

## Importance of *Murchhana Samskara* in the Preparation of Medicated Oil – An Analytical Study

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### Abstract

Indian system of medicine i.e., Ayurveda is serving man kind since long. A wide range of dosage forms are available in Ayurveda that makes it more effective and popular. Snehakalpana (medicated oil/ oil preparations) are an important secondary dosage form described in Ayurvedic pharmaceutics and it has a broad range of medicinal uses in different medical conditions. For the preparation of medicated oil Tila Taila (Sesame oil) is generally used. Watery content in oil causes rancidity factors (amadosa) which is an important factor in the decomposition of fatty acids of oil leading to decrease in life span of medicines prepared with oil. Murchhana is a pretreatment process to remove rancidity factor (amadosha) and simultaneously enhancing therapeutic quality of medicine.

In the present study, an attempt is made to authenticate the consequences of murchhana process for preparing medicated oil. The parameters like specific gravity, refractive index, acid value, saponification value, iodine value, peroxide value are analyzed to validate the importance of murchhana process. i.e., All the analytical values obtained are discussed in this paper.

### Keywords

*Snehakalpana, Taila, murchhana, Iodine value, Saponification value*



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## INTRODUCTION

*Swarasa* (juice), *kalka* (paste), *kwatha* (decoction), *hima* (cold infusion) & *phanta* (hot infusion) are primary dosages forms described by *Acharya Charaka* as *Panchvidhakasaya kalpana* first time<sup>1</sup>. As per *Acharya Charaka* drugs having quality to produce *arogya*<sup>2</sup> are the best one. Keeping this view in the mind a number of secondary preparations have been derived from these five basic preparations eg. *Asavarishta* (fermentation), *lepa* (paste), *churna* (powder), *sneha kalpana* (fatty preparation), *vati* (pills) etc.

*Sneha Kalpana* is well known among them. It 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’. It is one of the eye-catching techniques in *Ayurvedic* drug industry to achieve both fat soluble and water soluble extractives into the oil media acts on liposomal level<sup>3</sup>. It is again of two types like *Ghrita* and *Taila* (Oil) *kalpana*. *Taila*

*Kalpana* takes a Lion-share among *sneha* formulations.

Four types of *snehas* are described in *ayurvedic* literature<sup>4</sup>. These are *Taila* (Oil), *ghrita*, *vasa* & *majja*. Among the four *sneha* *Ghrita* and *Taila* (Oil) are regarded as suitable for medicinal purposes.

*Taila* (oil) alleviates *vata* and does not aggravate *kapha*. It promotes body strength. It is beneficial for the skin. It is *ushna*, provide firmness and cleans female genital passage. *Taila* means oily portion extracted from the drugs. *Acharya Charak* mentioned that *Tila taila* (sesame oil) is best one for strength and action and considered best for pacification of *Vata*. *Taila* assimilates the properties of other drugs added to it during the *paka* of *Sneha* without losing its own properties<sup>5</sup>. This radical transformation of property is not possible in *Ghrita* (*Harita*).

*Murchhana*<sup>6</sup> is an important intermediately process in the preparation of oil *kalpana* adopted for enhancing the potency of oil and to remove the bad odour and *amadosa* (Rancidity). Due to the process of *murchhana* oil will get such a capability to receive more active principles while the *veerya* (potency) of *sneha* is enhanced.

## MATERIALS AND METHODS

To demonstrate the importance of *Taila* (Oil) *murchhana* for the preparation of medicated *Taila* (Oil), two samples of *Taila* (Oil) were taken. First one was fresh Sesame oil (*Til Taila*) i.e **sample A** and second one was fresh Sesame oil (*Til Taila*) which undergoes the process of *murchhana* as per reference of Bhaisajjaya Ratnavali termed as **sample B**.

#### **Process of *Taila* (Oil) *Murchhana***<sup>7</sup>

**Ingredients:** *Triphala* , *Musta* , *Rajani* , *Hriversa* , *Lodra* , *Suchipuspa* (*Ketaki*), *Vatankura* and *Nalika* .All the above drugs were taken in equal quantity and powdered. Its total quantity was 1/4th to that of *Tila Taila*.

*Tila Taila* (sesame Oil) → 1 Part  
*Jalam* (water) → 4 Part

#### **Procedure**

- ▶ Plain *Tila taila* (sesame oil) was heated till it becomes free from froth. Four times of water than *Tila Taila* along with powder of all 8 herbs mentioned in ingredients were mixed in oil. *It was then boiled on moderate heat till the Taila* (oil) becomes free from water. It was then filtered and used for the preparation of other medicated oils. Both the samples **A** and **B** were collected and preserved in sterile container.

#### **Analytical technique:**

To study the effect of *murchhana samskara* on the oil both the samples were analyzed to obtain parameters, such as acid value, saponification value, iodine value, and refractive index according to the Quality Control Manual of Ayurveda, Siddha, and Unani Medicine (the standard protocol mentioned in books)<sup>8</sup>. The test was done as per the standard pharmaceutical laboratory process given in Appendix 3 (Physical test determination) of the Ayurvedic Pharmacopeia of India<sup>9</sup>.

#### **Measurement of Specific gravity<sup>10</sup>:**

1. A clean and dried 25ml capacity of specific gravity bottle kept in hot air oven was taken out and put into the desiccator. It was weighed empty first. Then it was filled with water and weighed again at room temp.
2. Again the bottle was cleaned and dried in hot air oven and then was taken out into dessicator. *Tila Taila* (Oil) sample was filled into the bottle up to the mark and weighed at the same temp.

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

#### **Determination of Refractive index<sup>11</sup>:**

Abbe's Refractometer was used to determine the Refractive Index. First the

mirror of the Abbe's Refractometer was adjusted to 45°C. Then the sample of *Taila* (Oil) was inserted in the prism box by using a pipette. After analyzing 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 were 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 in similar manner.

#### **Measurement of Saponification value<sup>12</sup>:**

Initially 500ml capacity of round bottom flask was fitted with a reflux condenser. Then 4gms of *Taila* (Oil) 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 40°C 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 *Taila* (Oil)

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.

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

\*W=Weight of the substance in gms.

#### **Determination of Acid value<sup>13</sup>:**

First of all a solvent was prepared by adding 50ml alcohol and 50 ml ether in a container. Then 20 gms of *Taila* (Oil) 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 burette 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.

#### **Determination of Iodine Value<sup>14</sup>:**

1. First an iodine flask was taken having capacity of 250 ml and was dried into hot air oven.

2. Accurately weighed 5 gms of sample was placed into dry iodine flask,
  3. Carbon tetrachloride 10 ml was added into the iodine flask and dissolved slowly by shaking.
  4. 20 ml of iodine monochloride solution was added in the above mixture . It was allowed to stand in a dark place with the help of stopper at a temperature of about 17<sup>0</sup> c for thirty minutes.
  5. Then 15 ml of solution of potassium iodine and 100 ml water was added into the iodine flask. It was shaken and titrated with 0.1 N sodium thiosulphate, using solution of starch as indicator.
  6. Note the number of ml of 0.1 N sodium thiosulphate required for titration (a).
  7. The operation was repeated in exactly the same manner, but without the sample being tested, and note the number of ml of 0.1 N sodium thiosulphate required for titration (b).
  8. Calculate the iodine value from the formula-  

$$\text{Iodine Value} = (b-a) \times 0.01269 \times 100 W$$
 Where 'W' is the weight in g of the substance taken.
- Results of these parameters are tabulated in Table 1.

**Table 1** Analytical Result

S. No.	<i>Tila taila</i> (Sesame Oil)	Specific Gravity at 26 <sup>0</sup> c	Refractive Index at 40 <sup>0</sup> c	Saponification value	Acid value	Iodine Value
1.	Sample A (Fresh Sesame Oil)	0.9186	1.4652	189.8	3.9	99.6
2.	Sample B (Murchhit Sesame Oil)	0.9224	1.5126	212.6	2.92	102.4

## DISCUSSION

**Specific Gravity:** Specific gravity of *Taila* (Oil) is indication of the solid to liquid ratio in *Taila* (Oil). Specific gravity of murchhit *Tila Taila* (Sesame Oil) is more in compare

to fresh *Taila* (Sesame Oil). It may be due to solid extractives that come from the herbals

added during the process. Increase in specific gravity thus reveals that solid content is increased in *murchhit Tila Taila*..as compared to liquid than fresh *Tila Taila* (Sesame Oil). Less liquid content in preparation increases the life span of formulations and thus its therapeutic value.

**Refractive Index:** Increased Refractive Index of *murchhit Tila Taila* (Sesame Oil)

than non *murchhit Tila Taila* (Sesame Oil) reveals that some active substances of ingredients used in the process of *murchhana* were incorporated into *Murchhit Tila Taila* (Sesame Oil).

**Saponification value:** Long-chain fatty acids found in fat have low saponification value and vice versa. Short chain fatty acids are readily absorbed than long-chain fatty acids. Increased saponification value shows that *murchhit Tila Taila* (Sesame oil) has greater short chain fatty acid than Non *murchhit Tila Taila* (Sesame Oil). Thus, *murchhit Tila Taila* (Oil) is easily absorbed and digested in the body.

**Acid value:** As oil and fats become rancid, triglycerides are converted into fatty acids and glycerol, causing an increase in acid value. Less acid value denotes the less chance of decomposition of the composition of *Taila* (Oil) thus increasing both life span and therapeutic value which is observed in the *murchhit Tila Taila* (Sesame oil).

**Iodine value:** One of the important application of the iodine number is the determination of the amount of unsaturation contained in fatty acids. The higher the iodine number, the more unsaturated fatty acid bonds are present in a fat. Unsaturated fat supplementation increases the total

dietary energy intake to the recommended levels, and it has no adverse impact on the blood lipids. It also improves the nutritional status of diet. Iodine value of *murchhit Tila Taila* (Sesame Oil) is more than fresh *Tila Taila* (Sesame Oil) denoting its high therapeutic value.

## CONCLUSION

From the above discussions it may be concluded that due the process of *murchhana* various active components of the ingredients used in the process preparation were incorporated into *murchhit Tila Taila* that enhances its life span and therapeutic value.

Water and fat soluble extractives are added to the *murchhit Tila tiala* (sesame oil) during the process that enhances its medicinal properties. Heating of *taila* during *murchhana* process is itself an important factor which causes the evaporation of any moisture contents that leads to the decrease in rancidity factors.

Further it may be concluded that *murchhana* process reduces the degree of saturation of *taila* and enhances degree of unsaturation which is beneficial for human health. So the medicated *taila* should be prepared by

taking the *murchhita taila* as ingredient rather non *murchhit one*.

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