



ISSN 2456-3110

Vol 7 · Issue 10

November 2022

Journal of  
**Ayurveda and Integrated  
Medical Sciences**

*www.jaims.in*

**JAIMS**

An International Journal for Researches in Ayurveda and Allied Sciences



**Maharshi Charaka**  
Ayurveda

**Indexed**

# Comparative pharmaceutical and analytical study of *Kasisadi Ghrita* prepared by two different methods

Padmanabha Lal R<sup>1</sup>, Govinda Sharma K<sup>2</sup>, Gazala Hussain<sup>3</sup>, Asha Vithal Bhat<sup>4</sup>, Ramya M Pavate<sup>5</sup>, Deekshitha S<sup>6</sup>

<sup>1,4,5,6</sup>Final Year PG Scholar, Department of Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala Manjunatheswara College of Ayurveda & Hospital, Hassan, Karnataka, India.

<sup>2,3</sup>Associate Professor, Department of Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala Manjunatheswara College of Ayurveda & Hospital, Hassan, Karnataka, India.

## ABSTRACT

**Introduction:** *Sneha Kalpana* are the dosage forms which can be used both internally as well as externally. Generally, *Sneha Kalpana* is prepared by using *Agni* as source of heating. However, *Kasisadi Ghrita* is an exception where the sunlight is used as source of heating. This unusual method of preparation looks attractive because of natural heat (sunlight) that is required in the preparation and the yield that may be obtained. The *Sneha* is heated with volatile drugs in *Surya Paka* for a specific time so that less heat allows them to leave their active principles in *Sneha*. The difference between *Bhanupaka* and *Agnipaka* is also an area of interest, on this formulation as far as its manufacturing is considered. *Kasisadi Ghrita* is a herbo-mineral formulation indicated for various skin diseases. **Materials and Methods:** *Kasisadi Ghrita* were prepared by classical method of *Bhanupaka* (KGB) and usual method of *Agnipaka* (KGA). Both KGB and KGA were analyzed as per the standard protocol. **Discussion and Conclusion:** Preparation of *Kasisadi Ghrita* by *Agnipaka* method is easy as it consumes less time. There were no pharmaceutical constraints in preparation of both samples. *Tamra Paatra* helps to retain more heat than other vessels during *Bhanupaka*. The results of the pharmaceutical and analytical study can be considered as the preliminary standards for the preparation of *Kasisadi Ghrita*.

**Key words:** Ayurveda, *Bhanupaka*, Comparative Study, Herbomineral, *Kasisadi Ghrita*, *Sneha Kalpana*.

## INTRODUCTION

In Ayurveda, *Sneha Kalpana* refers to the process of oleaginous medicine preparation by subjecting to a unique heating pattern and duration in specific proportions according to the need of the therapeutics.<sup>[1-4]</sup> The method of preparation of *Kasisadi Ghrita* looks attractive because of using sunlight as a source of heat in place of *Agni* which is used in general method of *Sneha Kalpana*.<sup>[5]</sup> *Adityapaka* or *Bhanupaka*

is probably employed for drugs which contain volatile and heat sensitive principles.<sup>[6]</sup> The aim of designing this process is to extract fat soluble active principles in low and controlled temperature. *Kasisadi Ghrita* contains 6 mineral ingredients and 25 herbal ingredients.<sup>[7]</sup> It can be used externally for the treatment of various skin problems, ulcers, fissures of anus, piles, fistula, scabies, eczema, ringworms etc. In this work, an attempt was made to prepare *Kasisadi Ghrita* by classical method of *Bhanupaka* as well as usual method of *Agnipaka*. Analytical standards were generated by assessing the quality parameters of *Ghrita* (clarified butter).

## AIMS AND OBJECTIVES

1. To prepare *Kasisadi Ghrita* by classical method (*Bhanupaka*-KGB).
2. To prepare *Kasisadi Ghrita* by modified method (*Agnipaka*-KGA).
3. To compare the analytical parameters of KGB and KGA.

### Address for correspondence:

Dr. Padmanabha Lal R

Final Year PG Scholar, Department of Rasashastra & Bhaishajya Kalpana, Sri Dharmasthala Manjunatheswara College of Ayurveda & Hospital, Hassan, Karnataka, India.

E-mail: rpadmanabhalal@gmail.com

Submission Date: 13/09/2022 Accepted Date: 17/10/2022

Access this article online

Quick Response Code



Website: [www.jaims.in](http://www.jaims.in)

DOI: [10.21760/jaims.7.10.19](https://doi.org/10.21760/jaims.7.10.19)

## MATERIALS AND METHODS

### Pharmaceutical Source

The required number of raw drugs were collected from a reputed firm in Kollam district, Kerala and from teaching pharmacy, Sri Dharmasthala Manjunatheswara College of Ayurveda and Hospital Hassan, Karnataka (SDMCAH). The herbal ingredients were authenticated from the department of *Dravya Guna*, and the mineral ingredients were authenticated from the Department of *Rasashastra* and *Bhaishajya Kalpana*, SDMCAH. Prior to preparation of *Kasisadi Ghrita*; *Shodhana* (purification)<sup>[8]</sup> of *Kasisa*, *Haritala*, *Manahsila*, *Gandhaka*, *Tutthaka* and *Guggulu* were carried out.

### Ingredients

Ingredients of *Kasisadi Ghrita*<sup>[9]</sup> were taken as given in the following table (Table 1).

**Table 1: Ingredients of Kasisadi Ghrita**

SN	Sanskrit name	English name/ Latin name	Part used	Quantity
1.	<i>Shuddha Kasisa</i>	Green vitriol (Ferrous sulphate)	-	5 grams
2.	<i>Shuddha Haritala</i>	Yellow arseniitri sulphidum	-	5 grams
3.	<i>Shuddha Manahshila</i>	Arsenic disulphide	-	5 grams
4.	<i>Shuddha Gandhaka</i>	Sulphur	-	5 grams
5.	<i>Shuddha Tutthaka</i>	Copper sulphate	-	5 grams
6.	<i>Girisindhoora</i>	Mineral red vermilion	-	5 grams
7.	<i>Haridra</i>	<i>Curcuma longa</i>	Rhizome	5 grams
8.	<i>Daruharidra</i>	<i>Berberis aristate</i>	Stem	5 grams

9.	<i>Musta</i>	<i>Cyperus rotundus</i>	Tuber	5 grams
10.	<i>Kampillaka</i>	<i>Mallotus philippinensis</i>	Glands and Hairs of Fruit	5 grams
11.	<i>Vidanga</i>	<i>Embelia ribes</i>	Fruit	5 grams
12.	<i>Maricha</i>	Black pepper	Fruit	5 grams
13.	<i>Kushta</i>	<i>Saussurea lappa</i>	Root	5 grams
14.	<i>Gaura Sarshapa</i>	<i>Brassica juncea</i>	Seed	5 grams
15.	<i>Rakta Chandana</i>	Red sandalwood	Heart wood	5 grams
16.	<i>Irimeda</i>	<i>Acacia farnesiana</i>	Stem Bark	5 grams
17.	<i>Nimbapatra</i>	Neem leaves	Leaf	5 grams
18.	<i>Karanja</i>	<i>Pongamia pinnata</i>	Stem Bark	5 grams
19.	<i>Swetha Sariva</i>	<i>Hemidesmus indicus</i>	Root	5 grams
20.	<i>Vacha</i>	<i>Acorus calamus</i>	Rhizome	5 grams
21.	<i>Manjishta</i>	<i>Rubia cordifolia</i>	Stem	5 grams
22.	<i>Yashtimadhu</i>	<i>Glycyrrhiza glabra</i>	Root	5 grams
23.	<i>Jatamamsi</i>	<i>Nardostachys jatamansi</i>	Rhizome	5 grams
24.	<i>Shirisha</i>	<i>Albizzia lebeck</i>	Fruit	5 grams
25.	<i>Lodhra</i>	<i>Symplocos racemose</i>	Stem Bark	5 grams
26.	<i>Padmaka</i>	<i>Prunus cerasoide</i>	Heart wood	5 grams
27.	<i>Haritaki</i>	<i>Terminalia chebula</i>	Pericarp	5 grams
28.	<i>Chakramarda</i>	<i>Senna tora</i>	Seed	5 grams

29.	<i>Shuddha Guggulu</i>	<i>Commiphora mukul</i>	Exudate	5 grams
30.	<i>Rala</i>	<i>Vateria indica</i>	Exudate	5 grams
31.	<i>Rasanjana</i>	Aqueous extract of <i>Berberis aristate</i>	Stem Extract	5 grams
32.	<i>Sikthaka (Madhuchista)</i>	Bee-wax	-	5 grams
33.	<i>Go-Ghrita</i>	Clarified butter	-	600 grams (120 parts)



Figure 1: Ingredients of *Kasisadi Ghrita*

#### Shodhana of mineral ingredients:

##### *Kasisa Shodhana*<sup>[10]</sup>

Fine powder of *Ashuddha Kasisa* was taken, levigated with *Bhringaraja (Eclipta alba)* *Swarasa* (expressed juice) for 3 times, then it was dried under sunlight until completely devoid of moisture content.

##### *Haritala Shodhana*<sup>[11]</sup>

Small pieces of *Ashuddha Haritala* was taken, bundled in clean muslin cloth, suspended in a *Dola Yantra* containing *Kushmanda Toya (Benincasa hispida)*.

Boiled for three hours, dried under sun rays and preserved for further purposes.

##### *Manahshila Shodhana*<sup>[12]</sup>

*Manahshila* made into fine powder form and levigated with *Ardraka Swarasa* for seven times.

##### *Gandhaka Shodhana*<sup>[13]</sup>

Melted small pieces of *Gandhaka* in an iron pan smeared with *Ghrita* and poured it into a pot containing cow's milk, collected after cooling. Repeated the process for three times. At the end of the third process, washed and dried the material.

##### *Tutthaka Shodhana*<sup>[14]</sup>

*Tutthaka* got purified by levigating with *Nimbu swarasa* for 6 hours in *Khalwa Yantra* (mortar and pestle).

##### *Guggulu Shodhana*<sup>[15]</sup>

Small pieces wood was removed manual. Cut *Guggulu* into small pieces, bundled in a cloth and immersed in *Dola Yantra* containing *Triphala Kashaya*. Boiled until the whole amount of *Guggulu* passed into the liquid through the cloth. Discarded the residue present in the bundle, filtered the liquid through muslin cloth and heated the mixture until a semi-solid mass is obtained. Dried under sunrays and stored for further use.

##### Method 1: Preparation of KGB<sup>[7]</sup>

Five grams each of all the ingredients from sl.no 1-29 (table-1) were taken separately, pounded into fine powder in *Khalva Yantra*, sieved through clean cloth, mixed together in a copper vessel with *Ghrita* (clarified butter). Five grams each of the ingredients from sl.no 30-32 (table 1) were added into the copper vessel separately and mixed well. The copper vessel with mixture of all the ingredients was kept in sun rays for on an average 8.5 hours daily for 7 days. After 7 days, the sample was filtered using cloth and stored in air tight container.

All the ingredients from sl.no 1-29 (table-1) were taken separately, pounded into fine powder in *Khalva Yantra* and then sieved separately through cloth. Three grams

fine powder each of the ingredients from sl.no 1-30 (table-1) were taken together, added with three grams each of the ingredients from sl.no 31-32 (table-1) and 60 ml of water to prepare the *Kalka* (paste form). 600 grams of the *Ghrita* was taken in a vessel and was heated over mild fire. Four times water was added to that of *Ghrita* in the vessel over fire. Frequent stirring was done using *Darvi* (spoon). Then the prepared *Kalka* was added to the mixture once it got heated well. The mixture was boiled well until all *Sneha Siddha Lakshana*<sup>[17]</sup> (confirmative tests for completion) appeared and only the ghee part remained back in the copper vessel. The sample was filtered using clean cloth and after allowed for self-cooling.

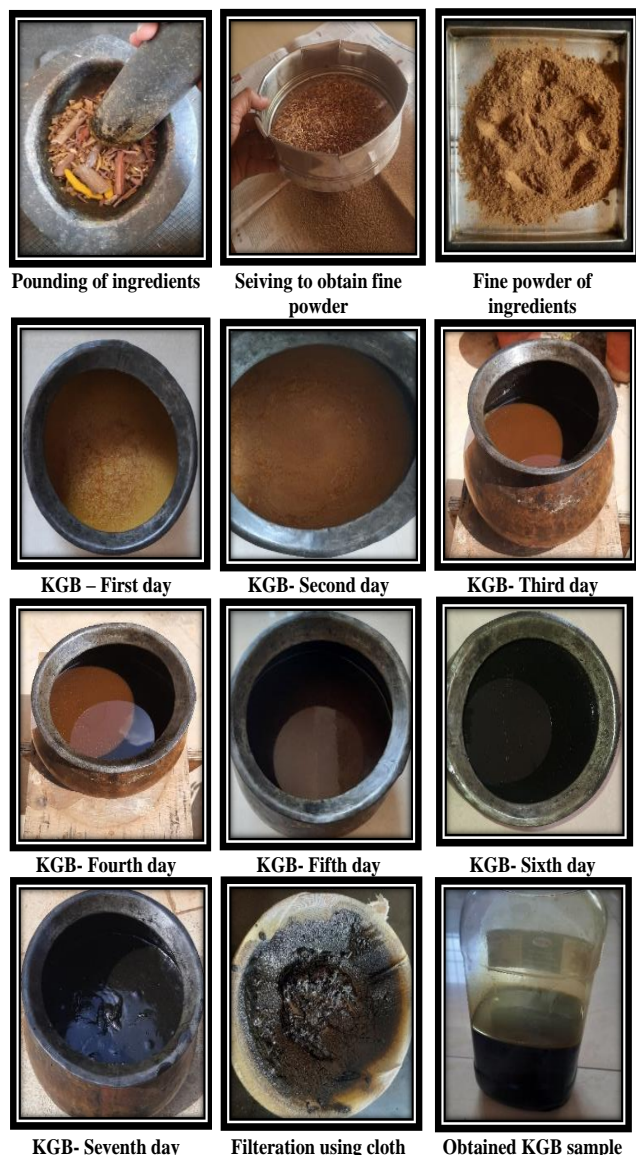


Figure 2: Methodology of Preparation of KGB

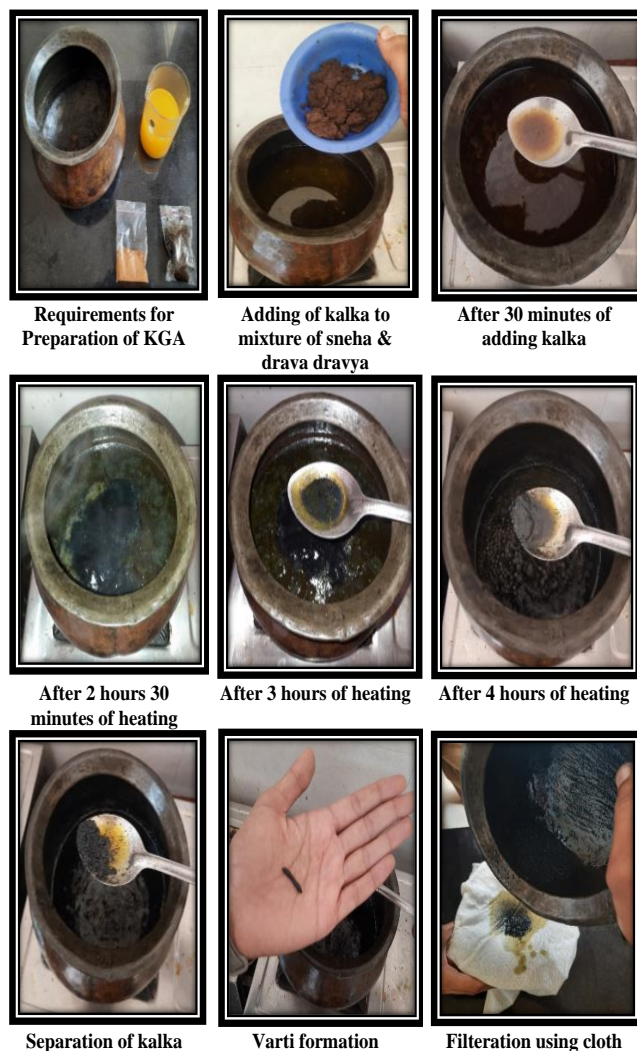


Figure 3: Methodology of Preparation of KGA

Analytical Study was carried out at teaching pharmacy, SDMCAH. Samples of prepared medicine were analysed using following parameters as per the references available in protocol for testing published by Central Council for Research in Ayurvedic Sciences (CCRAS).<sup>[18]</sup>

- A. Organoleptic Characters -** Organoleptic characters of *Kasisadi Ghrita* like colour, odour, touch, taste and appearance were assessed using sensory organs.
- B. Physico-Chemical Analysis<sup>[19]</sup> -** it includes following tests; Specific gravity, Refractive index, Viscosity, Saponification value, Iodine value, Acid value, and determination of pH. The complete analytical study was carried on both the samples of *Kasisadi Ghrita*.

## OBSERVATIONS AND RESULTS

### Pre procedure for Pharmaceutical Study

These were recorded according to the following sections.

- 1. Kasisa Shodhana** - Obtained quantity of *Shuddha Kasisa* was 42 grams with 16 % loss during *Bhavana* (levigation)<sup>[20]</sup> with 160 ml of *Bhringaraja Swarasa*. After *Bhavana* (levigation) the colour changed from greenish white to greyish light green. Consistency changed from crystalline to powder and touch from hard to smooth after the bhavana. characteristic odour of *Kasisa* was retained even after *Shodhana*.
- 2. Haritala Shodhana** - was done through *Swedana* in *Kushmanda Toya* for 3 hours. *Shuddha Haritala* obtained was 36 grams with a loss of 14 grams from initially taken 50 grams. A thick paste of *Kushmanda* was obtained after the procedure inside the vessel which was yellow in colour. After *Shodhana*, the colour of *Haritala* remained same as lemon yellow, consistency became brittle powdery from hard granular mass as it was pounded using *Khalva Yantra*, touch became smooth from hard, and remained odourless even after *Swedana*.
- 3. Manahshila Shodhana** - was carried out by doing *Bhavana* with *Ardraka Swarasa* for seven times. Final quantity of *Shodhita Manahshila* obtained was 46 grams with a loss of 4 grams (8%). After *Shodhana*, colour of *Manahshila* changed from bright reddish orange to light reddish orange. Consistency became powdery from heavy smooth crystalline form as it was pounded in *Khalva Yantra* before *Bhavana*. Odour changed to characteristic ginger odour from pleasant pungent odour as *Bhavana* was carried out using *Ardraka Swarasa*.
- 4. Gandhaka Shodhana** - was done by *Dhalana* method using *Go-dugdha* and *Go-Ghrita*. At 112°C, *Gandhaka* started to melt and complete melting was observed around 117-119°C. The whole process of *Dhalana* completed within 30 minutes. At the molten stage *Gandhaka* appeared as golden yellow colour. After *Shodhana*, *Gandhaka* changes

colour from pale yellow to bright yellow, resinous lustre diminished, characteristic odour reduced and there was a loss of 24.4% of weight from 500 grams to 378 grams at the end of three *Dhalana*.

- 5. Tuttha Shodhana** - was carried out by *Bhavana* with *Nimbu Swarasa* for 6 hours. Final quantity obtained after *Shodhana* was 42 grams with a loss percent of 16 (8 grams). After *Shodhana* colour changes to sky blue from blue, consistency changes from crystalline lumps to brittle powder in form, and sample shown slight *Nimbu* odour compared to odourlessness before *Shodhana*.
- 6. Guggulu Shodhana** - was carried out by *Dolayantra Swedana* using *Go-dugdha* as *Dravadavya*. After *Shodhana* the colour of *Guggulu* changes from brown to yellowish tinged brownish black with a loss percent of 38 (38 grams).

**Pharmaceutical study:** Observation and results of pharmaceutical study are as given in the following table (Table 2)

**Table 2: Observation and Result of Pharmaceutical study**

Parameters	KGB	KGA
1. Colour	Dark green	Yellowish green
2. Consistency	Thick paste like	Viscous
3. Odour	Strong characteristic odour	Characteristic odour
4. Duration	8 days	4.20 hours
5. Maximum temperature	<i>Ghrita</i> 60°C	<i>Ghrita</i> 85°C
6. Initial quantity	<i>Ghrita</i> -660 ml	<i>Ghrita</i> -660 ml
7. Final quantity	<i>Ghrita</i> -545 ml	<i>Ghrita</i> -528 ml
8. Loss/gain	<i>Ghrita</i> -115 ml- loss	<i>Ghrita</i> -132 ml loss
9. Loss %	<i>Ghrita</i> -17.42 % loss	<i>Ghrita</i> - 20% loss

**Analytical study:** results of organoleptic and physico-chemical analysis are as given in following tables. (Table 3 & 4)

**Table 3: Results of Organoleptic Analysis of KGB & KGA**

Parameters	KGB	KGA
1. Colour	Dark green	Yellowish green
2. Odour	Strong Characteristic odour	Characteristic odour
3. Touch	Thick paste like	Viscous
4. Taste	Acrid	Acrid
5. Appearance	Semi solid	Semi solid

**Table 4: Results of Physico-chemical Analysis of KGB & KGA**

Parameter	KGB	KGA
Specific gravity	0.9213	0.9385
Saponification value	229.78	246.92
Iodine value	39.37	46.63
Acid value	0.696	1.182
Refractive Index	1.4701	1.4657
Viscosity	2.602	3.013
pH	7.62	7.58

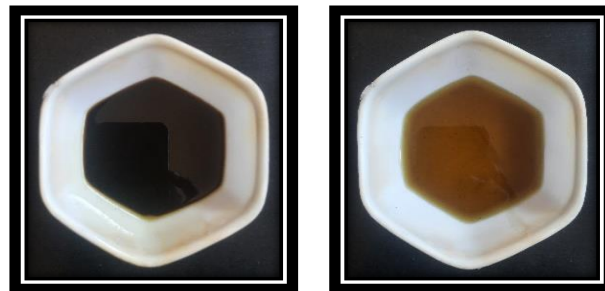
**Figure 4: Change in colour of copper vessel**



**Copper vessel before agnipaka**

**Copper vessel after agnipaka**

**Figure 5: Difference in colour of both samples (KGB & KGA)**



**KGB (Dark Green)**

**KGA (Yellowish green)**

**DISCUSSION**

*Kasisadi Ghrita* consists of multiple herbal and mineral ingredients which is to be prepared in *Bhanupaka* method using *Tamrapaatra* (copper vessel). It is pertinent to note that, there may be changes in the pharmacological and therapeutic properties of the formulation by *Bhanupaka*. Further the *Tamrapaatra* may bring in some changes again because it is a good conductor and retainer of heat. Most of the ingredients are *Vatakaphahara* in *Doshaghata* and possess *Kushtaghna*, *Kandughna* and *Vranaropana* property. Previous research works conducted on the individual ingredients of this formulation reveals that all the herbal and mineral ingredients possess antimicrobial activity. Thus, *Kasisadi Ghrita* being a formulation with all together will be possessing same properties. It is indicated in the treatment of skin problems, ulcers, fissures of anus, piles, fistula, scabies, eczema, ringworms etc.

**Pre procedure**

Colour change after *Kasisa Shodhana* may be due to the changes which occurred due to *Bhavana* procedure and reaction of *Kasisa* with atmospheric air. Ferrous sulphate on reaction with oxygen form ferric oxide. Possible reason for loss in *Haritala* quantity after *Shodhana* can be as it became fine particles during pounding, it may have filtered off with *Kushmanda Toya* during filtration. A thick yellow colour paste of *Kushmanda* inside the vessel after *Swedana* indicates

the presence of fine particles of *Haritala* within it. Comparatively much loss was not observed during *Manahshila Shodhana* as *Ardraka Swarasa* may have added upon to the weight of the powder during *Bhavana*. Change in colour of *Manahshila* after *Shodhana* may be due to the reaction with *Ardraka Swarasa* during *Bhavana* and exposure to atmospheric air. During *Gandhaka Shodhana*, organic substances used in the process have role in detoxification of inorganic sulphur. During *Shodhana*, *Gandhaka* was powdered because it increases surface area which facilitates quick melting. Crystalline sulphur after *Shodhana* turned to amorphous nature form. Possible reason for loss of *Gandhaka* may be due to physical impurities like stone which may have got separated during filtration, some particles of *Gandhaka* got adhered to cloth and vessel and by washing with hot water, small particles of *Gandhaka* flowed along with water. The Change in colour of *Tutthaka* after *Shodhana* may be due to the reaction with *Nimbu Swarasa* during *Bhavana* and oxidation with atmospheric air. After *Shodhana* the colour of *Guggulu* changes from brown to yellowish tinged brownish black suggesting removal of impurities during the process. It was devoid of mud, was soft, having good pleasant odour, burnt when put on fire, became liquified when exposed to sunlight indicating its genuine qualities.

#### Selection of vessel

Thick wide mouthed copper vessel was used as in wide mouthed vessel, mixture of drugs will be more exposed to sun during *Bhanupaka*, and same vessel only used during *Agnipaka* to maintain similar condition of *Paka*. Colour of the copper vessel changes to little darker from coppery colour after the *Agnipaka*. This may be due to the reaction of the mixture of ingredients with copper and exposure to heat during *Paka*. When copper is heated in air, it gains oxygen and the reddish-brown metal is changed into black Cupric oxide.

#### Source of heat

The *Bhanupaka* was done during April-May season as amount of sunlight and heat will be maximum during summer season. Maximum temperature was observed

in mid-day time whereas in morning and evening time, temperature was less. There were temperature variations according to diurnal variations. Low flame is maintained throughout *Agnipaka* to avoid the degradation of the phyto-constituents of the ingredients. Stirring was done throughout the procedure to avoid sticking of *Kalka* at the bottom of the vessel and to get proper *Paka*.

#### Sneha Kalpana

Weight of *Kalka* was more during *Bhanupaka* as compared to that of *Agnipaka*, as *Drava Dravya* was not added during *Agnipaka* and the drugs were kept in *Ghrita* for longer duration in *Bhanupaka*. The colour of KGB was dark green due to presence of *Kalkadravya* along with the *Ghrita* and which was thick paste like in consistency. Whereas in KGA the colour was yellowish green, may be due to the chemical reactions taking place between *Ghrita* and the *Kalka* at constant temperature throughout the procedure. Consistency of KGA was less viscous compared to KGB, it may be due to the addition of *Dravadravya* during the procedure and amount of heat given. Long duration of procedure and high intensity of heat are responsible for more and more evaporation of volatile contents of ingredients, which are responsible for the odour of the final product. Hence KGB might have emitted strong characteristic odour compared to KGA. The separation of *Kalka* from KGB was found difficult as both were completely mixed with each other. In case of KGA, separation of ghee from *Kalka* was easy.

#### Organoleptic characters

KGB was dark green in colour with thick consistency whereas KGA was yellowish green with viscous nature. This may be due to the complete mixing of *Kalka* with ghee, amount of heat obtained during *Paka* and long duration of *Paka* of KGB. Addition of *Dravadravya* during *Agnipaka* may have led to viscous nature. Taste and appearance were similar in both the samples.

#### Physico-chemical characters

Refractive Index - there is negligible difference in the value shown by both the samples, its density compared to air and liquid media can be taken as same. Specific



Gravity - KGA have slightly higher specific gravity than KGB as water soluble active components of *Churna* may have contributed for increase in specific gravity in KGA. Saponification value - saponification value of KGB was 229.78 whereas KGA was 246.92 indicating comparatively more shelf life of KGB sample than KGA sample. Iodine value - Iodine value of KGB was less than that of KGA indicating KGA more susceptibility for oxidation and rancidification than KGB sample. Acid value - the observed acid value of KGB was 0.696 and that of KGA was 1.182 indicating KGA is more susceptible for rancidification and oxidation. pH value - the observed pH of KGA was 7.58 and KGB sample was 7.62 with negligible difference indicating its slightly alkaline nature as that of cow's ghee.

## CONCLUSION

In this study, *Kasisadi Ghrita* was prepared by classical *Bhanupaka* - KGB and modified *Agnipaka* - KGA (usual method of *Sneha Kalpana*) as far as its manufacturing is concerned and analyzed as per the standard protocol. Based on the pharmaceutical and analytical study the following conclusions were drawn. *Kasisadi Ghrita* is economic by virtue of a smaller number of easily available ingredients and a time tested classical formulation. Copper vessel helps to retain more heat than other vessels during *Bhanupaka*. Preparation of *Kasisadi Ghrita* by *Agnipaka* method is easy as it consumes less time. There were no pharmaceutical constraints in preparation of both samples. During Analytical study of *Kasisadi Ghrita* prepared by *Bhanupaka* method, Specific gravity, saponification value, iodine value, acid value, refractive index, viscosity and pH were observed to be 0.9213, 229.78, 39.37, 0.696, 1.4701, 2.602 and 7.62 respectively whereas that of KGA sample was 0.9385, 246.92, 46.63, 1.182, 1.4657, 3.013 and 7.58 respectively. As there are no standards for the preparation of *Kasisadi Ghrita* available in published domain, these values can be taken as standards of evaluation of analytical parameters of both samples of *Kasisadi Ghrita*.

## REFERENCES

- Acharya J T. Charaka Samhita. Reprint ed. Varanasi: Chaukhambha Orientalia; 2011. p.120.
- Shastri Ambikadutta. Susruta Samhita. Reprinted ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2005. p.133.
- Murthy Srikantha. Ashtanga Hrudaya. Ninth ed. Varanasi: Chaukhambha Sanskrit Series; 2013. p.208.
- Angadi R. A Textbook of Bhaishajya Kalpana Vijnana. Second revised ed. Varanasi: Chaukhamba Sanskrit Pratishthan; 2016. p.250-59.
- Kishore Prem. Abhinava Chintamani. First ed. New Delhi: Central Ayurveda and Siddha Research Center; 1999. p.176.
- Rang Sourav Kumar, Sharma Govinda K, Saokar Reshma, Kadibagil Vinay R, Loganathan Sorunini. Review on Adityapaka- *Sneha Kalpana*. UJAHM. 2016; 04 (06): 22-24. Available from:
- Srikantha Murthy K R, English translation on Sharangadhara Samhita of Acharya Sharangadhara. First ed. Madhyama kanda; *Sneha Kalpana adhyaya*: Chapter 9, Verse 51-54. Varanasi: Chaukhamba Orientalia, 2017. p.120-21.
- Monier Williams. Sanskrit- English Dictionary. Varanasi: Indica Books; 1996. p.755.
- Anonymous. The Ayurvedic Formulary of India. Second ed. CCRAS. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2003. part I. vol I: p.83.
- Anonymous. The Ayurvedic Pharmacopeia of India. First ed. Dept of AYUSH. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2009. part II. vol II: p.280.
- Anonymous. The Ayurvedic Pharmacopeia of India. First ed. Dept of AYUSH. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2008. part II. vol I: p.253.
- Anonymous. The Ayurvedic Pharmacopeia of India. First ed. Dept of AYUSH. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2008. part II. vol I: p.252.
- Anonymous. The Ayurvedic Pharmacopeia of India. First ed. Dept of AYUSH. New Delhi: Ministry of Health and Family Welfare, Govt. of India; 2008. part II. vol I: p.251.
- Kasinada Shastri, editor, (reprinted ed.). Commentary on Rasatarangini of Sadananda Sharma: Chapter 21, Verse 107. Varanasi: Choukhamba Orientalia, 2000. p.540.
- Hegde PL, Harini A. A textbook of Dravyaguna Vijnana. Revised ed. Varanasi: Chaukhambha Sanskrit Sansthan; 2020. Vol II. p.266.

16. Murthy Srikanta. Sharangadhara Samhita. Fourth ed. Varanasi: Chaukhambha Orientalia; 2001. p.115.
17. Sharangadhara, Adhamalla. Pandit Kashirama. Sharangadhara Samhita Dipika Gudartha Dipika. Seventh ed. Varanasi: Chaukhambha Orientalia;2008. p.213.
18. CCRAS. Laboratory Guide for the Analysis of Ayurveda and Siddha Formulation. First ed. Dept of AYUSH. New Delhi: Ministry of Health and Family Welfare, Govt of India; 2010. p.16.
19. Food safety and Standards Authority of India. Manual of method of analysis of foods- oils and fats. New Delhi: Ministry of Health and Family Welfare, Government of India; 2015. p.9-28.
20. Radhakrishna Parasara, editor. Fourth ed. Sharangadhara Samhita of Acharya Sharangadhara. Madhyama Khanda; Chapter 6, Verse 6. Nagpur: Shree Baidyanatha Ayurveda Bhavana; 1994.

**How to cite this article:** Padmanabha Lal R, Govinda Sharma K, Gazala Hussain, Asha Vithal Bhat, Ramya M Pavate, Deekshitha S. Comparative pharmaceutical and analytical study of Kasisadi Ghrita prepared by two different methods. J Ayurveda Integr Med Sci 2022;10:149-157.

<http://dx.doi.org/10.21760/jaims.7.10.19>

**Source of Support:** Nil, **Conflict of Interest:** None declared.

\*\*\*\*\*