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## A comparative study on the pharmaceutical preparation of Kalyanaka Ghrita and Ksheerakalyanaka Ghrita

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### ABSTRACT

*Kalyanaka Ghrita*<sup>1</sup> is a commonly prescribed formulation in cases of diseases of psychiatric origin like *Unmada*, *Apasmara* etc. The reference of *Kalyanaka Ghrita* is available in *Brihatrayees*, *Sharangadhara Samhita*, *Chakradatta*, *Sahasrayoga*, *Kashyapa Samhita* etc. The reference of *Ksheerakalyanaka*<sup>2</sup> is mentioned along with the reference of *Kalyanaka Ghrita* in *Chakradatta* and also in *Sahasrayoga*. The reference mentioned in *Charaka Samhita* for *Kalyanaka Ghrita* and in *Chakradatta* for *Ksheerakalyanaka Ghrita* is taken for current study. The only difference observed in the references of both the formulations is the addition of two parts of *Jala* and four parts of *Ksheera* as *Drava Dravya* in case of *Ksheerakalyanaka Ghrita*. In case of *Kalyanaka Ghrita* only *Jala* is taken as *Drava dravya*. It is aimed to throw light on the pharmaceutical preparation of *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* in order to understand the aspects related to preparation of medicated *Ghrita* when *Dugdha* is mentioned as a *Drava dravya*.

**Keywords:** *Kalyanaka Ghrita*, *Ksheerakalyanaka Ghrita*, *Ksheera*, *Drava Dravya*.

### INTRODUCTION

*Kalyanaka Ghrita*<sup>[1]</sup> is one of the most commonly preferred drug in cases of diseases of psychiatric origin. It is known to possess actions such as *Vishaghna*, *Hrudya*, *Tridosahara* etc along with its *Medhya* effect. *Kalyanaka Ghrita* is a complex formulation mentioned in which most of the drugs mentioned possesses antioxidant, antimicrobial and anti-venom properties.

The word meaning of *Kalyanaka* is '*Kalyane shubhakarmani shreyaskara*' and this term conveys that the drug if administered brings auspiciousness, prosperity and wellbeing to humankind.

We get reference of *Kalyanaka Ghrita* in *Brihat trayees*, *Bhaishajya Ratnavali*, *Sharangadhara Samhita*, *Chakradatta*, *Sahasrayoga* etc. Along with reference of *Kalyanaka Ghrita* we get reference of *Ksheerakalyanaka Ghrita*<sup>[2]</sup> in *Chakradatta* of *Acharya Chakrapani* and also in *Sahasrayoga*.

The reference mentioned in *Charaka Samhita* for *Kalyanaka Ghrita* and in *Chakradatta* for *Ksheerakalyanaka Ghrita* is taken for the current study. The only difference observed in the pharmaceutical preparation of both the formulation is the addition of two parts of *Jala* and four parts of *Ksheera* as *Drava dravya* in case of *Ksheerakalyanaka Ghrita*, whereas in the case of *Kalyanaka Ghrita* only *Jala* is taken as *Drava dravya*.

### MATERIALS AND METHODS

Pharmaceutical study deals with the process of preparation of medicine starting from collection of drugs till attaining the final product. It is divided into following sections:

- Collection of Raw drugs according to classical reference.
- Authentication of the raw drugs
- *Ghrita Murchana*<sup>[3]</sup>
- Preparation of *Kalyanaka Ghrita*<sup>[1]</sup>
- Preparation of *Ksheerakalyanaka Ghrita*<sup>[2]</sup>

## PHARMACEUTICAL SOURCE

The raw drug required for the preparation of *Ghrita Murchana*, *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* were collected from the SDM Ayurveda Pharmacy, Udipi and were identified as genuine samples by Head, Department of Rasashastra and Bhaisajya Kalpana. Preparation of *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* was carried out in the laboratory, Department of Rasashastra and Bhaisajya Kalpana, S.D.M College of Ayurveda, Udipi.

*Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* were prepared according to the reference given in *Charaka Samhita* and *Chakradatta* respectively.

### I. Ghrita Murchana

The raw drugs for *Murchana* preparation were chopped into small pieces and dried under sunlight until they were dried thoroughly (Table 1). *Matulunga* for obtaining *Swarasa* to be used for preparing the *Kalka Dravya* was procured from local market.

**Table 1:** Quantity of Each Ingredient Taken for Drying for Ghrita Moorchana

S. No.	Name of the ingredient	Quantity taken
1	Haritaki	120 g
2	Vibhitaki	120 g
3	Amalaki	120 g
4	Mustha	120 g
5	Haridra	120 g

### 1. Preparation of Choorna of raw drugs for Kalka preparation

Name of the practical: Preparation of *Choorna* of raw drugs for *Kalka* preparation

Instruments used: Pulveriser, Weighing balance, cloth/sieve, steel vessels.

Principle Involved: Size Reduction.

#### Procedure:

The thoroughly dried raw drugs were powdered in the pulveriser separately and then sieved through number 85 sieve to obtain fine powders or *Sukshma Choorna* of ingredients.

### 2. Preparation of Kalka

Name of the practical: Preparation of *Kalka* for *Ghrita Murchana*

Reference: *Sharangadhara Samhita*

Principle involved: *Peshana*

#### Procedure:

- The accurately measured quantities of each ingredient was taken in a *khalva yantra* and a homogenous mixture was made first (Table 2).

**Table 2:** Quantity of Each Ingredient Taken for Ghrita Moorchana

S. No	Name of the ingredient	Quantity taken
1	Haritaki	80 g
2	Vibhitaki	80 g
3	Amalaki	80 g
4	Mustha	80 g
5	Haridra	80 g
6	Matulunga Rasa(for making Kalka)	500 ml

- To it required quantity of *Matulunga rasa* was added when required and grinded to a smooth paste was obtained and the paste formed into a bolus. This *Kalka* was further used for the purpose of *Ghrita Murchana Samskara*.

### 3. The process of Ghrita Murchana

Name of the practical: *Ghrita Moorchana Samskara*<sup>3</sup>

Reference: *Bhaisajya Ratnavali Jwaradhikara*

Principle involved: *Snehapaka Samskara*

#### Ingredients:

*Kalka* : 625 g

*Ghrita* : 2.5 litres

*Jala* : 10 litres

#### Procedure:

- Initially plain ghee was taken in a big copper vessel and heated for some time.
- It was then allowed to cool down for few minutes and then *Jala* and *Kalka* were added and boiling was started.
- The boiling was continued until all the water content evaporated from the *ghrita* and all *Sneha siddhi lakshanas* were appreciated.
- Once the *Sneha Siddhi Lakshanas* were observed, the heating process was stopped and subjected to filtration.
- The filtration was done through a clean and thick double folded Kora cloth in order to avoid the seeping of *Kalka* into the *ghrita*. The retained *Kalka* was squeezed in order to strain as much oil as possible.
- The filtered *ghrita* was then allowed to cool down on its own and then stored.
- The *Murchita Ghrita* was further used for *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita*. (Fig.1)

Results of this preparation are summarised in the Table 3 below.

**Table 3:** Observations After Murchana Samskara Of Ghrita

S. No	Attribute	Result/Observation
1	Initial quantity of Ghrita	2.5 l
2.	Quantity of Ghrita obtained after Murchana	2.150 l
3	Loss observed	350 ml
4	Initial quantity of Kalka	625 g
5	Weight of Kalka after Murchana	1120 g
6	Gain observed in Kalka	495 g

**Observations:**

- The procedure of *Ghrita Murchana* of 2.5 l of *Go ghrita* took 2 days to complete.
- The temperature maintained throughout the procedure was 95 to 102°C.
- Considerable loss was observed in the final yield of *Ghrita* due to the reabsorption of *Ghrita* into *Kalka*.
- *Paka* was stopped at *Mrudu paka* for further continuation of the process.

**Precautions:**

- *Sukshma churna* of *Kalka Dravya* was prepared for easy assessment of *Siddhi lakshanas*.
- *Mandagni* was maintained throughout the *Murchana* procedure.
- Care was taken to stop the *Paka* at *Mrudu paka*.

**PREPARATION OF KALYANAKA GHRITA AND KSHEERAKALYANAKA GHRITA**

**I. Preparation of Choorna of raw drugs for Kalka preparation of Kalyanaka Ghrita and Ksheerakalyanaka Ghrita.**

Name of the practical: Preparation of *Choorna* of raw drugs for *Kalka* preparation for *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita*.

Principle Involved: Size Reduction

**Procedure:**

The thoroughly dried raw drugs were powdered in the pulveriser separately and then sieved through number 85 sieve to obtain fine powders or *Sukshma Choorna* of ingredients (Table 4).

**Table 4:** The Quantity of Ingredients Taken for Kalyanaka Ghrita and Ksheerakalyanaka Ghrita.

S. No	Name of the ingredient	Quantity taken
1	VISALA/INDRAVARUNI	20 g
2	HARITAKI	20 g
3	VIBHITAKI	20 g
4	AMALAKI	20g
5	KAUNTI	20g
6	DEVADARU	20g
7	ELAVALUKA	20g
8	STHIRA/SALIPARNI	20g
9	NATA/TAGARA	20g
10	RAJANI	20g
11	DARUHARIDRA	20g
12	SARIVA	20g
13	KRISHNA SARIVA	20g
14	PRIYANGU	20g
15	NILOTPALA	20g
16	ELA	20g
17	MANJISHTA	20g
18	DANTI	20g
19	DADIMA	20g
20	KESARA	20g
21	TALISAPATRA	20g
22	BRHATI	20g
23	MALATHI	20g
24	VIDANGA	20g
25	PRISNIPARNI	20g
26	KUSHTA	20g
27	CANDANA	20g
28	PADMAKA	20g

- The raw drugs were thoroughly dried under the sun for three days before subjecting them for powdering.
- After confirming that the drugs had dried properly, they were powdered separately in the pulverizer.
- The two drugs i.e *Jatikalika* and *Dadimaphala* which were taken in the fresh form were made into *Kalka* directly.

**Observations**

- Some of the drugs which were woody like *Chandana* and which were fibrous were difficult to powder.
- It was very easy to prepare the *Kalka* of *Jatikalika*.
- It was difficult to sieve the powder through Kora cloth and considerable loss was observed.

**Precautions:**

*Sookshma choorna* of drugs were preferably prepared.

It was then stored in moisture free condition to prevent deterioration.

**Step 2: Preparation of Kalka**

Name of the practical: Preparation of *Kalka* for *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita*

Reference: *Sharangadhara Samhita*

Principle involved: *Peshana*

**Procedure:**

- Accurately measured quantities of each ingredient was taken in *Khalwa yantra* and made into a homogenous mixture first (Table 4).
- To the mixture, required quantity of water was added as required and grinded until a smooth paste was obtained and the paste was converted into a bolus.
- This *Kalka* was further used for the purpose of *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita*.(Fig. 3)

**II. Preparation of Kalyanaka Ghrita and Ksheerakalyanaka Ghrita**

A. Name of the practical: *Kalyanaka Ghrita* preparation<sup>1</sup>

Reference: *Charaka Samhita*

Equipment used: *Tamra patra*, Spatula, Measuring jar, cloth, thermometer, vessel etc.

Principle involved: *Sneha Paka Samskara*

**Ingredients:**

*Kalka* : 437 gm  
*Moorchita Ghrita* : 1 litre  
*Jala* : 4 l

**Procedure:**

- Initially the *Murchita Ghrita* was taken in a big copper vessel.
- Later, *Jala* and *Kalka* were added and boiling was started.(Fig 2 and Fig 4)
- The boiling was continued until all the water content evaporated from the ghee and *Sneha siddhi lakshanas* were appreciated.(Fig 5)
- The temperature was maintained between 90-102°C.
- Once the *Sneha siddhi lakshanas* were observed, the heating process was stopped and the *ghrita* was filtered.(Fig 6)
- Filtration was done through a thick double folded Kora cloth into a stainless steel vessel.

- Later the ghee was allowed to cool and on cooling it was stored in airtight container.

#### Observations

- The procedure was completed within 2 days
- After attaining *paka* all the *siddhi lakshanas* could be appreciated such as *Shabdahinatva* on *Agninikshepa*, formation of *Varti, Rasa* and *gandha* could be appreciated.
- On cooling it became semisolid and granular in consistency.

#### Precautions

- Continuous stirring was carried out to prevent charring of *Kalka*.
- *Taila paka* was stopped at *Madhyama paka avastha*.
- The *mandagni* was maintained throughout the procedure.

**Results:** The results observed after the preparation of *Kalyanaka Ghrita* (Fig.7) is depicted in Table 5.

**Table 5:** Results after the Preparation of Kalyanaka Ghrita

S. No	Attribute	Result/Observation
1	Initial quantity of Murchita Ghrita	1 litre
2	Quantity of Kalyanaka Ghrita	750 ml
3	Loss observed	250 ml
4	Initial quantity of Kalka	437 gm
5	Weight of Kalka after preparation	730 gm
6	Gain observed in Kalka	293 gm

### PREPARATION OF KSHEERAKALYANAKA GHRITA [2]

Reference: *Chakradatta*

Equipment used: *Tamra patra*, Spatula, Measuring jar, cloth, thermometer, vessel etc.

Principle involved: *Sneha Paka Samskara*

#### Ingredients:

*Kalka* : 437 gm  
*Moorchita Ghrita* : 1 litre  
*Jala* : 2 l  
*Ksheera* : 4 l

#### Procedure:

- Initially the *Murchita Ghrita* was taken in a big copper vessel.
- Later, *Jala, Kalka* and *Ksheera* were added successively and boiling was started.(Fig.8 and Fig.9)
- Boiling was continued until all water content evaporated from the ghee and *Sneha siddhi lakshanas* were appreciated.(Fig.10)
- Temperature was maintained between 90-102°C.
- Once the *Sneha siddhi lakshanas* were observed, the heating process was stopped and the *ghrita* was filtered.
- Filtration was done through a thick double folded Kora cloth into a stainless steel vessel.
- Later the *Ksheerakalyanaka ghrita*(Fig.11) was allowed to cool and on cooling it was stored in airtight container.

#### OBSERVATIONS

- The procedure was completed within 2 days.
- After boiling for about 1 hour it appeared like an emulsion and the consistency became thicker.

- After 2 hours the *ghrita* started getting separated from the *Kalka*.
- After attaining *madhyama paka*, all the *siddhi lakshanas* could be appreciated such as *Shabdahinatva* on *Agninikshepa*, formation of *Varti, Rasa* and *gandha* could be appreciated.
- On cooling it became semisolid and granular in consistency.
- The characteristic smell of *Ksheera* along with *Ghrita* could be appreciated.

#### Precautions

- Continuous stirring was carried out to prevent charring of *Kalka*.
- *Sneha paka* was stopped at *Madhyama paka avastha*.
- The *mandagni* was maintained throughout the procedure.

#### RESULTS

The observations of *Ghrita moorchana, Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* is depicted in Table 3, Table 5 and Table 6 respectively.

**Table 6:** Results after the Preparation of Ksheerakalyanaka Ghrita

S. No	Attribute	Result/Observation
1	Initial quantity of Murchita Ghrita	1 litre
2	Quantity of Ksheera Kalyanaka Ghrita	800 ml
3	Loss observed	200 ml
4	Initial quantity of Kalka	437 gm
5	Weight of Kalka after preparation	680 gm
6	Gain observed in Kalka	243 gm

#### Organoleptic Characteristics of End Products

- Colour: The colour of both *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* was brownish yellow. After cooling, it attained light yellow colour.
- Odour: *Kalyanaka Ghrita* had the characteristic odour of *ghrita* but *Ksheerakalyanaka ghrita* differed slightly as the odour of milk processed in *Ghrita* was appreciable.
- Taste: *Kashaya Tikta*.
- Consistency-Unctuous, semisolid and granular.

#### Pharmaceutical Preparation of Kalyanaka Ghrita and Ksheerakalyanaka Ghrita



**Figure 1:** Murchita Ghrita



**Figure 2:** Addition of water



Figure 3: Kalka



Figure 4: Addition of Kalka



Figure 5: Stirring and Heating



Figure 6: Boiling is continued with uniform heating till Sneha Siddhi Lakshanas



Figure 7: End product-Kalyanaka Ghrita

#### Preparation of Ksheera Kalyanaka Ghrita



Figure 8: Dugdha



Figure 9: Addition of 4 parts of Dugdha as drava dravya



Figure 10: Observations during Boiling



Figure 11: End product- Ksheera Kalyanaka Ghrita

#### DISCUSSION

*Ksheera* is one among the *drava-dravyas* which has been explained in the context of *Sneha Kalpana*. It can be inferred that different *drava-dravyas* are mentioned in the classics based upon capability of a particular solvent to imbibe certain therapeutically active principles into it; for e.g water soluble extracts, alcohol soluble extracts etc. Hence, evaluation of *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* was carried out in a methodical way.

It was observed that unlike *Kalyanaka Ghrita* during the preparation of *Ksheerakalyanaka* after boiling for a stipulated period of time the mixture turned into an emulsion like consistency. On further heating, the *Kalka* started to get separated from the emulsion like form and the characteristic odour of milk mixed with *ghrita* could be appreciated.

*Siddhilakshanas* like *Phenashanti*, formation of *Varti*, *Sabdahinatva* on *Agninikshepana* and the attainment of desired *Gandha*, *Varna* and *Rasa* could be appreciated in both the cases. Both the preparations were stopped at *Madhyama paaka avastha*. The final yield of *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* was 750 ml and 800ml respectively. The loss was comparatively less for *Ksheerakalyanaka Ghrita* compared to *Kalyanaka Ghrita*. On cooling, the consistency of both the *Ghrita* changed to a semisolid granular consistency.

#### CONCLUSION

The *Kalyanaka Ghrita* and *Ksheerakalyanaka Ghrita* was prepared as per Standard operating procedures explained in *Charaka Samhita* and *Chakradatta* respectively. During the pharmaceutical preparation of *Ksheerakalyanaka ghrita* it was observed that after boiling for an hour; the mixture appeared like an emulsion and the consistency became thicker. The *ghrita* started to get separated from *Kalka* after two hours of boiling. On analysing the end products, it was found that both the

preparations were having semisolid granular consistency. *Ksheera kalyanaka Ghrita* had a characteristic odour of *Ghrita* mixed with *Ksheera* after processing.

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