

A COMPARATIVE PHARMACEUTICO-ANALYTICAL STUDY OF KSHEERABALA TAILA PREPARED WITH MURCHITA AND AMURCHITA TILA TAILA

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Abstract:

Sneha and its products play a vital role in the field of pharmaceuticals. Sneha kalpana is very peculiar because of its property of absorbing the active principles of drug and stores it for longer period without losing its own property. Classics claim it mandatory that prior to the preparation of any type of medicated oil, taila murchana of crude oil with the help of drugs mentioned in classics should be done.

Taila murchana is the best method to remove the amadosha, durgandha and ugratha of the crude oil that eventually increase the potency of the taila. Here an attempt is being made to determine the importance of tila taila murchana, ksheerabala taila with murchita & amurchita tila taila on the basis of their Organoleptic characters, bio constituents and Physico-chemical characters .

Key words: Tila taila Murchana, Murchita ksheerabala taila, Amurchita ksheerabala taila

Introduction:

The origin of medicine is as old as the origin of life on earth itself. Oushadha which may be animal or mineral origin is the most important instrumental aid for vaidya. But to make these drugs therapeutically fit for administration, they are to be processed. Necessity is the mother of invention perhaps, the necessities which appeared in the various areas like dose, route of administration, processing, shelf life, availability, efficacy etc.

Samskaras done to the drugs will render them fit for therapeutic administration and made them more potent. Medical advancement has to be judged largely by the richness in the variety as well as the quality of the pharmacopoeia and pharmacy. In Ayurvedic pharmaceuticals much importance was given to sneha kalpana, because Ayurveda considers the purusha as the essence of sneha. Most of the therapeutics aimed at maintaining kayagni or jataragni which is responsible for the maintenance or otherwise of health in humans. Sneha is considered as the best one to stimulate kayagni. Sneha kalpana is a unique and popular preparation in ayurveda because of its property of absorbing the principles of drug and stores it for longer period without losing its own property¹.

When considering this aspect Taila kalpana takes a lion share. Because it is the only one such kalpana which is used for all four modes of drug administration like pana, abhyanga, nasya, and basti².

‘Aadou sammurchayet sneham’ the famous quotation have been explained in classical text like Bhaishajya Ratnavali³. Prior to the preparation of any type of aushadhi siddha taila, murchana of crude oil is required. Concept of sneha murchana has aided significantly in enhancing the acceptability and potency of sneha dravya. By murchana samskara the sneha preparations are made more stable with prolonged shelf life and quickly absorbable into the system. Ksheerabala Taila is a well known popular formulation among the Ayurvedic physician. So the standardization of ksheerabala on the basis of murchana samskara is a need of the hour.

Objectives of the study:

To carry out Tila Taila Murchana as per the Classical guidelines

Preparation of Ksheerabala Taila by using the Murchita and Amurchita Tila Taila.

To evaluate the Ksheerabala Taila prepared by using Murchita and Amurchita Tila Taila based on the grounds of Physico- chemical parameters.

*Materials and methods:**Sources of the data:*

Raw drugs are collected from VPSV Ayurveda college pharmacy and pharmaceutical study was conducted in the Rasashastra and Bhaishajya kalpana practical hall.

Method of data collection:

Murchita Tila Taila and Ksheerabala Taila⁴ will be prepared strictly as per the guidelines of the classical literature. Ksheerabala Taila is prepared by using the same tested sample of Tila Taila. The changes occur during the Murchana will be noted keenly. The main Difference between the Ksheerabala Taila which is prepared by using Murchita and Amurchita Tila Taila will be assessed by Organoleptic Method, presence of bio constituents and Physico-Chemical characters.

The references are as follows:

1. Bhaishajya Ratnavali
2. Sahasra yoga

Assessment criteria:

1. Organoleptic characters
2. Physico-chemical parameters
3. Bio- constituents

1. Organoleptic characters

Colour

Odour

Taste

Consistency

2. Physico-chemical parameters

pH

Specific gravity

Refractive index

Acid value

Saponification value

Iodine value

Loss on drying

Ash value

Viscosity

Ester value

3. Bioconstituents

Alkaloid, Tannin, Terpenoids, Saponin and Glycoside

Methodology: Practical Number

Table No: 1

Ingredients: Kalka dravy , Sneha dravya and drava dravya

No	Drugs	Latin name	Family	Quantity
1	Manjishta	Rubia cordifolia	Rubiaceae	64gms
2	Haritaki	Terminalia chebula	Combretaceae	16 gms
3	Vibhitaki	Terminalia bellerica	combretaceae	16 gms
4	Amalaki	Embalica officinalis	Euphorbiaceae	16 gms
5	Musta	Cyperus rotundus	cyperacea	16 gms
6	Haridra	Curcuma longa	Zingiberacea	16 gms
7	Hribera	Coleus vettivoroides	Laminacea	16 gms
8	Lodhra	Symplocus racemosa	Symplocacea	16 gms
9	Sucipushpa	Pandanus odorotissimus		16 gms
10	Vatankura	Ficus bengalensis	Moraceae	16 gms
11	Nalika	Cinnamomum tamala	Lauracea	16 gms
12	Tila taila	Sesamum indicum	Pedaliacea	1000ml
13	Water			4000ml

Procedure:

Tila Taila was taken in an iron vessel and heated on mild fire to remove the moisture content and it is allowed for cooling. Bolus of the kalka was prepared by adding little water and kalka was added to the oil and constant stirring is carried out for the homogenous mixing. Four times of water to that of sneha was added to the above vessel and heated over mandani with continuous slow stirring for proper mixing. The heating process is continued till the oil becomes moisture free and siddhi lakshanas were attained. After attaining all the siddha lakshanas the heating is discontinued and the oil was filtered through a clean cloth and filled in a labeled glass bottle and stored⁵

Practical No.2

Name of the practical : Preparation of Ksheerabala Taila with Murchita Tila Taila

Ingredients: Kalka dravya , Sneha dravya and drava dravya

Kalka dravya: Bala(Sida rhombifolia)- 240gms

Sneha dravya-Murchita tila taila (Sesame indicum)- 768 ml

Drava dravya: Milk - 3072 ml and water - 3072 ml

Method of preparation:

Required quantity of bala moola kalka was prepared with the addition of boiled and cooled milk. The above kalka was added to the Murchita Tila Talia, then to this prescribed quantity of milk and water is added. Heating was continued in mandagni over gas stove for 3 hrs on the first day. It was allowed to self cool and covered it with plate to avoid any kind of dirt. Second day heating was continued for about 8 hrs till the completion of paka. Filtration was done in the warm condition itself. Ksheerabala Taila was labeled and stored in bottles.

Practical No.3

Name of the practical: Preparation of Ksheerabala Taila with Amurchita Tila Taila

Ingredients: Kalka dravya, Sneha dravya and drava dravya

Kalka dravya: Bala (Sida rhombifolia)- 240gms

Sneha dravya: Murchita tila taila (Sesame indicum)- 768 ml

Drava dravya: Milk - 3072 ml and water - 3072 ml

Method of preparation:

Same like practical number two. Here instead of murchita, amurchita tila taila is taken for the ksheerabala preparation. Heating was continued for 3 hrs on the first day. It was allowed to self cool and covered it with plate to avoid any kind of dirt. Second day heating continued for 10 hrs till the completion of paka. Filtration was done in the warm condition itself. Ksheerabala Taila was labeled and stored in glass bottles.

Pharmaceutical & Analytical Results

Volume obtained: Amurchita ksheerabala taila (720 ml),

Murchita ksheerabala taila: 750 ml

Percentage Gain in volume: Amurchita ksheerabala taila (93.755 v/vml)

Murchita ksheerabala taila : 97.65 v/vml

Loss after the process: Amurchita ksheerabala Taila: 48ml

Murchita ksheerabala taila: 18 ml

% of loss: Amurchita ksheerabala taila: 6.25v/v

Murchita ksheerabala taila: 2.34v/v

Table No: 2

Qualitative tests for detecting the Bioconstituents in the drugs of Murchana and Bala root

Sl.No	Drugs	Alkaloid	Tannin	Terpenoids	Saponin	Glycoside
1	Manjishta	-	-	-	-	+
2	Haritaki	-	+	+	+	-
3	Vibitaki	-	+	+	-	-
4	Amalaki	-	+	+	+	-
5	Musta	-	-	+	+	-
6	Haridra	-	-	-	-	-
7	Hribera	-	-	-	-	-
8	Lodra	+	-	-	-	-
9	Sucipushpa	+	-	-	-	-
10	Vatankura	-	-	-	-	-
11	Tamalapatra	-	-	-	-	-
12	Bala	+	-	-	+	+

Table No: 3

Comparative Organoleptic parameters of all four samples: TT(Tila Tila), MTT (Murchita Tila Taila), KTT (Ksheerabala Taila with plane Tila Taila), KMTT (Ksheerabala Taila with Murchita Tila Taila)

Sl.No.	Parameters	TT	MTT	KTT	KMTT
1	Colour	Yellow	Dark red	Golden Yellow	Dark red
2	odour	Characteristic of Taila	Aromatic	Not characteristic	Aromatic
3	Taste	Characteristic of Taila	Astringent	Characteristic of Taila	Astringent
4	Consistency	Oily	Oily	Oily	Oily

Table No: 4

The comparative values of physico-chemical parameters of all four samples

Sl.No	Parameters	TT	MTT	KTT	KMTT
1	pH	4-4.5	6	3.5	6.5
2	Specific gravity	0.9164	0.9182	0.9170	0.9204
3	Refractive index	1.466	1.468	1.467	1.468
4	Acid value	3.876	3.602	3.512	3.254
5	Saponification value	184.416	188.180	186.92	189.974
6	Iodine value	103.86	81.876	109.34	100.94
7	Loss on drying	0.0160	0.010	0.0512	0.0305
8	Ash value	0.0021	0.098	0.00214	0.0705
9	Viscosity	46.9032	44.0974	49.0859	47.4310
10	Ester value	178.34	184.91	180.22	192.26

Discussion on pharmaceutical study

The pharmaceutical techniques which convert the natural products into therapeutically potent dosage form which is easily absorbable in the biological system by different processing techniques. There are mainly three processes are executed under this.

1. Tila Taila Murchana (MTT)
2. Murchita Ksheerabala Taila (KMTT)
3. Amurchita Ksheerabala Taila (KTT)

Even though in the reference of Murchana of Tila Taila the quantity of water is not mentioned there for four parts of the water to that of Sneha was taken for the maximum extraction of active principles.

Tila Taila Murchana:

Nalika is a controversial drug. For the present study, Tamala Patra i.e. *Cinnamomum tamala* was used as per the reference of Dr. Bapalal's some controversial drugs in Indian medicine⁶.

The preparation of Taila was completed by 2 hrs and 45 min .The reason for loss of oil during Murchana is alkaline substance present in the Murchana drugs and emulsifying agent. Alkaline substance sometimes may saponify some of the glycerides. Loss of Taila may be due to evaporation of oil during heating, spillage of oil, completion tests and filtration.

Organoleptic characters of murchita Tila Taila

It was red in colour due to the colour imparted by the Murchana dravyas. Manjishta contains purpurin and haridra contains curcumin as colouring matter. Specific aromatic odour is due to the musta, tamalapatra, ketaki, hribera etc it imparted characteristics odour. Astringent taste is due to the Murchana dravyas and oily consistency due to the dissolution of bio constituents to the oleaginous matter and removal of watery portion.

Ksheerabala Taila with Murchita and Amurchita Tila Taila

The duration of paka of KTT was more the reason is Amurchita Tila Taila is the base used, it itself contains moisture, But in case of KMTT the base oil is murchita Tila Taila due to the murchana process ama is removed so it can attain the active principles very fast and space between the molecules to accommodate active principle is also responsible for the lesser time duration.

The colour of KMTT was dark red because of its base oil, i.e. murchita Tila Taila is red in colour due to the colour of Murchana drugs. Where as in case of KTT the colour was golden yellow, because the base used is plain tila taila. Loss of oil more in KTT which is due to more heating duration and less in KMTT is due to the less duration of heating.

Discussion on analytical study:

1) pH by pH paper⁷:

It is observed that the pH between 6.2-6.8 is ideal to the body. Thus in the present study it can be observed that the KMTT is having pH of 6.5 which is very ideal and acceptable to the body where as KTT has a pH 3.5 which is more acidic. Very low pH irritates and higher pH corrodes the skin. The murchita Tila Taila and Ksheerabala with murchita Tila Taila are slightly acidic and tending towards neutral.

2. Specific gravity at room temperature:

The specific gravity increased after the process of Murchana which may be due to the addition of some active bio constituents from the herbs used for Murchana. Duration of heating also affects the specific gravity. Specific gravity of KTT was found less than when compared to KMTT sample.

3. Refractive index at room temperature:

There was no much variation in the refractive indexes of samples. The refractive index after Murchana increased which may be due to colouration and phytoconstituents. Refractive index of KMTT was more than that of refractive index of KTT.

4. Acid value⁸

Acid value indicates the amount of free fatty acid present in an oil. Here after Murchana acid value reduced that indicates less percentage of free fatty acids or in other words stable nature of fatty acid and decreased rancidity. Ultimately it leads to increased shelf life. In this Acid value of KMTT was lesser than KTT.

5. Saponification value⁹

Saponification is an indication of the molecular weight of the fat or oils, saponification number and molecular weight of oil are inversely proportional to each other. The increased saponification value is because of higher content of low molecular weight fatty acids. A medicated ghee or oil preparation containing low molecular weight fatty acids get absorbed fast and in more percentage. so quickly absorbable into the system. Here after Murchana saponification value increased in both MTT and KMTT so it indicates higher content of low molecular weight fatty acids and quick absorption.

6. Iodine value¹⁰

Iodine value is an index of the degree of unsaturation of oil and is directly proportional to the content of unsaturated fatty acids. Higher the iodine values higher the degree of unsaturation. Greater the degree of unsaturation greater will be possibility of the oil becoming rancid due to atmospheric oxidation. Here after Murchana iodine value was reduced in MTT and KMTT that means decreased degree of unsaturation. So

possibility of rancidity less, increased shelf life is maintained. The iodine value of Amurchita sample was higher due to oxidation across the double bonds of unsaturated fats.

7. Loss on drying at 110 °C

Loss on drying is an indicative of moisture content and volatile content. The higher value suggests that the medicine is susceptible for spoilage or microbial contamination, or may provide route to early rancidity of oils. Here it is in permissible limits. The LOD of MTT and KMTT was less than compared to TT and KTT. So rancidity chance decreased.

8. Ash value:

The ash value represents the inorganic substance present in the oil. In the medicated samples the inorganic substance comes from ingredients used as kalka dravya etc. The increased ash content in murchita Tila Taila may be due to the Murchana dravya. The ash value increased in murchita Ksheerabala Taila is due to the inorganic substances contributed by the Murchana dravya, milk and bala roots.

9. Viscosity:

Here after Murchana viscosity is reduced due to the hydrogenation reaction to oils. Hydrolysis reaction that occurs leads to saturation. Rate of absorption depends upon the viscosity.

10. Ester value:

After Murchana ester value is increased in MTT and KMTT compare to that of TT and KTT. Esters are the fatty acids with glycerol. As the esters are increased rancidity chance is decreased.

Conclusion:

Murchana is a special pharmaceutical procedure done prior to the sneha siddha kalpana¹¹.

Pharmaceutical procedure reveals that the duration for the preparation of KMTT is less and also there is less percentage of oil loss at the end.

Organoleptic characters of the samples revealed that, KMTT imparts good red colour, aromatic odour, and astringent taste due to the Murchana samskara. Murchana enhances the absorption capacity and chemical stability of the oil.

Physico-chemical parameters describes that pH of KMTT is very ideal and acceptable to the body than other samples and increased specific gravity indicates the addition of active principles from Murchana dravya to the oil. More refractive index is due to the Phyto-constituents of Murchana dravya. Decreased Acid value in KMTT suggests that the decreased percentage of FFA and decreased Iodine value in KMTT suggests the decreased degree of unsaturation. In both the above cases chances of rancidity is less. That means Murchana samskara can increase the shelf life of the preparation. Increased ester value also an indicative for less rancidity. Loss on drying is less in KMTT than KTT it indicates that chances of less microbial contamination and spoilage.

Increased Saponification value is favorable to the quick and more absorption of oil into the system. Rate of absorption depends upon the viscosity also. So ultimately Murchana samskara can increase the absorption capacity of oil and absorption into the system also. Ash value of KMTT is more compared to KTT. It indicates that increased percentage of inorganic contents.

Murchana dravya itself has high therapeutic significance. Hence it can be concluded that the process of Murchana must be strictly included as the pre-requisites of any medicated oil.

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