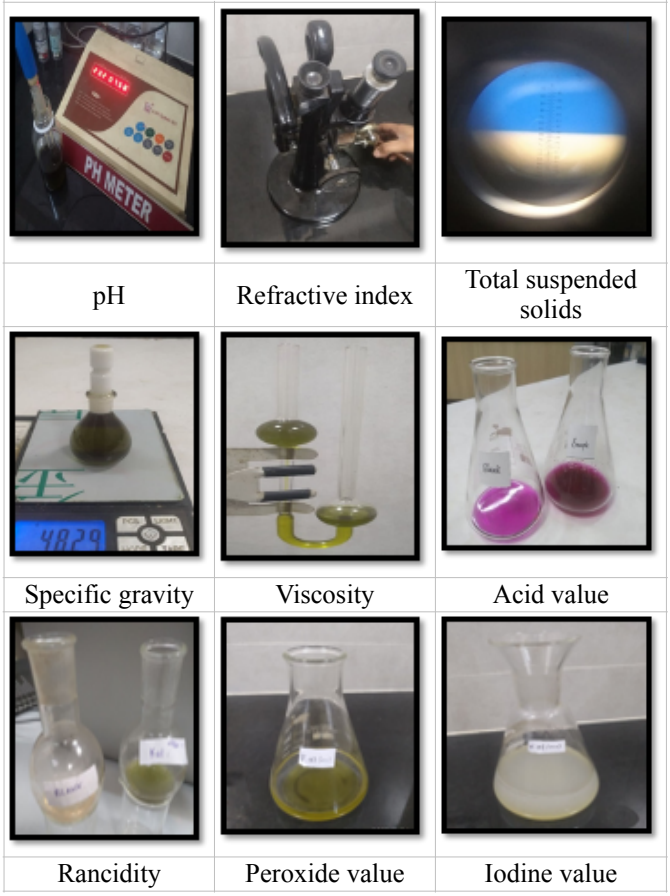
Place of analytical study: this study was carried out in the quality control laboratory of the teaching pharmacy of department of Rasashastra and Bhaishajya kalpana, Sri Dharmastala Manjunatheshwara college of Ayurveda and hospital, Hassan.

Observations and Results

Observations and results of pharmaceutical study

When *ksharodaka* was added to *taila*, foaming and effervescence was observed with hissing noise and it turned to milky white color. After adding the *kalka dravya* to the *taila*, the white colored liquid turned to green. Frequent stirring was done and continuously *mandagni* (167.5 ^{0}c of fire, 30.2^{0}c of vessel and 69.9^{0}c temp of oil) was maintained throughout the procedure. Temperature was checked in every half an hour with the help of Infrared pyrometer. Alkaline odor was appreciated while preparing *taila.* Separation of *kalka* was noted, able to role the *varti* of *kalka,* frothing started with creamy layer , when *agni pariksha* was done, no crackling sound noted, more froth was seen at the end of *taila paka (phenodgama taila),* later the *taila* was immediately filtered through a clean cloth measured and preserved in wide mouthed glass container.

Fig-2 Quality control parameters

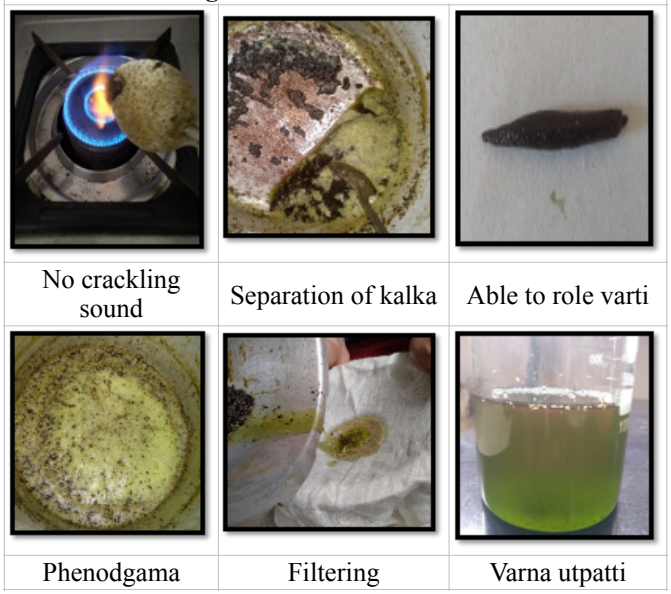


pH	Refractive index	Total suspended solids
Specific gravity	Viscosity	Acid value
Rancidity	Peroxide value	Iodine value

Taila siddhi lakshana (15)

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

Fig-3 Taila siddhi lakshana



No crackling sound	Separation of kalka	Able to role varti
Phenodgama	Filtering	Varna utpatti

Table - 2 Quantity of taila taken and loss

Taila	Quantity
Total *tila taila* taken	1000ml
Obtained *taila*	850ml
Loss	150ml

Observations and results of analytical study

The analytical study like organoleptic and physico-chemical parameters of *karaviradya taila* were carried out and results are given in table-3 and table-4

Table-3 Organoleptic characters of *karaviradya taila*

Sl .No	Particulars	*Karaviradya Taila*
1	Appearance	Translucent Viscous Liquid
2	Color	Green
3	Odor	Alkaline Odor

Table -4 Physico- chemical parameters of Karaviradya taila

Sl. No.	Parameters	Karaviradya taila
1	pH	7.58
2	Specific gravity	0.9196
3	Viscosity	0.01428
4	TSS (Total Suspended	79
5	Refractive index	1.48
6	Saponification value	133.23
7	Acid value	0.6563
8	Rancidity	Oil is not oxidized
9	Peroxide value	6
10	Iodine value	17.08
11	Weight/ml	1.26
12	Ester value	132.5737

Discussion

Local applications is beneficial because they are quickly absorbable, protect the skin and promotes percutaneous absorption of incorporated drug (16). Drug and media to some extent is taken and heated along with the oil at a desired temperature and for a certain period of time. Here, the principle is to transfer the active constituent of the drug according to its solubility.

pH of of *ksharodaka* was11.1and the pH of *karavira* after *shodhana* was 5.2, *karaviradya taila* was 7.58, it may be because of alkaline ingredients like *kadali ksharodaka* which was alkaline in nature was added during preparation of *taila*. Specific gravity suggests the presence of solutes in a solvent. The specific gravity of the *karaviradya taila* is 0.9196 which is lesser than the specific gravity of water. Viscosity measures the resistance of a solution to flow when stress is applied. Viscosity of *karaviradya taila* is 0.01428 Pascal seconds, it indicates the liquid is more viscous, which may be due to the property of *tila taila* and the ingredients added to it. Total suspended solids of *karaviradya taila* is 79, which suggests solid particles suspended in the *karaviradya taila.* Refractive index gives the idea about the viscosity and also the density of the substance. The refractive index of

karaviradya taila is 1.48 the substance with high refractive index will be having high viscosity.

The saponification value of *karaviradya taila* is 133.23, which indicates the amount of KOH required to saponify 2g of *karaviradya taila,* higher saponification value of *taila* indicates presences of short-chain fatty acids. It suggests that, more the short chain fatty acid more is the rate of absorption, thus leading to the increased efficacy of the *taila* (17). The acid value of *karaviradya taila* is 0.6563, low acid value indicates less percentage of free fatty acids, less chance of decomposition of *taila*, thus increasing lifespan and therapeutic value and good cleansing by soap (18).

Oils can be susceptible to rancidity because it is caused by biochemical reaction between fats and oxygen. Thus, known as oxidative rancidity. In this process long chain fatty acids are degraded and short compounds are formed. One of the reaction products is butyric acid, which causes the typical rancid taste. Evaporation of moisture contents in *karaviradya taila* leads to the decrease in rancidity factors, lesser the rancidity longer will be the self-life (19). Peroxide value gives a measure of the extent to which an oil sample as undergone primary oxidation. Peroxide value of *karaviradya taila* was 6 and there was no primary oxidation (20). Easter value: esters are the fatty acids with glycerol, as the esters are increased rancidity chance is decreased. Ester value of *karaviradya taila* is 132.5737 indicates the less chance of rancidity.

Iodine number is a measure of the degree of unsaturation in an oil, the iodine number is useful to determine the quality of *taila* or its freedom from adulteration. It is use to check the oxidative rancidity of oils, higher the unsaturation greater is the possibility of oil to get rancid. The more iodine number, the more unsaturated fatty acid bonds i.e a greater number of double bonds in the oil. The more iodine is attached, the lesser is the iodine value, less reactive, more stable and less susceptible to oxidation and rancidification (21).

Conclusion

Sneha kalpana (oleaginous preparations) is having longer shelf life, extraction of fat soluble as well as water soluble active principle at a time in a single formulation and quick in absorption. *Karaviradya taila* mainly used for *loma shatana* (depilation). Ingredients of *karaviradya taila kadali, Karavira, koshataki*, *danti*, are easily available, formulation is easy to prepare and cost effective. The total oil obtained during pharmaceutical preparations was 85% and the loss was 15%. The standard analytical parameters of *karaviradya taila* is not available in API and AFI. Hence analytical studies conducted on the *karaviradya taila* can be taken as preliminary standards.

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