WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 4, 1153-1162. Research Article ISSN 2277– 7105

PHARMACEUTICAL STUDY OF DADIMADYA GHRITA

Amit Kumar Meena[1]*, Amit Kumar Sharma[2], Sakhitha K. S.[3] and Amit Mishra[4]

[1]Assistant Professor, [2]Ph.D Scholar, [3]Lecturer, [4]Assistant Professor

[1]S. K. S. Ayurvedic College, Mathura, (U.P.)

[2,3]P.G. Department of Rasashastra & Bhaishajya Kalpana, NIA, Jaipur (RAJ.)

[2]Vijayshree Ayurveda Medical College, Jabalpur, (M.P.)

Article Received on
21 Jan. 2021,

Revised on 11 Feb. 2021,
Accepted on 03 March 2021

DOI: 10.20959/wjpr20214-20024

***Corresponding Author**
Dr. Amit Kumar Meena
Assistant Professor, S. K. S. Ayurvedic College, Mathura, (U.P.)

ABSTRACT

Diabetes mellitus (DM) is a clinical syndrome characterised by hyperglycaemia due to absolute or relative deficiency of insulin. Several distinct types of Diabetes Mellitus are caused by a complex interaction of genetics and environmental factors. *Ayurveda* has a great potential in treating diabetes and its associated complications. Among the wide varieties of drugs mentioned in *Ayurveda* text books *Dadimadya Ghrita* has been chosen for the study so as to develop standard operating procedure for the same which help in re-establishing its efficacy and inturn contribute. Which may contribute to the successful treatment of *Madhumeha* (DM). The formulation of *Didimadya ghrita* for present study has been taken from *Bhaishajya ratnavali* written by *Govind Das Sen* in *Prameha rogadhikara*. Standardization technique help in monitoring the safety and efficacy of the product. However *Ayurveda* text books have described the quality control procedures for the raw material. In the present study *Dadimadya ghrita*was prepared as per classical reference to develop SOP (Standard Operating Procedure).

KEYWORDS: Diabetes mellitus, *Dadimadya Ghrita*, *Madhumeha*, *Bhaishajya ratnavali*, *Prameha.*

INTRODUCTION

The word ‘Pharmaceuticals’ means a medicinal drug or manufacturing a compound which can thereby be used for medicinal purpose. With a view to obtain maximum therapeutic benefit and make recipe palatable, different pharmaceutical processes are described in Ayurveda. *Bhaishajya Kalpana* got foundation during Vedic period and the development of

these processes, methods starts during the period of *Charak Samhita* which states the basic processing techniques. *Acharya Charak* has named such pharmaceutical processing as "*Samskara*". According to him, *Samskara* brings,, *Gunantaradhana*.[1] which means assimilation of newer properties.

Sneha kalpana is a technique where *Sneha* are used as a base to get properties of the herbs in the media of *Sneha*. The *Sneha* acts not only as base but also vehicle and class one preservative. The active constituents of the drugs are incorporated into the *Sneha* to make the preparation therapeutically more potent.

In this present study various practical carried out for developing SOP and SMP of *Dadimadya ghrita* in detail.

AIMS AND OBJECTIVES

To prepare the *Dadimadya ghrita* as per classical reference and to develop SOP (Standard Operating Procedure).

MATERIALS AND METHODS

Materials and methods used in this preparation were based on availability, feasibility in classical indication of *RasaShastra*, traditional value and expert opinions. All the raw materials were procured from the N.I.A. pharmacy.

Methods

The following practicals were carried out in pharmaceutical study

1. *Murchana* of *Goghrita*
2. Preparation of *Dadimadya Ghrita*

Procedure

(1) *Murchana* of *goghrita*[2]

Table 1: Showing ingredients for *ghritamurchana.*

S. no.	Name of ingredient	Part of Use	Quantity
1	*Goghrita*	-	2000 g
2	*Haritaki*	Dried Pericarp	125 g
3	*Amalaki*	Dried Pericarp	125 g
4	*Bihitaki*	Dried Pericarp	125 g
5	*Musta*	Rhizome	125 g
6	*Haridra*	Rhizome	125 g
7	*Matulanga swarasa*	Fresh Fruit juice	125 ml.
8	Water	-	8.Liter

2 – 6 drugs were cleaned properly and made into powder separately and passed through 60 no. sieve to obtain moderately fine powder form. To this *Matulunga Swarasa* (obtained by cleaned-cut pieces of *Matulunga* by squeezing it) was added and mixed properly. Finally sufficient quantity of water was added till the mixture become *Kalka* form. Prepared *Kalka* was kept for some time for soaking the materials. Then the *Kalka dravyas* were transferred to the wet grinder and ground with sufficient quantity of water to prepare homogeneous blend.

Table 2: Showing quantity for *ghritamurchana* 1st sample.

S. No.	Ingredient	Quantity
1	*Kalka*	950 g
2	*Sneha*	2000 g
3	*Drava*	8 litre

Two kg. of *Goghrita* was taken into a stainless steel vessel and heated over mild heat till it become moisture free. At that time *Goghrita* was showed disappearance of foam and sounds at 140˚C temperature. The vessel which was containing *Goghrita* was taken out from the heat and allowed to cool to temperature around 70˚C, then added prepared *Kalka* little by little and stirred well, after that again heated with adding mentioned quantity of water. Heated for 3 h with constant stirring maintaining the temperature between 50 degree to 90 degree celcius during the first hour of heating. Heating was stopped and allowed to stand overnight. Next day, heating was started again and the boiling mixture was observed for subsidence of froth. Kalka was constantly checked for the *Kalka* for formation of *varti* (*madhyama paka lakshana*). The *varti* and *Ghrita* were exposed to flame and confirmed the absence of crackling sound indicating absence of moisture. Heating was stopped when the *Kalka* forms a *varti* and the froth subsides ϖ The heating process was continued till *Sneha* Siddhi *Lakshana* appeared with intermittent stirring on 1st and 2nd day and continuous stirring on 3rd day. After complete appearance of *Sneha Siddhi Lakshana* the vessel was taken out from the heat and then filtered through muslin cloth to another stainless steel vessel at that time temperature was 80˚C. Remaining *Kalka* part was properly squeezed for extract the ghee which was remaining with *Kalka*, tested for moisture and added to the bulk. Then some quantity of boiled water was added to the *Kalka* and kept it to be freeze for 5-6 hours and then the freezed layer of ghee was separated and heat it till become moisture free and then filter it with cotton cloth and added to the bulk. Final product was stored in a clean dry wide mouth PET jar after cooling.

Same process was repeated 3 times for three sample. Each time initial quantity of *ghrita* was taken 2 kg. for *murchana*.

(2) Preparation of *dadimadya ghrita.*[3]

Table 3: Showing ingredients of *dadimadya ghrita*for 1st sample.

S. No.	Name of the drug	Latin Name	Parts Used	Quantity
1	*Dadima*	*Punica granatum*	*Beeja*	26 g
2	*Vidanga*	*Embelia ribes*	*Phala*	26 g
3	*Haridra*	*Curcuma longa*	*Kanda*	26 g
4	*Chavya*	*Piper retrofractum*	*Moola*	26 g
5	*Krishna jeerak*	*Carum bulbocastanum*	*Beeja*	26 g
6	*Aamlaki*	*Phyllanthus embelica*	*Phalmajja*	26 g
7	*Baheda*	*Terminalia bellerica*	*Phala*	26 g
8	*Haritaki*	*Terminalia chebula*	*Phala*	26 g
9	*Shunthi*	*Zingiber officinale*	*Kanda*	26 g
10	*Gokshur*	*Tibulus terrestris*	*Phala*	26 g
11	*Yavani*	*Corum copticum*	*Beeja*	26 g
12	*Dhanyak*	*Coriandrum sativum*	*Panchanga*	26 g
13	*Vrakshamla*	*Garcinia indica*	*Mooltwaka*	26 g
14	*Choti pippali*	*Piper longum*	*PhaIa*	26 g
15	*Pippali mool*	*Pipper longum*	*Moola*	26 g
16	*Badar*	*Zizyphus jujube*	*Phalmajja*	26 g
17	*Saindhav Lavana*	Rock salt	-	26 g
18	*Goghrita*	-	-	1753 g

Procedure

1– 17 drugs were cleaned properly and each one pounded into fine powder and pass through the sieve no-80. Then water was added till the mixture become semisolid i.e. *Kalka* form.

Table 4: Showing quantity for *dadimadta ghrita* 1st sample.

S. No.	Ingredient	Quantity
1	*Kalka*	438.25 g
2	*Sneha* (*Murchita Ghrita*)	1753 g
3	*Drava*(Jala)	8 liter

Prepared *Kalka* was kept for some time for soaking the materials. Above mentioned quantity of *Murchhita Goghrita* was taken into a stainless steel vessel and heated over mild heat till it becomes moisture free. Then prepared *Kalka* was added little by little and stirred well, after adding the *Kalka*, temperature was around 60^0C, *Paka* was done for half an hour after that mentioned quantity of water was added. The temperature falls to 50^0C when water was added. Heated for 3 hrs and with constant stirring maintaining the temperature between 50^0-90^0C during the first hour of heating. Heating was stopped and *Ghrita* was allowed to stand

overnight. Heating was started on the next day and boiling mixture was observed for subsidence of froth *(Phenashanti)* and *Kalka* was checked constantly for *Varti* formation *(Madhyama Paka Lakshana*). The *Varti* and *Ghrita* were exposed to the flame and confirmed the absence of crackling sound which indicates the absence of moisture. Heating was stopped when the *Kalka* forms a *Varti* and the froth subsides. The heating process was continued till *Sneha Siddhi Lakshanas* appeared with intermittent stirring on 1st and 2nd day and continuous stirring on 3rd day. After complete appearance of *Sneha Siddhi Lakshanas* the vessel was taken out from the heat and then filtered through muslin cloth into another stainless steel vessel, at that time temperature was 80˚C. Remaining *Kalka* part was squeezed properly to extract the *Ghee* which was remaining with *Kalka* tested for moisture and added to the bulk. Then some quantity of boiled water was added to the *Kalka* and kept it to be freeze for 5-6 hours and then the freeze layer of ghee was separated and heat it till become moisture free and then filter it with cotton cloth and added to the bulk. Final product stored in a clean dry glass jar and labeled accordingly.

The above same procedure was followed in next two samples of *Dadimadya Ghrita.*

Photos of pharmaceutical study

1. *Kalka dravya*

Dadima

Vidanga

Haridra

Chavya

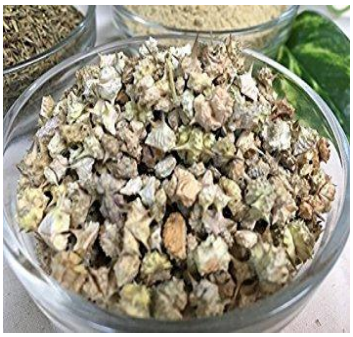
Krishana Jeerak

Aamlaki

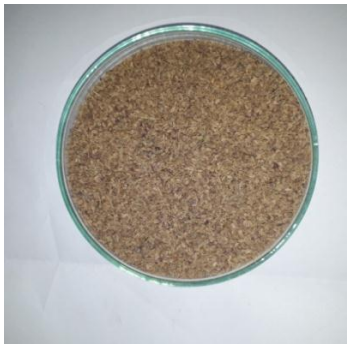
Haritaki

Vibhitaki

Shunthi



Gokshur



Yavani

Dhanyak

Vrakshamla

Choti Pippali

Pippali Moola

Badar

Saindhav lavan

2. *Ghrita*

Goghrita

3. Dadimadya Ghrita

Dadimadya Ghrita

Observations

Table 5: Showing *Sneha Siddhi Lakshana*[4] of *Dadimadya Ghrita in all samples*.

S. No	*Sneha Siddhi Lakshana*	*Dadimadya Ghrita*	*Kalka*
1	*Shabda Hino Agni Nikshipta*	+	+
2	*Phenodgama*	+	-
3	*Gandha Varna Rasotpatti*	+	-
4	*Sanyav Eva Niryase*	-	+
5	*Madhye Darvi Vimunchati*	-	+
6	*Vartivat Kalka*	-	+

Foam was appeared when *Kalka* was added to the *Ghrita*. *Sneha Paka* completed when crackling sound subsided and *Phenashanti* observed. *Dadimadya Ghrita* which was collected by boiling the *Kalka* was shown some moisture content, hence that was heated on mild heat till it becomes moisture free. *Dadimadya Ghrita* was filtered through cloth by squeezing the *Kalka*, then it was allowed to self cooling and on next day *Ghrita* was filled in dry glass jar.

RESULTS

Table 6: Showing organoleptic characters of *goghrita*.

S. no.	Organoleptic Character	Before *Murchana*	After *Murchana*
1	Colour	Light yellow	Dark yellow
2	Odour	Characteristic of *Goghrita*	Characteristic of *Kalkadravya* specially *Haridra*
3	Taste	*Madhura*	*Kasaya*& slightly *Madhura*
4	Appearance	Semi liquid	Semi liquid

Table 7: Showing total loss of *goghrita*on *murchana*.

S. no.	Initial weight	Weight after *Murchana*	Loss of *Murchana*	% of loss
1	2000gram	1853gram	147gram	7.35%
2	2000gram	1870gram	130gram	6.5%
3	2000gram	1840gram	160gram	8%

Table 8: Showing results of organoleptic characters of all 3 samples of *Dadimadya Ghrita* (D.G.).

Sample	Colour	Odour	Appearance	Taste
DG 1	Yellowish Green	Characteristic	Semisolid	Characteristic
DG 2	GreenishYellow	Characteristic	Semisolid	Characteristic
DG 3	Green	Characteristic	Semisolid	Characteristic

Table 9: Showing the weight loss of 3 samplesof *dadimadya ghrita* in *sneha paka* process.

S. n	Initial weight	Final weight	Loss of *Murchana*	% of loss	Average loss
1	1753	1673	80	4.57	4.71%
2	1870	1795	75	4.02	
3	1840	1738	102	5.55	

DISCUSSION

Ghrita Murchana has been conducted prior to preparation of *Dadimadya Ghrita* as a part of *Sneha Kalpana*. All the drugs for *Murchana* are taken in its dry form except *Matulunga* fruit has been taken freshly during the *Kalka* preparation.

For *Murchana* purpose *Matulunga (Citrus medica)* named *Bijora nimbu* in local market is used. All the *Murchana Dravyas* were made into moderately fine powder form and soaked in water one day before *Sneha Murchana* for easier to *Kalka* preparation. They were grind into wet grinder for *Kalka* preparation to make a smooth paste and homogenous.

During *Murchana* when *Goghrita* was subjected to heat in vessel to remove moisture, changes observed in color and consistency of the ghee. Color changes from light to dark yellow and consistency become thinner as compared to cold ghee. Maximum temperature observed at that time was 140^0C and 30 minutes were required to make the ghee moisten free. These different observations found may be due to changes in properties of *Goghrita*. When *Goghrita* gets slight cold in its mild hot stage temperature nearly about 70^o -80^o C *Kalka* was added in little by little quantity to prevent instant frothing in a vessel and continuous stirring was carried out to prevent burning of *Kalka*. After addition of *Kalka* it was observed that the

color of *Ghrita* get change darker within5-10 minutes after addition of *Kalka* after that there has been no *notifiable* change has been observed in color.

Total three days were required to complete the *Sneha Murchana.* During the *Sneha Paka* it was observed that max temp of *Sneha* noted within range of 50^0-90^0 C which has been increased within 90^0-95^0 C as day by day *Paka* ~~was~~ progresses; and 95^0 -98^0 C at final stage of the *Paka*. When *Sneha Siddhi Lakshanas* were observed the *Ghrita* has been filtered in its mild hot stage to obtain maximum yield. During the filtration temperature of oil and ghee observed was 60^0 -65^0 C. In *Sneha Murchana* 7.35% loss was found in *Ghrita.*

During the pharmaceutical study all the solid and liquid material has been taken in w/w unit; it was to prevent the error in the research. Because the *Ghrita* has lower specific gravity than water and if it taken in volume unit it`s quantity is lower as compared to Liquid media e.g. when we compare 1 liter ghee with 1 liter water the weight difference between them is varying nearly about 70- 100 g that mean 1 liter ghee ranges the weight between 900-930 gm.

After the *Ghrita Murchana* the *Murchita Ghrita* was subjected to next procedure i.e *Dadimadya Ghrita* preparation. Three samples of *Dadimadya Ghrita* has been prepared with intention to establish SOP & SMP.

All the drugs for *Dadimadya Ghrita* preparation are taken in its dry form except *Vrikshamala* has been taken freshly during the *Kalka* preparation.

The quantity of each *Kalka Dravya* was taken 438.25 g, 468.25 g, 460 g (¼ part of *Sneha*) divided by 17 ingredients and water is used 4 *Guna* of *Sneha*. All the process of General *Sneah Paka* was adopted to prepare *Dadimadya Ghrita* 3 samples preparations. The process was completed within 3 days. The same observations were observed during *Ghrita Paka* in terms of time & temperature i.e. *Ghrita Murchana* temp.60^0 -90^0c.

CONCLUSION

In present study 3 days were required to complete the *Sneha Paka* and average time duration taken to complete the *Sneha Paka* was 17-18 Hrs. Time variation in completion of *Sneha Paka* may depend upon intensity of heat source, different environmental conditions, some manual error like consistency in continuous stirring which effect on evaporating rate of the liquid media. *Sneha Paka* was carried out on *Mandagni*. Average loss of *Dadimadya Ghrita*

formulations observed after completion of *Sneha Paka* was 4.71%. The color of *Dadimadya Ghrita* was yellowish green, greenish yellow and green in the three sample and *Murchitta Ghrita* colour was yellow. It may be due to more phyto constituents absorbed in to the *ghrita*. The observations of present study showed uniformity in the various parameters and the SOP of the same can be considered as a standard for preparation of *Dadimadi ghrita*.

REFERENCES

1. Charak Samhita, Hindi Commentary 'Vidyotini' edited by Pt. Kashinath Pandeya, Edition Chaukambha Vishwabharti, Varanasi, Page no. Verse – Cha. Viman Sthana, 2009; – 680: 1-21(2).
2. Sen Govind Das, Bhaishajya Ratnavali, Hindi Commentary 'Siddhiprada' edited by Prof. Siddinandan Mishra, Edition Chaukambha Surbharti Prakashan, Varanasi, page no, – 2017; 206: 5-1267.
3. Sen Govind Das, Bhaishajya Ratnavali, Hindi Commentary 'Siddhiprada' edited by Prof. Siddinandan Mishra, Edition Chaukambha Surbharti Prakashan, Varanasi, page no, – 2017; 206: 37, 197-201.
4. Sharangadhar Aacharya, Sharangadhar Samhita, Hindi Commentary 'Deepika' edited by Dr. Brahmanand Tripathi, Edition Chaukambha Surbharti prakashana, Varanasi, Page no. Verse – Madhyam Khanda, 2016; 145: 9, 12-13.