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Research Article

GHRITA MURCHANA WITH RESPECT TO COMPARATIVE PHYSICO-CHEMICAL ANALYSIS OF PLAIN *GHRITA* AND *MURCHIT GHRITA*

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ABSTRACT

Background: *Sneha Kalapana* is a unique contribution to Ayurvedic science. *Ghrita Murchana* is a special pharmaceutical procedure before subjecting the drugs to *Snehapaka* and is used for *Amadoshaharatwa*, removal of odor, imparting color and increasing potency of the drug.

Methods: *Murchana* of *Ghrita* was done as mentioned in *Bhaishajya Ratnavali*. Physico-chemical analysis of Plain and *Murchit Ghrita* were done and comparison of various parameters on quality assessment was done.

Result: Physicochemical parameters were applied for assessing the prepared formulation. The refractive index was 1.4560. The specific gravity of the sample was 0.9138, which was closer to plain *Ghrita*, for which it was 0.9, showing that the sample was not too dense. The acid value was 0.556, indicating the amount of free fatty acid present in the *Ghrita*. The acid value decreased considerably from 0.868 to 0.556 which shows decrease in rancidity.

Conclusion: We conclude that the *Murchana* of *Ghrita* showed that with *Murchana*, *Ghrita* becomes a very effective medium for drugs. It helps in decreasing rancidity, removing odor and imparting it a greenish-yellow color.

Key Words: *Ghrita Murchana*, Comparative Physico-Chemical Analysis, Plain *Ghrita*, *Murchit Ghrita*.

INTRODUCTION

Sneha Kalpana may be defined as 'A pharmaceutical process to prepare oleaginous medicaments from the substances like Kalka, *Kwatha* and *Drava dravyas*, in specific proportions by subjecting to a unique heating pattern and duration to fulfill certain pharmaceutical parameters, according to the need of therapeutics'. This process ensures transformation of the active therapeutic properties of the ingredients to the solvents and hence to get fat soluble, water soluble or even the chemical constituents which are soluble in media like Kanji, Butter milk etc. *Ghrita Kalpana* is a pharmaceutical process which comes under *Sneha Kalpana. Murchana* is the first step towards any *Sneha paka* process. Earliest it has been mentioned in *Chakradutt Ratanaprabha* by *Nishchalker*, here is just a mention about *Murchana* though it is better explained in detail in *Bhaishajya* Ratnavali[1]which recommends a preliminary treatment for *Sneha*.

Ghrita Murcchana[2] (Refining of *Ghrita*):

It is a special pharmaceutical procedure before subjecting the drugs to *Snehapaka*. *Goghrita* is the most commonly used *Ghrita*.

Need of *Ghrita Murchana*: Probably the necessity appeared in the following areas like.

1. Water contents leading to early rancidity
2. Fungal growth
3. Loss of odor
4. Coloring
5. Absorbability

METHODS

Objectives of *Ghrita Murchana*

Murchana may be performed to achieve the following objectives.

1. *Amadoshaharatwa* – removal of '*Ama*' which can be correlated to the 'moisture content' which can be directly related to rancidity problems.
2. Removal of bad odour of *Sneha*.
3. *Sneha* will acquire the capability to receive more active principles from the drug which it is processed.
4. Potency of the *Sneha* is also supposed to increase.
5. Impart appealing colour to the *Sneha*.
6. It may alter the solubility and absorption of the finished product.

Materials

Ingredients:

1. The drugs enumerated in the preparation.
2. Wide mouthed vessels made up of stainless steel.
3. Strong spatula with long handle.
4. A clean cloth for filtering.
5. A thermometer for recording the temperature.
6. Heating aids such as Gas stove.
7. Measuring cylinder.
8. A 1000 mL Beaker for collecting sample.
9. Electric Weighing Machine for measuring weights.
10. Clean glass jars for storage of fresh samples.

Table 1: Showing the ingredients and their ratios for *Ghrita Murchana* by *Bhaishajya Ratnavali*[2]

Ingredients	Latin name	Family	Part used	Quantity
Amalaki	Embelika officinalis	Euphorbiaceae	Pericarp	1 pala
Haridra	Curcuma longa	Zingiberaceae	Rhizome	1 pala
Mustaka	Cyprus rotandus	Cypraceae	Rhizome	1 pala
Haritaki	Terminelia chebula	Combretaceae	Pericarp	1 pala
Bibhitaki	Terminelia bellerica	Combretaceae	Pericarp	1 pala
Matulung	Citrus Medica	Rutaceae	swarasa	1 pala
Goghrita	-	-	-	1 prastha
Jala	-	-	-	4 prastha

Table 2: Showing Ingredients and their weights used for *Ghrita Murchana*

S.No.	Ingredients	Measurements
1	*Go-ghrita*	4.5 kg
2	*Haritaki*	281.28 gm
3	*Amalaki*	281.28 gm
4	*Bibhitaki*	281.28 gm
5	*Musta*	281.28 gm
6	*Haridra*	281.28 gm
7	*Matulunga swarasa*	281.28 gm
8	Water	18 liters

Procedure

All the Kalka *Dravyas* were made into coarse powder form, then Kalka was prepared by adding *Matulunga swarasa*. *Goghrita* was taken in a steel vessel and heated over *Madhyamagni* till complete evaporation of moisture content become possible at the temperature around 140° C. The Kalka was added to the *Ghrita* after slight cooling, at temperature around 85° C. When Kalka becomes light brown in color, water was added in proportion to 4 times of *Sneha*. After addition of water, it was heated on *Mandagni* with intermediate stirring. Heating duration was adjusted so as to complete the *Sneha paka* till *Sneha Siddhi Lakshana* appeared and then *Sneha Paka* is complete. Then vessel was taken out from the fire and *Ghrita* was filtered through clean cloth in its mild hot stage. *Murchita Sneha* was stored in a glass jar container after cooling[3].

Precautions

- Continuous stirring was carried out to protect the burning of Kalka especially in last stage.
- The big size vessel was used to avoid the loss of *Ghrita*.

Observations during *Murchana*

When *Ghrita* was moisture-free, the color of *Ghrita* slightly changed to light yellow from dark yellow. Fumes and sound emerged at that time and specific smell of *Go-ghrita* was felt. Froth

appeared when Kalka was added. Color of *Go-ghrita* was converted into dark greenish-yellow, after 9 hrs. heating. Bubble and sound appears during *Sneha paka*. Smell of *Kalka dravya* appears during heating process.

A layer of *Ghrita* remained at the upper portion of the vessel after completion of *Ghrita Murchana*. A layer of fine particles of Kalka occurred over *Sneha* during *Ghrita Murchana*. At final stage sound disappeared and *Phenshanti* was observed.

Table 3: Showing *Sneha Siddhi Lakshana* during *Ghrita Murchana*[4, 5]

Sr.No	Sneha Siddhi Lakshana	Kalka	Ghrita
1	*Sonya Eve Niryase*	+	-
2	*Madhye Darvi Vimunchati*	+	-
3	*Shabda Hino Agni Nikshipta*	-	+
4	*Phenashanti*	-	+
5	*Gandh Varna Rasotpatti*	-	+

Table 4: Showing the organoleptic characters of *Murchita Ghrita*

Characters	Observation
Color	Dark greenish-yellow
Smell	Like *Haridra*
Consistency	Like *Ghrita*
Appearance	Oily

Table 5: Showing total loss of *Go-ghrita* on *Murchana*

S.No.	Initial Amount of *Goghrita*	Obtained *Murchita Goghrita*	Loss	% of Loss
1	4.5 Kg	4.320 Kg	180 gm	4 %

RESULT

Table 6: Showing physico-chemical standards of *Murchita Go-ghrita*

S.No.	Name of tests	*Goghrita*	*Murchit Goghrita*
1	Specific gravity	0.9097	0.9038
2	Refractive index	1.4621	1.4560
3	Loss on drying	0.15 %w/w	0.552% w/w
4	Total ash	0.062	0.0425% w/w
5	Acid value	0.868	0.556
6	Ester value	232.892	68.262
7	Iodine value	32.719	42.807
8	Saponification value	234.78	61.818
9	Unsaponifiable matter	31.98% w/w	29.62% w/w
10	T L C (Rf value)	1.456	0.87

DISCUSSION

Physicochemical parameters were applied for assessing the prepared formulation. The refractive index was 1.4560. The specific gravity of the sample was 0.9138, which was closer to plain *Ghrita*, for which it was 0.9, showing that the sample was not too dense. The acid value was 0.556, indicating the amount of free fatty acid present in the *Ghrita*. The acid value is decreased considerably from 0.868 to 0.556 which shows decrease in rancidity. The saponification value was found to be 61.818. It gave an idea of the molecular weight of an oil/fat, and the oil contained a long chain of fatty acids. The observed iodine value for the sample was 32.719, which indicated the consumption of the iodine molecules by free fatty acids. TLC showed the value of 0.87.

As per the text Bhaisajya Ratnavali, *Murchana* helps to overcome bad odor and brings good odor. The *Amadosaharatwa* is also another property, the classics suggest. *Amadosata* is not clearly defined, probably the natural *Gunas* like Guru, *Snigdh, Manda, Hima, Sandra, Sthira*, *Pichchhila* etc. may change after *Murchana*. And, natural bond between molecules of Ghee may differ after *Murchana* and it becomes comparatively lighter to digest than uncooked Ghee. This process is referred as refining of ghee and is aimed at removing of free fatty acids,

phosphatides, undesirable color, moisture and solids from crude *Ghrita*. *Murcchana* alters the solubility pattern and absorbability, which is desired to get maximum medicinal properties. Thus, bad odor of the *Ghrita* is removed along with *Amadosata*. Probably the water content existing in *Ghrita* or the factor which inhibit the absorption (internal or external) of *Ghrita* may be co-related for this matter. Additional Ingredients may help in contribution of good smell and color to the *Ghrita*, meanwhile increasing the medicinal properties too. *Ghrita kalpanas* (oleaginous medicaments) are in use for both external and internal application purposes.

CONCLUSION

From the above review, it has been concluded that *Murchana* is an important process before any drug preparation. *Murchana* performed on *Ghrita* makes it a better medium for the solubility of the drug and imparts all the specific properties to the *Ghrita* which can be used to increase the efficacy of the drugs. The physicochemical analysis showed specific gravity (0.9038), refractive index (1.4560), loss on drying (0.552% w/w), total ash value (0.0425% w/w), acid value (0.556), ester value (68.262), iodine value (42.807), saponification value (61.818), unsaponifiable matter (29.62% w/w) and TLC value (0.87). All the parameters discussed here could be used as identifying tools for the quality assessment of *Murchit Ghrita.*

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