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Taila murchchhana with respect to comparative physico-chemical analysis of plain sarshapa taila and murchchhita sarshapa taila

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Abstract
Sneha Kalpana (medicated Taila and Ghrita) is one of the important dosage form among Ayurvedic medicament. It is used as both externally and internally. While preparing Sneha Kalpana first of all Sneha should undergo one particular Samskara called Sneha Murchchhana and it is used for Amadoshaharatwa, removal of bad odor, imparting color and increasing potency of the drug. Sarshapa Taila Murchchhana was done as mentioned in Bhaishajyaratnavali. Analysis on modern parameters of plain and Murchchhita Sarshapa Taila was done and comparison of various parameters on quality assessment were done. By Murchchhana process Sarshapa Taila converted into dark red colour from light yellow and get good order from pungent sulphurous odour. Physico-chemical parameters were applied for assessing the prepared formulation. The physico-chemical analysis showed slightly increased weight per millilitre (g) (0.9076). The moisture content (%w/w) slightly decreased (0.09) which shows decrease in rancidity. The viscosity (cpc) decreased considerably from 122 to 60 which shows increased rate of absorption. The acid value decreased (0.8047) which shows decrease in rancidity. We conclude that Murchchhita Sarshapa Taila is better than plain Sarshapa Taila for medicated oil preparations.

Keywords: sneha kalpana, ayurvedic medicament, samskara, sarshapa taila murchchhana, plain sarshapa taila

1. Introduction
Ayurveda has given the greatest emphasis to comprehensive knowledge of drugs including identification, procurement, processing, preservation and dispensing of prepared drug under a broad heading known as Bhaishajya Kalpana. The term Bhaishajya Kalpana is formed by the combination of words 'Bhaishajya' and 'Kalpana'. Bhaishajya - that which wins the disease or beneficial in Chikitsa or material presented for the treatment through the Bhishaka is called Bhaishajya, and it is also called 'Aushadha' (medicine) [1-3]. Kalpana – it is the process or the method employed for pharmaceutical processings [4]. Kalpana is said- Yojana (planning) to convert a material into useful form to the body [5, 6]. Thus 'Bhaishajya Kalpana' is the science which deals in detail about the preparation of different medicines by using some raw material according to physicians requirements.
This science explains various methods of processing a drug in order to make the drug- More palatable, rich with potency, pleasing with good odor, colour etc, and long lasting or improve the self life of the prepration. The basic processing techniques of Bhaishajya Kalpana are elaborately explained in Samhitas. They were called the Panchavidha Kashaya Kalpana. – Swarasa, Kalka, Kwatha, Hima, Phanta [7]. These have been derived from five Kashaya yoni expect Lavana Rasa. All Kalpanas are mainly based on water contents or water soluble part. Since they have less shelf life so to prepare the formulations which can be preserved for long time and can be administered conveniently- Churna, Vati, Sneha, Sandhana Kalpana etc. were introduced. Sneha Kalpana is well known among these. Sneha preparations have better pharmacokinetic action in comparison to other dosage forms because of the lipoid nature of the biomembranes, as lipid soluble substances readily permeate into the cells.

Introduction of Sneha Kalpana into Ayurvedic pharmaceutics may be the result of the above mentioned facts. The rationality behind taking oil as a base is presumably to extract lipid-soluble active fractions from the ingredients into the oil and even this formulation holds its properties for longer period when compared to primary preparations. Sneha Kalpana is again of two types depending upo base material i.e. Ghrita and Taila Kalpana. Taila Kalpana have been used abundantly due to its use for all four modes of drug administrations like Pana, Abhyanga, Nasya, Basti and through all the bodily routes of drug administration. While preparing Sneha Kalpana first of all Sneha should undergo one particular Samskara called Sneha Murchchhana. It is applicable for both Ghrita and Taila. Sneha Murchchhana is not described in ancient books – Charaka Samhita, Sushrut Samhita, Astanga samgraha, Astanga hridaya. Murchchhana process is firstly mentioned in Sharngdhara Samhita commentary by Kashiram's Gudhartha-Dipika [8]. Yogatarangini Brihatyogatarangini, Yogratnakar and Bhaishajyaratnavali also delt with concept of Sneha Murchchhana. Bhaishajyaratnavali delt details of the Murchchhana of different oils (Tila Taila, Sarshapa Taila, Erand Taila) and Ghrita with specific herbal drugs. The main aim of Sneha Murchchhana is to remove the Durgandha, Amadosa, and Ugrata etc. bad characters of crude form of Sneha. Eventhough the word Ama in the context to Taila is not clearly defined, probably the water content existing in oil or the factor which inhibit the absorption (internal and external) of oil can be correlated. By doing Murchchhana, Sneha will get good smell and colour, apart from these, because of Murchchhana, Sneha will get such a capability to receive more active principle while the preparation of Sneha Paka and also by doing Murchchhana, the virya (potency) of the Sneha is enhanced. Because of Murchchhana, Sneha will get the active principles of Murchchhana Dravyas too.

2. Material and Methods

Murchchhana is a special pharmaceutical procedure before subjecting the drugs to SnehaPaka. Sarshapa Taila being best Kushthahara was selected as Sneha Dravya [9].

2.1 Pharmaceutical Study

3 batches of Murchchhita Sarshapa Taila were prepared for the study as references of Bhaishajyaratnavali [10].

Ingredients

Table 1: Showing the Ingredients and Their Ratios for Sarshapa Taila Murchchhana by Bhaishajyaratnavali [10]

S. No.	Ingredie-NTS	Latin Name	Family	Part Used	Quantity
	Kalka				
1.	Amalaki	*Phyllanthus emblica*	Euphorbiaceae	Pericarp	1 Karsh (12 gm)
2.	Haridra	*Curcuma longa*	Zingiberacea	Rhizome	1 Karsh (12 gm)
3.	Musta	*Cyprus rotandus*	Cypraceae	Tuber	1 Karsh (12 gm)
4.	Bilva	*Aegel marmelos*	Rutaceae	Unripe Fruit	1 Karsh (12 gm)
5.	Dadima	*Punica granatum*	Punicaceae	Seeds	1 Karsh (12 gm)
6.	Nagakeshara	*Mesua ferrea*	Calophyllaceae	Stamens	1 Karsh (12 gm)
7.	Krisna Jiraka	*Carum carvi*	Umbelliferae	Fruit	1 Karsh (12 gm)
8.	Hribera	*Pavonia odorata*	Malvaceae	Root	1 Karsh (12 gm)
9.	Nalika	*Cinnamomum zeylanicum*	Lauraceae	Inner stem bark	1 Karsh (12 gm)
10.	Bibhitaka	*Terminalia bellirica*	Combretaceae	Pericarp	1 Karsh (12 gm)
11.	Manjishtha	*Rubia cordifolia*	Rubiaceae	Root	2 Pala (96 gm)
	Sneha				
	Sarshapa Taila	*Brassica campestris*	Brassicaceae	Seed oil	1 Prastha (768ml.)
	Drava				
	Water	-	-	-	1 Adhaka (3.72 litre)

Table 2: Showing Ingredients and Their Weights used for Sarshapa Taila Murchchhana.

S. No.	Ingredients	Weight
1	Sarshapa Taila	4 Prastha (3072 ml) (2646 gm)
2	Kalka – [Amalaki, Haridra, Musta, Bilva, Dadima, Nagakeshara, Krisna jiraka, Hribera Nalika, Bibhitaka,] [Manjishtha]	72 Karsh (864 gm) [Each 4 Karsh (48 gm)] [8 Pala (384 gm)]
3	Water	4 Aadhaka (12288 ml) (11736gm)

*1 Karsa = 12gm In the case of liquid, the metric equivalents would be the corresponding litre and milliliter [11]
So, 1 Prastha = 64 Karsa = 768ml
*The conversion of ml into gm in this table is done by weighing on the weigh machine.

Equipments

Mortar & pestle, Mixer-Grinder, Sieve, Heating device – gas burner with LPG cylinder, Aluminium Vessel – Diameter-46.5cm, Depth-26cm, wt – 6.8 kg, and Capacity – 50 lit., Cotton cloth, Measuring cylinder, stainless steel ladle, Thermometer.

Procedure

All the Kalka Dravyas were made into coarse powder form (Yavakut Churna) and Kalka was prepared by soaking in water that was 2500ml and left undisturbed overnight (about 18 hrs).

On next morning Sarshapa Taila was taken in a aluminium vessel and heated over Madhyama Agni till complete evaporation of moisture content, and the temperature was around 164°C. The Kalka was added to the Taila after slight cooling, and the temperature was around 95 °C.

After adding Kalka, water was added and heated it with intermediate stirring. Heating process was carried out till Sneha Siddhi Lakshana appeared, then vessel was taken out

from the fire and Taila was filtered through clean cloth in its hot stage. Murchchhita Sneha was store in a container after cooling.

Precautions

- Fresh Sarshapa Taila should be taken.
- The vessel used for the process should be clean and of adequate size, inorder to avoid spilling of Taila due to excess foaming during Murchchhana process.
- Kalka should be made with coarse powder and soaked into water overnight to avoid the sticking of Kalka to the vessel
- When froth appears in the Taila, the temp was maintained to protect the Taila coming out from vessel.
- Continuous stirring was carried out to avoid the sticking of Kalka especially in last stage.

Observations during Murchchhana

- Initiation of process crackle sound was heard in Sarshapa Taila.
- Appearance of fumes and eye irritation get started due to fumes.
- Specific smell of Sarshapa Taila.
- When Taila get moisture free then the fumes comes out abundantly and the colour of Taila slightly changes but unable to differentiate clearly.
- Froth appears when Kalka was added.
- After adding Kalka and water colour of Taila gets converted into reddish orange colour, and after complete Paka it converts into dark red colour.
- Bubble and bubble sound appears during Sneha Paka.
- Smell of Kalka Dravya appears during heating process.
- At Mridu Paka stage absence of crackling sound when oil was sprinkled on the fire but crackling sound was present when Kalka Dravya was sprinkled on the fire.
- Phena appeared at Mridu Paka stage and disappear at Madhyama Paka stage.
- At Madhyama Paka stage absence of crackling sound when oil and Kalka particles were sprinkled on the fire.

2.2 Analytical Study

Analysis of Sarshapa Taila and Murchchhita Sarshapa Taila was done as per "General Guidelines for Drug Development of Ayurvedic Formulations", Volume – 1, Central Council for Research in Ayurvedic Sciences, Ministry of Ayush, Govt. of India, New Delhi, 1st edition – 2018. Physico chemical analysis of the samples were carried out at Multani Pharmaceuticals Limited (Analytical division), Haridwar, Uttarakhand and pH of the samples was carried out at laboratory of Deptt. Of Rasa Shastra and Bhaishajya Kalpana, BHU, Varanasi.

3. Observation and Result

3.1 Pharmaceutical Study

Table 3: Observations with Temperature (°C) During Sarshapa Taila Murchchhana

Observations	1st Batch	2nd Batch	3rd Batch	Average
Initial temp. of Sarshapa Taila	34.5	36	34	34.8
Temp. when Taila get moisture free	164	172	155	163.7
Temp. at the time of Kalka add	95	100	110	101.7
Temp. after adding Kalka and at the time of water add	76	58	60	64.7
Temp. after adding water	57	40	41	46
Temp. at which boiling of Taila start	96	94	94	94.7
Temp. after one hour of starting of Taila boiling	99	97	97.6	97.9
Temp. at the time of Phenodgama	98	96.9	93	96
Temp. at the time of Mridu Paka stage	94	96.9	93	94.6
Temp. at the time of Madhyama Paka stage	95.5	98	93	95.5
Temp. at the time of filtration	90	91	85	88.7

Table 4: Duration of Sarshapa Taila Murchchhana

Observation	1st Batch	2nd Batch	3rd Batch	Average
Total duration to obtain moisture free condition (in min.)	48	35	42	42
Time of Kalka added (in min.)	73	60	68	67
Time of water added (in min.)	78	65	72	72
Time of starting Taila boiling (in min.)	115	103	105	108
Time of Phenodgama	11 hrs. 25min.	13 hrs 8min.	12 hrs 30min.	12 hrs 21min.
Duration of Mridu Paka stage	11 hrs 40min.	13 hrs 8min.	12 hrs 30min.	12 hrs 26min.
Duration of Madhyama Paka stage	14 hrs 17min.	15 hrs 10min.	14 hrs 45min.	14 hrs 44min.
Total time required for Taila Murchchhana	14 hrs 17min.	15 hrs 10min.	14 hrs 45min.	14 hrs 44min.
Total time required for Taila Murchchhana (in days)	3	3	3	3

Table 5: Sneha Siddhi Lakshana of Taila Murchchhana

S. No.	Sneha Siddhi Lakshan	
1	Sanyav eve niryase	-ve
2	Madhye darvi vimunchati	+ve
3	Varti formation	+ve
4	Shabda hino Agni nikshipta	+ve
5	Phenodgama	+ve
6	Gandh varna rasotpatti	+ve

Table 6: Showing the Result Obtained During Preparation of Sarshapa Taila Murchchhana

Result	1st Batch	2nd Batch	3rd Batch	Average
Initial quantity of Sarshapa Taila (in ml.)	3072	3072	3072	3072
Initial quantity of Sarshapa Taila (in gm.)	2646	2646	2646	2646
Obtained quantity of Murchchhita Sarshapa Taila (in ml.)	2702.15	1840	1915	2152.38
Obtained quantity of Murchchhita Sarshapa Taila (in gm.)	2329.39	1558.18	1587.8	1825.12
Loss of Taila (in ml.)	369.85	1232	1157	919.62
Loss of Taila (in gm.)	316.61	1087.82	1058.2	820.88
% of gain in volume	87.96	59.90	62.34	70.07
% of gain in weight	88.03	58.89	60	68.97
% loss in volume	12.04	40.10	37.66	29.93
% loss in weight	11.97	41.11	40	31.03
Initial quantity of Kalka (in gm.)	864	864	864	864
Obtained quantity of Kalka (in gm.)	2638.8	2113.3	2266.2	2339.43
Colour of Kalka after filteration	Dark brown	Dark brown	Dark brown	Dark brown

*The conversion of ml into gm in this table is done by weighing on the weigh machine.

3.2 Analytical Study

Table 7: Showing Organoleptic Characters of Sarshapa Taila and Murchchhita Sarshapa Taila

Sample	Colour	Taste	Odour	Consistency	Texture
Sarshapa Taila	Light yellow	Katu, Tikta	Pungent Sulph-urous odour	Liquid	Oily
Murchchhita Sarshapa Taila	Dark reddish	Tikta, Kashaya	Murchchhana Dravyas odour	Liquid	Oily

Table 8: Showing Different Physico - Chemical Parameters and Their Result of Sarshapa Taila and Murchchhita Sarshapa Taila

S. No.	Parameters	Sarshapa Taila	Murchchhita Sarshapa Taila
1	Weight/ml (g) at 40°C	0.9051	0.9076
2	pH value	4.84	3.65
3	Moisture content (%w/w)	0.13	0.09
4	Refractive index at 40°C	1.4673	1.4694
5	Viscosity (cpc) (Spindle No. 64)	122	60
6	Iodine value	106.22	108.31
7	Saponification value	195.80	193.54
8	Unsaponifiable matter	0.81	0.34
9	Acid value	2.72	0.8047
10	Peroxide value	11.45	11.6159
11	Mineral oil test	Absent	Absent

Table 9: Showing Microbial Count of Sarshapa Taila and Murchchhita Sarshapa Taila

Sample	Total Viable Aerobic Count	Total Fungal Count	Enterobacteriaceae Presence
Sarshapa Taila	<10	<10	Absent
Murchchhita Sarshapa Taila	10	<10	Absent

4. Discussion

As the present article is a preliminary study it can be concluded that Pharmaceutical study of Sarshapa Taila Murchchhana took 14hrs.44min. in completion for 4 Prastha (3072 ml) amount of Sarshapa Taila. At Madhyama Paka stage absence of crackling sound when oil and Kalka particles were sprinkled on the fire. It shows the absence of water content in Murchchhita Sarshapa Taila. Average quantity of Taila obtained in volume was 70.07% and average loss in volume was found to be 29.93%.

Analytical study show that after Murchchhana process the colour of Sarshapa Taila was converted in dark red from light yellow because of Manjishtha that was used as Kalka Dravya in Murchchhana process. Taste of Sarshapa Taila was Katu & Tikta, which was converted in Tikta & Kashaya after Murchchhana process. Pungent sulphurous odour of Sarshapa Taila was converted in Murchchhana Dravyas odour in Murchchhita Sarshapa Taila.

In physico-chemical characters the weight per millilitre (g) slightly increased after the process of Murchchhana which may be due to the addition of some active bioconstituents from the herbs used for Murchchhana. Murchchhita Sarshapa Taila is more acidic than plain Sarshapa Taila, this indicates that the drugs used in Murchchhana are more acidic in nature e.g. Amalaki. After Murchchhana process, moisture content became less (0.09%w/w) that is negligible that show Murchchhita Sarshapa Taila is good with respect to rancidity. The refractive index after Murchchhana slightly increased which may be due to colouration and phytoconstituents. Because of Murchchhana process viscosity of Sarshapa Taila decreases. If the viscosity of the liquid preparation is decreased, the rate of absorption is increased. The iodine value increased a bit and the saponification value decreased a bit after Murchchhana process. The unsaponifiable matter after Murchchhana decreased when compared to Taila which indicates the process of refining. A high acid value in the oil may leads to early rancidity of the oils. The acid value decreased after Murchchhana process. There was slightly increase in the peroxide value after Murchchhana and this indicated that there is no more difference in the stability due to Murchchhana process. Mineral oil in Sarshapa Taila and

Murchchhita Sarshapa Taila was absent. Total viable aerobic count was slightly increased after Murchchhana process, but it is much less than the maximum acceptable count of total aerobic microbe (10^2 CFU/g or CFU/ml = 200 -according to The International Pharmacopoeia). This may be due to improper hygiene during the preparation or packing of drug.

Kalka Dravya Sarshapa Taila Water

Fig 1: Ingredients of Sarshapa Taila Murchchhana

Fig 2: Adding Kalka

Fig 3: Adding Water

Fig 4: Boiling of Taila

Fig 5: Sneha Siddhi Lakshana

Fig 6: Filtration

Fig 7: Prepared Murchchhita Sarshapa Taila

5. Conclusion

From the above review, it has been concluded that after Murchchhana process, the Sarshapa Taila gets all characters that described in Ayurvedic texts. By doing Murchchhana, Sneha will get good smell and colour. Because of Murchchhana, Sneha will get the active principles of Murchchhana Dravyas too. The physico-chemical analysis showed weight per millilitre (g) (0.9076), pH value (3.65), moisture content (%w/w) (0.09), refractive index (1.4694), viscosity (cpc) (60), iodine value (106.22), saponification value (193.54), unsaponifiable matter (0.34), acid value (0.8047), peroxide value (11.6159) and mineral oil test (absent). These parameters showed that Murchchhita Sarshapa Taila is better than plain Sarshapa Taila for medicated oil preparations.

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7. References

1. Raja Radha Kanta Deva. Shabda-Kalpadrum. Edn 3, Part 3, Chowkhamba Sanskrit Series, Varanasi 1967, 543.
2. Vraddha Jivaka. Kasyapa Samhita, Vidyotini hindi commentary by Sri Satyapala Bhisagacharya. Reprint Edn, Chaukhambha Sanskrit Sansthan, Varanasi 2009, 242.
3. Pt. Sarngadharacharya. Sarngadhara-Samhita, commentary of Adhamalla's Dipika and Kasirama's Gudhartha-Dipika. Edn 3, Chaukhambha orientalia, Varanasi 1983, 16.
4. Raja Radha Kanta Deva, Shabda-Kalpadrum, Edn 3, Part 2, Chowkhamba Sanskrit Series, Varanasi 1967, 64.
5. Vagbhata, Astangahrdayam, Sarvangasundara commentary of Arunadatta and Ayurvedarasayana commentary of Hemadri. Edn 7, Chaukhambha orientalia, Varanasi 1982, 735.
6. Agnivesa. Caraka Samhita, Ayurveda-Dipika commentary of Cakrapanidatta and Vidyotini hindi commentary by Pt. Kasinatha Sastri. Edn 6, Part 1, Chaukhambha Sanskrit Sansthan, Varanasi 2000, 57.
7. Agnivesa. Caraka Samhita, Vidyotini hindi commentary by Pt. Kasinatha Sastri & Dr. Gorakha Natha Chaturvedi. Part 1, Chaukhambha Bharati Academy, Varanasi 2018, 67.
8. Pt. Sarngadharacharya. Sarngadhara-Samhita, commentary of Adhamalla's Dipika and Kasirama's Gudhartha-Dipika., Chaukhambha orientalia, Varanasi 1983, 215.
9. Agnivesa. Caraka Samhita, Vidyotini hindi commentary by Pt. Kasinatha Sastri & Dr. Gorakha Natha Chaturvedi. Reprint Edn, Part 2, Chaukhambha Bharati Academy, Varanasi 2009, 267.
10. Sri Govind Das. Bhaisajyaratnavali, Vidyotini hindi commentary by Shri Kaviraja Ambikadatta Shastri Ayurvedacharya. Reprint Edn, Chaukhambha Prakashan, Varanasi 2018, 186.
11. The Ayurvedic Formulary of India. Edn 1, Part 3, Deptt. Of AYUSH, Ministry of Health and Family Welfare, New Delhi 2011, 705.