

Pharmaceutico-Analytical Study and Standardization of *Dhaturadalakatu Tailam*

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Abstract

Dhatu (Dhaturametel) is a well-known drug for curing pain related with swelling of body parts. *Rasatarangni* has mentioned its external application in various forms for *Vatavikaras*, so as *Bhavaprakasha*¹ in *vatavyadhi*. A *snehapakalpana* is mentioned in *Rasatarnagni* with leaves of *Dhatu*(Dhaturametel) and *katutaila*(mustard oil) for *Mamsagatavata*(muscular dystrophy) as external application².

Snehapāka was subjected according to the general rule of *snehakalpanai.e* in ratio of 1 part *Kalka* (fine paste of Dhaturametel leaves), 4 parts of *Katutaila*(Mustard oil) and 16 parts of water to that of *kalka*³. It was to heat until the *taila siddha laksanas* were obtained. After preparation of oil it was subjected for organoleptic analysis as mentioned in API Part II protocols. The results obtained were ash value .03%, loss of drying at 105°C w/w .02%, refractive index at 40°C 1.4665, acid value 1.81, saponification value 170.15, iodine value 104.66, and volatile matter 5.24% w/w as per API- II protocols.

Keywords

Dhatu (Dhaturametel), Rasatarangni, Katutaila (mustard oil), Mamsagatavata, snehapaka



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INTRODUCTION

Snehakalpana is one of the *kalpana* of *bhaishajyakalpana*. Although there are five basics *kalpanas* mentioned in Ayurveda text, snehakalpana is not included among these primary *kalpanas* by *acharyas*. But *snehakalpana* has its own importance in clinical practice particularly for *vatavyadhies* because of its counteracting *gunas* to that of *vataguna*. *Dhaturadalakatutailam* is unique combination of *Dhatu* leaves and *Katutaila* indicated in *Mamsagatavata*. Therefore, to standardize *Dhaturadalakatutailam* present study was focused on pharmaceutical and analytical study of *Dhaturadalakatutailam*.

MATERIALS AND METHODS

Present work of “Pharmaceuticoanalytical study and Standardization of *Dhaturadalakatutailam*” was divided into 2 parts:

1. Pharmaceutical study
2. Analytical study

PHARMACEUTICAL STUDY

Preparation of *Dhaturadalakatutailam*

▪ Fresh leaves of *Dhatu* were obtained from college herbal garden, washed thoroughly and made *kalka* (fine paste of

Dhatu leaves). *Kalka*, 125 gm was weighted and stored for further procedures.

▪ *Katutaila* (mustard oil) 4 times to that of *kalka* was taken in clean steel vessel i.e., 500 ml and to this 4 times of water was added i.e., 2 litres.

▪ It was subjected to *Snehapaka* until the water started evaporating. Temperature recorded during this phase was approximately 120°C.

▪ Once the moisture content was reduced sufficiently, flame was reduced to *Mruduagnito* to avoid burning of *kalka*.

▪ After 2 hours of *paka*, *Sneha siddhi* qualities started to appear. *Kalka* was subjected to examination as mentioned in classics for *Vartipareksha*, *agnipareksha* of *vartifor* knowing any water content left in *Kalka*⁴.

▪ After observing all the qualities of *Snehapaka* flame was stopped and the vessel was taken out of gas stove. *Siddha sneha* was filtered through double layered cotton cloth in warm stage.

▪ After self-cooling *Dhaturadalakatutailam* was preserved in clean glass bottle.

Precautions

Continuous stirring of *drava-dravya* (kalka-oil and water) was done to avoid sticking of *kalka* to the bottom of the vessel.

- The size of the vessel should be sufficient to avoid any spillage of content outside.

ANALYTICAL STUDY

Analytical Parameters

Organoleptic Characters

Colour (*rupa*), odour (*gandha*), appearance(*rupa*), touch (*sparsh*), taste (*rasa*), clarity.

Physico-chemical Parameters

Ash value, Loss of drying at 105°C w/w, Refractive index at 40°C, acid value, Saponification value, Iodine value, Volatile matter w/w as per API- II protocols.

OBSERVATION AND RESULTS

- Initially the colour of *oil* was golden in colour. As the *snehapaka* progressed change in colour was observed.
- Sticky nature of *kalka* was observed throughout the process. As the *paka* progressed to its completion all *lakshanas* of *snehasiddhi* were observed i.e. *gandha* and *varnautpatti*. Colour of *snehain* final stage changed to dark green coloured.

- Appearance of *phena* (froth, bubbles) was observed. A small quantity of *Kalka* was taken out and taken in between fingers, it assumed a *varti* (wick-like shape) and on doing *agnipareksha* (flame test) it doesn't produced any crackling and hissing sound (*shabdapradhurbhava*) indicating the *Madhyamsnehapaka*⁵.

RESULTS

Organoleptic changes observed are tabulated as follows:

Table No. 1- Organoleptic parameters

S. NO.	Parameter	Results
1.	Colour	Dark
2.	Odour	Characteristic
3.	Appearance	Oily
4.	Touch	Snigdha
5.	Clarity	Opaque
6.	Taste	Mild tikta

Table no. 2- Physico-chemical parameters

S. No.	Name of the test	Value
1.	Ash value	.03%
2.	Loss of drying at 105°C w/w	.02%
3.	Refractive index at 40°C	1.4665
4.	Saponification value	170.15
5.	Iodine value	104.66
6.	Volatile matter w/w	5.24%

DISCUSSION

Dhaturadalakatutailamis unique preparation mentioned in Rasatarnagani for *Mamsagatavata* (muscular dystrophy) comprising the *snehapakaof katutailawith dhaturapatra.Sneha* itself by virtue of its *snigdhasguna* counteract the *rukshasguna* of vata. *Katutailabeing usna and tikshnaingunahelps* in curing *Vatavyadhi* by virtue of better penetration in body tissues. *Dhaturaleavesare* also said to have *vatasamanagunaas dhaturais sothaharaand vedanaharain* action. *Murchanaof Katutailawith Dhaturapatraenhances* the medicated qualities and action of this oil in curing *Mamsagatavata*.

The physico-chemical tests performed were as per the protocol mentioned in API part II and were found to be significant.

- Ash value- ash values are helpful in determining the quality and purity of crude drugs, especially in powder form. The objective of ashing drugs is to remove all traces of organic matter, which may otherwise interfere in an analytical determination. On incineration, crude drugs normally leave an ash usually consisting of carbonates, phosphates and silicates of sodium, potassium, calcium and magnesium. The value was found to be 0.03%.

- Loss of drying at 105°C w/w - Loss on Drying Test is designed to measure the amount of water and volatile matters in a sample when the sample is dried under specified conditions. It is obtained by drying 1 to 2 g of the sample, accurately weighed, at 105°C for 3 hours; the loss in weight is not more than 0.50 % of the sample. Here in this study loss drying at 105°C was found to be .02% which is significant.

- Refractive index at 40°C - The oil must be clear free from rancidity, suspended or foreign matter, separated water, added colouring, or flavoring substances or mineral oil. The value obtained is 1.4665 which is normal for mustard oil.

- Saponification value-Saponification value represents the number of milligrams of potassium hydroxide required to saponify 1g of fat under the conditions specified. It is a measure of the average molecular weight (or chain length) of all the fatty acids present. The value obtained is 170.15.

- Iodine value- The iodine value is the mass of iodine in grams that is consumed by 100 grams of a chemical substance. Iodine numbers are often used to determine the amount of unsaturation in fatty acids.

The value obtained is 104.66.

CONCLUSION

Oil is best material mentioned for any *Vatavyadhi*. *Snehapaka* of oil with any vatahara drug enhances its property. *Dhaturadalakatutailam* is one such type of preparation mentioned in *Rasatarangani* for *Mamsagatavata* (muscular dystrophy) prepared with leaves of Dhaturametel and Mustard oil (*Katutaila*). Final drug subjected to organoleptic and physico-chemical analysis as per the API part II protocols. The results obtained were ash value .03%, loss of drying at 105°C w/w .02%, refractive index at 40°C 1.4665, acid value 1.81, saponification value 170.15, iodine value 104.66, volatile matter 5.24% w/w. All these values are found to be normal limits showing the significant Pharmaceutico-analytical properties of *Dhaturadalakatutailam*.

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