

Effect of Murchhana Samskara in the Preparation of Hingutriguna Taila - An Analytical Study

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ABSTRACT

Sneha kalpana (medicated oil preparations), one of the important secondary dosage form in Ayurvedic pharmaceuticals have a broad spectrum use in different medical conditions. Various crude oils are mostly associated with rancidity factors (*amadosa*), those are very effectively removed and simultaneously therapeutic quality is enhanced by the ancient Ayurvedic pharmaceutical techniques called *taila murchhana*. In current study, it is tried to authenticate the importance of this thousand year old *murchhana* process for preparing medicated oils, over medicated oils prepared without following *murchhana* process. The oil media considered here is *eranda taila* (castor oil). It is observed that in the preparation of medicated oil used for *gulma* and different other gastro intestinal disorders namely Hingutriguna *taila*, *taila murchhana* plays a significant role for changing different quality control parameters responsible for the genuinity and nobility of the medicated oil preparations. The parameters like specific gravity, refractive index, acid value, saponification value are analyzed in both the medicated oils, i.e. one following the *murchhana process* and the other one is without following the *murchhana process*. All the analytical values obtained are discussed. We hope this will help the ayurvedic pharmaceuticals as well as researchers to more enlighten this ancient pharmaceutical process.

Key words: *Taila murchhana*, Lodine value, Saponification value, Rancidity factor, *Sneha kalpana*.

INTRODUCTION

Oil preparations manufactured in Ayurvedic pharmaceuticals are used extensively for medicinal purposes as well as for cosmetic purposes. It is one of the stunning techniques in Ayurvedic drug industry to achieve both fat soluble and water soluble extractives into the oil media. The crude oils taken for the preparation of any medicated oil are nonpolar in nature and may commonly contained fixed oils, fatty acids (saturated and unsaturated), free acids etc.. Crude oils are contained in, different undesired substances for therapeutic purposes and are more prone to *amadoshas* (rancidity factors). Also in the era of commercialization, crude oils are found adulterated many where, for the shake of financial

profit compromising with the nobility of business and health of the consumer.

For preparing a medicated oil different crude oils like castor oil (*eranda taila*), *til* oil, mustard oil, coconut oil etc. are taken as base. Before using these oils as base of particular medicated oil, a special Ayurvedic treatment is given to that oil called *taila murchhana*. Through the *murchhana process* the oils are believed to leave the *amadosa* (rancidity factor), *durgandhata* (foul odor) hence shelf life of the medicine prepared is enhanced along with therapeutic quality.

The oil contains fatty acids, free fatty acids, glycerols etc. in different proportions in different

oils. Hence the oil is subjected for chemical analysis like saponification value, measurement of fatty acids, free fatty acids etc. and for some physical characteristics there on like refractive index, specific gravity etc. In fact these values indicates the purity and quality of the oil in turn genuinity and quality of the medicine.

MATERIALS AND METHODS

For disclosure of the importance of *taila murchhana* for preparation of medicated oil, *Hingutriguna taila*, is prepared taking *murchhita eranda taila* and ordinary *eranda taila*. Both the samples are subjected for different Physico-chemical analysis like refractive index, specific gravity, saponification value, and acid value.

Materials

1. The following materials are taken for the analytical study
2. *Hingutriguna taila* prepared taking ordinary *eranda taila* (Sample-1)
3. *Hingutriguna taila* prepared taking *murchhita eranda taila* (Sample-2)
4. Abbe's Refractometer
5. Dropper
6. Specific Gravity Bottles(Pycnometer, 25ml capacity)
7. Weighing balance
8. 0.5N Alcoholic KOH solution and 0.5N HCl Solution
9. Round bottom flasks
10. Reflux condensor
11. Water bath
12. Titration indicator(phenolphthalein)
13. Burrate
14. 0.1N NaOH solution
15. Solvent Ether

METHODS

Determination of Refractive Index:

The refractive index of a substance is the ratio of the velocity of light in vacuum to the velocity of light in the substance.

1. At first the mirror of the Abbe's Refractometer was adjusted to 45°C. Then while sample was inserted in the prism box by using a thin dropper.

2. Various colour bands were observed in the right eye piece. Colour 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.
3. The black and white portion are adjusted to the cross wire with the help of lever. Finally the reading was noted on the scale through left eye piece.

Determination of Specific Gravity:

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 (picnometer) was weighed empty. Then it was filled with water and weighed at room temp.
2. Again the bottle was clean and dried then filled the oil sample up to the mark and weighed at the same temp.
3. The specific gravity was determined by dividing the weight of the sample in grams by the weight of the water in grams.

Specific gravity of the sample = Weight of (oil) sample in grams/ weight of same volume of water at same temp in grams.

Measurement of Saponification Value:

Saponification value of an oil or fat is defined as the number of milligrams of KOH required to neutralize the fatty acids resulting from the complete hydrolysis of 1 gm. of sample.

1. At first 250ml capacity of round bottom flask is fitted with a reflux condenser. Then 2gms of oil sample with 25ml of 0.5N KOH was taken into the round bottom flask.
2. Then 2-3 pieces of pumice stones were put into the same flask and the mixture was boiled on water bath at 40°C for 30 min.
3. Afterward 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.
4. The burrate reading was noted (a).
5. The same procedure was carried out without taking the oil sample, i.e. a blank test under same conditions and burrate reading was noted (b).

Saponification value was determined as per following formula.

$$\text{Saponification value} = \{(b-a) \times 28.05\} / W$$

*W=Weight of the substance in gms.

Measurement of Acid Value

The acid value of an oil or fat is defined as the number of milligrams of alkali (NaOH) required neutralizing the free acid in 1 gm of the sample.

1. A solvent is prepared by mixing 25ml alcohol

and 25 ml ether. Then 10 gms of (oil) sample was mixed in 50ml of solvent prepared earlier.

2. Then 1 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.
3. Burette noted the reading.

S. No.	Oil sample	Specific Gravity at 26°C	Refractive Index at 26°C	Saponification Value	Acid Value
1	Sample-1	0.9467	1.4865	180.220	2.8
2	Sample-2	0.9503	1.4855	176.715	2.1

Acid value was calculated as per following formula

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

*N= Number of ml of 0.1NaOH required

*W =Weight of sample in gms.

Specific gravity of oils determines the solid to liquid ratio in oils. The *hingutriguna taila* prepared with *murchhita eranda taila* (Sample-II) has higher specific gravity in comparison to *hingutriguna taila* prepared with ordinary *eranda taila* (Sample-I). This may be due to solid extractives in the sample-II comes from the herbals added during the *murchhana* process.

Observations

It is observed that specific gravity of *hingutriguna taila* prepared with ordinary *eranda taila* is 0.9467, which is increased to 0.9503 in same medicated oil, prepared with *murchhita eranda taila*. But the other analytical values like refractive index, saponification value and acid value for *hingutriguna taila* prepared with ordinary *eranda taila* are 1.4865, 180.220 and 2.8 respectively which are decreased to 1.4855, 176.715 and 2.1 correspondingly in the same medicated oil prepared with *murchhita eranda taila*.

More the Saponification values and acid values more will be the rancidity factor and less will be the self life and therapeutic value. Hence decreasing of these values will add benefit and augmented the acceptability of medicated oil preparations. The herbal ingredients used during the *murchhana* process may play the significant role for decreasing of refractive index, saponification value and acid value in a crude oil. These may also cause for increasing the therapeutic values by adding many water soluble and fat soluble extractives to the initial oil which inclines to the healthy effect in the human system. Heating or boiling the oil is also an ancillary part which may cause decreasing of the rancidity factors because only heating it self causes the evaporation of any moisture contents. Ultimately *murchhana* process reduces degree of saturation of oils and enhances degree of unsaturation which is beneficial for human health. Hence the medicated oil should prepared by taking the *murchhita* oil as base, rather than crude oil.

DISCUSSIONS

In above analytical findings it is observed that specific gravity is increased in medicated oil prepared with *murchhita eranda taila* where as other analytical values like refractive index, saponification values and acid values are decreased, in comparison to the medicated oil prepared by taking ordinary *eranda taila* from market. These may happens due to the ancient *murchhana* technique adopted for preparation of medicated oils. During the *murchhana* process it is indicated to boil the oil with many herbal pastes, decoctions and juices along with prescribed amount of water.

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