



Research Article

PHARMACEUTICAL STANDARDIZATION OF *GANDHAKAKALPA*

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ABSTRACT

Rasa Shastra is the pharmaceutical branch of Ayurveda which deals with the processing of metals and minerals having therapeutic importance. *Rasoushadhis* possess wide range of therapeutic efficacy and are considered superior because of their qualities like small dose, quick action, palatability and longer shelf life. *Gandhakakalpa* is a *Rasoushadhi* mentioned in Basavarajeeyam 18th chapter 20th sloka indicated for *Sthoulya*. *Gandhaka* (sulphur) and *Madhukathaila* are the main ingredients of *Gandhakakalpa*. *Shodhana* (purification), *Murchchana*, *Mardana* (trituration) are the important steps involved in preparation of *Gandhakakalpa*. *Shuddha Gandhaka* and *Murchchita Madhukataila* were taken. After obtaining homogenous mixture, it was made into 500mg tablets. The present study has been planned to standardize the method of preparation of *Gandhakakalpa* as explained in the classical literature.

KEYWORDS: *Gandhakakalpa*, *Shodhana*, *Murchchana*, *Mardana*, standardization, *Sthoulya*.

INTRODUCTION

The nature possesses immensely valuable and powerful medicines. However, most of the drugs as such are not absorbable into the biological system, until and unless they undergo certain modifications. Mineral materials as such are claimed to be toxic by Ayurvedic *Rasa* texts. Different manufacturing processes like *Shodhana*, *Marana*, *Jarana*, *Mardana* (trituration), *Bhavana* (soaking with liquid and triturating till drying), *Nirvapana* (heating and quenching), *Prakshalana* (washing), *Bharjana* (frying), *Pruthakkikarana* (separation), *Galana* (filtration) etc., are adopted for this processing. All these procedures play a significant and vital role in converting these metals and minerals into safe, non-toxic and efficacious form.

Gandhaka mentioned under *Uparasa* group possess various therapeutic properties. It is indicated in the management of several skin diseases and *Madhukataila* contains *Daha* and *Pitta nashaka*^[1] properties and is indicated in *Swasa*, *Kshaya*, *Raktapitta*, *Grahani*.^[2] *Gandhakakalpa* is one of the unique formulations mentioned in *Basavarajeeyam* 18th chapter 20th Sloka which contains *Shuddha gandhaka* and *Murchchithamadhukataila*. Flower, Seed and oil^[3] are the parts used in *Madhuka*. *Shodhana*, *Murchchana* and *Mardana* are the pharmaceutical procedures involved in the preparation of *Gandhakakalpa*. In the present study, an effort has been made to highlight the significance of these pharmaceutical procedures and to

standardize the method of preparation of *Gandhakakalpa*. Above formulation involves *Shodhana* of *Gandhaka* and *Murchchana* of *Madhukataila*. *Murchchita Madhukataila* is grinded with *Shuddha Gandhaka* in appropriate amount as mentioned in the reference of drug.

Aim of the Present Study

Pharmaceutical standardization of various steps involved in the preparation of *Gandhakakalpa*.

MATERIALS AND METHODS

Collection of Raw Material

Gandhaka and *Madhukataila* were collected from Vijayawada.

Methods

Entire preparation of *Gandhakakalpa* was carried out in Department of *Rasa Sastra and Bhaishajyakalpana*, TTD's S.V. Ayurvedic College and Sri Srinivasa Ayurveda Pharmacy, TTD, Tirupati.

Chief Reference:^[4] *Basavarajeeyam* chapter no.18 Sloka no. 20.

Total pharmaceutical study was carried out in four stages

Stage I *Shodhana* of *Gandhaka*

Stage II *Murchchana* of *Madhukataila*

Stage III Grinding of *Shuddha Gandhaka* with *Murchchitha Madhukataila*.

Stage IV *Gandhakakalpavati nirmana*

Gandhakakalpa preparation

Materials: Shuddha Gandhaka -500gms,
Murchchitha Madhukataila – Q.S

Method/Principle: Shodhana, Murchchana, Mardana.

Apparatus: wide mouthed earthen pot with lid, cotton cloth, Khalwayantra, cow dung cakes, Multanimitti, stove, stirrer, vessel, ladle.

Procedure

Gandhakasodhana

Ingredients: Ashuddhagandhaka- 600gms, cow's milk -4 litres, cow's ghee 200gms.

Procedure: Gandhakashodhana was done according to Rasendrasarasangraha^[5] by Puta method, Ashuddha gandhaka is taken in a Khalwayantra and made into coarse powder. An earthen pot was filled with cow's milk, and its opening was tied with a

double layered cloth. Over this, coarse powder of Gandhaka was spread evenly on it, earthen lid was placed over the pot and sealed with Multanimitti.

Over the lid, eight cow dung cakes were ignited, melted Gandhaka in form of small pellets was collected in a pot having cow milk later subjected to washing by hot water. Purified Gandhaka obtained was 580gms.

Observations

Colour of Gandhaka became bright yellow after Shodhana. Gandhaka was collected as fine pellets.

Madhukataila Murchchana

Murchchana was done by the reference taken from Bhaishajyaratnavali.^[6]

Ingredients: Madhukataila, Kalka dravyas, water.

Table 1: Showing the Kalka dravyas for Madhukataila Murchchana

S. No.	Sanskrit Name	Latin name	Quantity
1	Manjista	Rubia cardifolia	188grams
2	Haridra	Curcuma longa	47grams
3	Lodhra	Symplocos recemosa	47grams
4	Musta	Cyperus rotundus	47grams
5	Nalika	Cinnamomum tamaal	47grams
6	Amalaki	Embllica officinalis	47grams
7	Vibitaki	Terminalia bellarica	47grams
8	Haritaki	Terminalia chebula	47grams
9	Ketaki pushpa	Pandanus odoratissimus	47grams
10	Hribera (Vativeru)	Vattiveria giginoidus	47grams
11	Vatankura	Ficus bengalences	47grams

Procedure

- 3 litres of Madhukataila was taken in an open wide mouthed vessel and heated on mild fire till the foam disappears.
- The Kalkadravyas as mentioned above were mixed with little amount of water and paste was prepared. This prepared Kalka was added. Later, four times of water is added and kept over mild fire (Mandagni) and constant stirring was carried out.
- Heating process was continued till the oil becomes water free and gets the Lakshanas of Sneha Siddhi.
- After observing all qualities of Sneha Siddhi, the vessel was taken out from the fire and the oil is filtered through a clean cloth.
- Obtained Murchchita Madhukataila is preserved in glass jars.

Observation

- ❖ Foam was produced at the terminal stage of Madhukataila murchchana.
- ❖ Wick like structure was observed when Kalka is rolled in between the fingers.
- ❖ Thick brown coloured oil with pleasant smell was observed.

Preparation of Gandhakakalpa

Mardana

Shuddha Gandhakachurna was grinded with sufficient quantity of Murchchitha madhukathaila and made into a paste.

Vatinirmana

Vati of 500mg was prepared manually.

RESULTS

Table 2: Showing the results of Gandhaka Shodhana

Initial weight	Final weight	Loss in weight	Loss in %
600g	580g	20g	8%

Table 3: Showing the results of Madhukatailamurchchana

Initial quantity	Final quantity	Loss of Taila	% loss of quantity
3000ml	2900ml	100ml	10%

Figure 1



1. Ashuddha Gandhaka
2. Pot filled with Milk
3. Gandhaka is placed over the cloth
4. Lid is placed over the pot
5. Cowdung cakes are ignited
6. Shuddha Gandhaka
7. Tila Taila
8. Murcchana of Tilataila
9. Murcchita Tilataila



a. Mardana of Shuddha Gandhaka with Madhukataila; b. Paste of Gandhakakalpa; c. Gandhakakalpavati

DISCUSSION

The pharmaceutical procedure involved in this study is *Shodhana, Murchchana of Madhukataila*. *Shodhana* is done for *Gandhaka*.

Gandhakashodhana

Shodhana of *Gandhaka* is done to remove visible and invisible impurities, to reduce the toxicity and to enhance the therapeutic property.

Gandhaka Shodhana includes melting and dropping of *Gandhaka*. Sulphur turns into liquid at 115.21°C. However, at that temperature, arsenic sulphides (Orpiment M.P 310°C, Realgar M.P 360°C) which are the chief impurities of sulphur stay back in cloth and liquid sulphur flows freely through fine pores.

Agni by cow dung cakes ensures uniform spreading of temperature and prevents sulphur to get in contact with external oxygen, which otherwise causes oxidation and considerable weight loss.

Gandhaka is highly *Pitta vardhaka*. Milk is *Vata Pitta shamakadravya, Vishahara* (antitoxic) and *Rasayana*.^[7] Therefore, it can reduce *Teevrapitta vrudhikara* effect of *Gandhaka*. It can remove *Vishadoshas* of *Gandhaka* and impregnate *Rasayana* property to *Gandhaka*. Final cleaning with hot water removes greasy remnants of milk.

Murchchana of Madhukataila

Tailamurchchana was done as a special pharmaceutical procedure which removes bad odour

and *Amadosha* from *Taila*.^[8] *Madhukataila* is *Vatashamaka*.^[9]

A medicated oil preparation containing low molecular weight fatty acids are made more stable and quickly absorbable into the system. The ingredients like *Manjista*, will help to impart good colour to *Taila*. Specific aromatic odour of *Murchchitha madhukataila* is due to the *Murchchana* drugs like *Musta*, *Ketaki*, *Hrivera* etc. It imparts characteristic odour and Astringent taste is due to the dissolution of bio constituents to the oleaginous matter and removal of watery portion. Probable reasons for loss of *Taila* are evaporation during process and sticking of oil to the *Kalkadravyas*.

Four stages are involved during the *Murchchana* of *Madhukataila*

They are:

- Initiation of boiling of *Drava*
- Stage of mixing
- Stage of boiling of oil
- Completion of *Paka*

The stage of initiation of boiling of *Drava* appears usually after half an hour. Initiation of vaporization with slight sound of boiling was present. Stage of mixing proceeds the boiling of *Drava*. At this stage complete mixing of *Drava*, *Kalka* and *Sneha* take place. The vaporization and sound of boiling becomes prominent. The stage of boiling starts with bigger bubbles at the center and finer bubbles in the periphery region. Mild appearance of foam was observed during the end of this stage. Completion of *Paka* is ascertained as *Snehasiddilakshanas* are observed. Performance of *Paka Pariksha* and observation of *Sneha Siddilakshana* are thus completed.

Preparation of *Gandhakakalpa*

Shuddha Gandhaka is triturated with sufficient quantity of *Murchchitha Madhukataila* and 500mg of *Vati* were prepared.

CONCLUSION

Gandhakakalpa is one of the unique formulations in which *Shuddha Gandhaka* and *Murchchitha madhukataila* are the main ingredients.

Cite this article as:

V.Shyamaladevi, G. Rameshbabu. Pharmaceutical Standardization of *Gandhakakalpa*. International Journal of Ayurveda and Pharma Research. 2018;6(9):53-56.

Source of support: Nil, Conflict of interest: None Declared

The reference for the present study was taken from *Basavarajeeyam Sthoulya Chikitsa*. The pharmaceutical procedure involved in this study is *Shodhana*, *Murchchana* and *Mardana*.

Pharmaceutical Standardization is the first step towards standardization of any formulation. So it should be done with utmost accuracy. This leads to reproducibility of drug and production of safe and efficacious drug.

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