

ROLE OF MURCHHANA SAMSKARA IN THE PREPARATION OF MEDICATED GHRITA W.S.R. TO PANCHTIKTA GHRITA

Pankaj Rai

Associatet Professor, Department of Rasa Shastra and Bhaishjaya Kalpana,
Major S D Singh Ayurvedic Medical College and Hospital, Farrukhaabad, Uttar Pradesh, India

ABSTRACT

Snehakalpana (medicated *ghrita*/ oil preparations) are an important secondary dosage form described in Ayurvedic pharmaceutics has a broad range of medicinal uses in different medical conditions. Cow's *ghrita* usually used for the manufacturing of medicines in medicated *ghrita* preparations. Rancidity factors (amadosa) due to watery content in *ghrita* is an very important factor in the decomposition of fatty acids of *ghrita* leading to decrease in life span of medicines prepared with *ghrita*. These are very effectively removed and simultaneously therapeutic quality is enhanced by the ancient Ayurvedic pharmaceutical techniques called *ghrita murchhana*. In this present study, it is tried to validate the importance of *murchhana* process for preparing medicated *ghrita*, over medicated *ghrita* preparation without following *murchhana* process.. The parameters like specific gravity, refractive index, acid value, saponification value are analyzed in both the medicated *ghrita*., i.e.. All the analytical values obtained are discussed in this paper.

Keywords: *Ghritamurchhana*, Iodine value, Saponification value, *Snehakalpana*.

INTRODUCTION

Maintenance of homeostasis in the functioning of the body tissues is primary aim of *ayurveda* as per AcharyaCharaka¹. *Ayurveda* is an unique system of medicine due to its wide range of dosage forms according to different stages of disease and patients. *Swarasa* (juice), *kalka* (paste), *kwa-tha* (decoction), *hima* (cold infusion) & *phanta* (hot infusion), are the basic pharmaceutical preparation coming down since antiquity in some form or other. Acharya Charaka mentioned them as *Panchvidha kasayakalpana* first time ². He was of the opinion that the drug having quality to produce *arogya*³ is the best drug. Keeping this view in the mind a number of preparations have been derived from these five basic

preparations eg. *Asavarishtha* (fermentation), *lepa* (paste), *churna* (powder), *Sneha kalpana* (fatty preparation), *vati* (pills) etc.

Sneha kalpana is widely described dosage form in Ayurvedic pharmaceutics under which medicated oil and *ghrita* are prepared. *Ghrita* is obtained from the class mammalian of the animal Kingdom especially cow, buffalo, goat, sheep etc. *Ayurveda* recommends the *Goghrita* as best and the *ghrita* is choice for both food and medicinal purposes. *Ghrita* alleviates *pitta* and *vata*, is beneficial for *rasa*, semen and *ojas*, cooling, softening and improves voice and complexion ^{4,5}.

Ghrita preparations manufactured in Ayurvedic pharmaceutics are used broadly for

medicinal purposes. It is one of the eye-catching techniques in Ayurvedic drug industry to achieve both fat soluble and water soluble extractives into the *ghrita* media.

*Murchhana*⁶ is an important intermediately process in the preparation of *ghrita kalpana* adopted for enhancing the potency of *ghrita* and to remove the bad odour and *amadosa* (Rancidity). Due to the process of *murchhana ghrita* will get such a capability to receive more active principles while the *veerya* (potency) of *sneha* is enhanced. *BhaisajjayaRatnavali* has mentioned about *murchhana* first time. *Panchtikta Ghrita*⁷ is commonly used *ghritakalpana* used as Ayurvedic medicine for the treatment of skin disorders. As the herbs used in the manufacturing of *Panchtikta ghrita* are considered best among *raktashodhak* (blood purifier) drugs and *ghrita*.

Materials and Methods:

To demonstrate the importance of *ghrita murchhana* for the preparation of medicated *ghrita*, two samples of *Panchtikta ghrita* were prepared one by *murchhit ghrita*

<i>Nimba-</i>	Azadirachtaindica	240g
<i>Patola</i>	Luffaacutangula	240g
<i>Vyaghri</i>	Solanumxanthocarpum	2480g
<i>Guduchi</i>	Tinosporacordifolia	240g
<i>Vasa-</i>	Adhatodavasica	240g

water for decoction – 6.144 liters is boiled and reduced to 1.5 liters *Triphala* – *Haritaki* (*Terminaliachebula*), *Vibhitaki* (*Terminaliabellirica*) *Amla* (*Emblicoefficialis*) – 64 g each. *Ghrita* – *ghee* – 384 ml The above combination is heated till *Panchtiktaghrita* is prepared.

Two samples of *Panchtiktaghrita* were prepared one by *murchhitghrita* and another

and another one by without *murchhit ghrita*. *Ghrita murchhana* was done as per reference of *BhaisajjayaRatnavali*.

Process of *GhritaMurchhana*⁸

Ingredients: *Pathya*, *Dhatri*, *Vibhitaki*, *Musta* (*Jaladha*), *Rajani*, *Matulungaswarasa*

From *Pathya* to *Matulungaswarasa* each I *Pala* = 48gram

Cow's *Ghrita* 1 *Prastha* (64 *tola*) = 788grams

Jala (Water) 4 *Prastha* (256 *tola*) = 3.072liters

Heat the *Ghrita* till it's become free from froth. Add 4 part of water along with powder of all the drugs.. Boil it on moderate heat till the *Ghrita* became free from water. Filter it and use for the preparation of medicated *ghrita*.

By this process unpleasant odour of the *Ghrita* is removed. It obtains good colour and fragrance.

Method of Preparation of *Panchtikata ghrita*:⁹

Table No1: Ingredients:

<i>Nimba-</i>	Azadirachtaindica	240g
<i>Patola</i>	Luffaacutangula	240g
<i>Vyaghri</i>	Solanumxanthocarpum	2480g
<i>Guduchi</i>	Tinosporacordifolia	240g
<i>Vasa-</i>	Adhatodavasica	240g

one by without *murchhitghrita*. The sample prepared by without *murchhitghrita* was named sample1 and with *murchhitghrita* as sample 2.

Both the samples were subjected for different Physico-chemical analysis like specific gravity, refractive index, saponification value, and acid value.

Analytical techniques:

Measurement of Specific gravity¹⁰: Specific gravity of a substance is the weight of the substance in grams at a specific temperature compared with the weight of the same volume of water in grams at a same temperature.

1. A clean and dried 25ml capacity of specific gravity bottle kept in hot air oven was taken in desiccator and weighed empty. Then it was filled with water and weighed at room temp.

2. Again the bottle was clean and dried. Kept it in hot air oven and then took in desiccator. Filled the *Panchtiktaghrita* sample up to the mark and weighed at the same temp.

Specific gravity of the sample = $\frac{\text{Wt. of Sample}}{\text{Wt. of Water}} = \frac{\text{Weight of (oil) sample in grams}}{\text{weight of same volume of water at same temp in grams}}$

Determination of Refractive index¹¹: The refractive index (or index of refraction) of a medium is a measure for how much the speed of light (or other waves such as sound waves) is reduced inside the medium. It is the ratio of the velocity of light in a vacuum to its velocity in the substance.

Abbe's Refractometer was used to determine the Refractive Index. First the mirror of the Abbe's Refractometer was adjusted to 45⁰c. Then the sample of *Panchtiktaghrita* was inserted in the prism box by using a pipette. After each sample refractometer was cleaned with petroleum ether followed by the distilled water. Different color bands were observed in the right eye piece. These color bands were removed with the help of compensator knob in such a way that only the black and white portion should be seen in the right eye piece. The black and white portion are accustomed to the cross wire with the help of lever. Finally the result was

noted on the scale through left eye piece. Both samples were analyzed by this way.

Measurement of Saponification value¹²: Saponification value (or "saponification number", also referred to as "sap" in short) represents the number of milligrams of potassium hydroxide or sodium hydroxide required to saponify 1g of fat under the conditions specified

Initially 500ml capacity of round bottom flask is fitted with a reflux condenser. Then 4gms of *Panchtiktaghrita* sample with 50ml of 0.5N KOH was taken into the round bottom flask. 2-3 pieces of pumice stones were put into the same flask and the mixture was boiled on water bath at 40⁰c for 30 min. Then after it was taken out from water bath and 1 ml of phenolphthalein solution (indicator) was added to it. Titration was done immediately with 0.5N HCl. The burette reading was noted (a). Process was repeated out without taking the *ghrita* sample, i.e. a blank test under same conditions and burette reading was noted (b). Both the samples were analyzed by this method.

Saponification value was determined as per following formula.

Saponification value = $\frac{(b-a) \times 28.05}{W}$.
*W=Weight of the substance in gms.

Determination of Acid value¹³: Acid value (or "neutralization number" or "acid number" or "acidity") is the mass of potassium hydroxide (KOH) in milligrams that is required to neutralize one gram of chemical substance.

First of all a solvent is prepared by adding 50ml alcohol and 50 ml ether in a container. Then 20 grams of *Panchtiktaghrita* sample was mixed in 100ml of solvent which was prepared earlier. Now 2 ml of Phenolphthalein indicator was added to it and titration was done with 0.1 N Sodium hydroxide

(NaOH) until the solution remained faintly pink for 30 sec. even after shaking. Finally the reading of the barrette was noted.

Acid value was calculated as per following formula

$$\text{Acid value} = (N \times 5.61) / W$$

*N= Number of ml of 0.1NaOH required and *W =Weight of sample in gms.

Results: Observations of both the samples are tabulated in table 1. Analytical findings shows that Specific gravity of *Panchtik-*

taghrita prepared with *murchhitghrita* was increased to 0.9124 in compare of *Panchtik-taghrita* prepared from without *murchhitghrita* that of 0.8958 . Refractive Index, Saponification value and Acid value is simultaneously decreased in the *Panchtiktaghrita* prepared with *murchhitghrita* than prepared without *murchhitghrita*.

Table No 2: Showing different observations

S.No.	<i>PanchtiktaGhrita</i> Sample	Specific Gravity at melted stage	Refractive Index at 40 ⁰ c	Saponification value	Acid value
1.	Sample 1	0.8958	1.5325	227.4	1.72
2.	Sample 2	0.9124	1.5126	222.6	1.58

DISCUSSIONS AND CONCLUSIONS

In the results it is observed that there is increase in value of specific gravity of the *Panchtiktaghrita* prepared with *murchhitghrita* in compare to *Panchtiktaghrita* prepared from without *murchhitghrita*. But other analytical values like refractive index, saponification values and acid values were found vice – versa of specific gravity i.e. are decreased. Process of *murchhana* may be a probable reason for this.

Specific gravity of *ghrita* is indication of the solid to liquid ratio in *ghrita*. Specific gravity of sample 2 is increased that may be due to solid extractives comes from the herbals added during the *murchhana* process. Increase in Specific gravity thus reveals that solid content is increased in compare of liquid in the *Panchtiktaghrita* prepared from *murchhitghrita*. Less liquid content in preparation increases the life span of formulations

Saponification value is a measure of the average molecular weight (or chain

length) of all the fatty acids present. Saponification value is the directly proportional to the fatty matter content. More the fatty matter content there will be the more chances of rancidity factor and less will be the self life and therapeutic value.

The acid number is a measure of the amount of carboxylic acid groups in a chemical compound, such as a fatty acid, or in a mixture of compounds As oil-fats rancidify, triglycerides are converted into fatty acids and glycerol, causing an increase in acid. Less acid value denotes the less chance of decomposition of the composition of *Ghrita* thus increasing both life span and therapeutic value.

Refractive index is the ratio of the velocity of light in a vacuum to its velocity in the substance. It is a fundamental physical property of a substance often used to identify a particular substance, confirm its purity, or measure its concentration. More will be Refractive index, there will be more concentration of light which facilitates rancidification of *ghrita* i.e. decomposition of *ghrita*.

During the process of *murchhana* water and fat soluble extractives are added to the initial *ghrita* that enhances its medicinal properties. Heating of *ghrita* during *murchhana* process is itself an important factor which causes the evaporation of any moisture contents thus leading to the decreasing of the rancidity factors. From above discussions it may be concluded that *murchhana* process reduces degree of saturation of *ghrita* and enhances degree of unsaturation which is beneficial for human health. Hence the medicated *ghrita* should be prepared by taking the *murchhitaghrita* as ingredient rather without *murchhitaghrita*.

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CORRESPONDING AUTHOR

Dr. Pankaj Rai

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