



ISSN 2456-3110

Vol 5 · Issue 4

July-Aug 2020

Journal of
**Ayurveda and Integrated
Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Charaka
Publications

Indexed

Recapitulation of *Gandhaka Shodhana*

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ABSTRACT

Gandhaka is a primary substance and a fundamental part of Ayurvedic laboratory. *Gandhaka* being the first among the *Uparasa Varga*, plays a vital role in the preparation of *Chaturvidha Rasa-Rasayanas*. *Sagandha Yogas* are considered as most efficacious among all the herbo-mineral preparations and hence can be used for longer duration without any complications. Also, *Gandhaka* is the best antidote for *Parada Kalpa*. Hence there is a requirement to screen, understand, and analyse various methods of *Gandhaka Shodhana* which are scattered in our classical *Rasagranthas*. Here is an attempt made to review all the different methods of *Gandhaka Shodhana* in *Rasagranthas* and also to analyse the ratiocination behind each method.

Key words: *Gandhaka*, *Shodhana*, *Sulphur*.

INTRODUCTION

Gandhaka is included under *Uparasas* by all the *Rasa Granthas*. Mercury and Sulphur finds maximum use in Indian medicine. *Gandhaka* is the principal material used for making the most important preparations like *Rasalinga*, *Rasabandhas*. *Gandhaka* stands next to *Parada* in importance, it is also considered as an essential substance for *Murchana* and *Marana*. The *Rasadavyas* are classified as *Sagandha Murchana* and *Nirgandha Murchana* based on the presence of *Gandhaka*. In *Ayurveda*, more specifically in *Rasashastra*, most of the things start from the construction of "*Rasalinga*", the fundamental part of Ayurvedic laboratory. Since *Gandhaka* is the emissary of *Parada* in making the *Rasa Linga* and *Caturvidha*

Rasa-Rasayanas, it is necessary to mention its utility as a primary substance.

OBJECTIVES OF THE STUDY

1. To review all the classical *Rasagrantha's* for different methods and medias used for *Gandhaka Shodhana*.
2. To analyse the rationality behind various methods and medias used for *Gandhaka Shodhana*.

MATERIALS AND METHODS

Totally seven different methods of *Gandhaka Shodhana* are available by reviewing all the classical *Rasagranthas*.

Name of <i>Rasagrantha</i>	<i>Gandhaka Shodhana</i> methods
<i>Rasa Tarangini</i> ^[1] <i>Rasa Ratna Samucchaya</i> ^[2]	Swedana method
<i>Rasa Ratna Samucchaya</i> ^[3]	<i>Dalana</i> and <i>Vastragalana</i> method
<i>Rasa Tarangini</i> ^[4] <i>Rasa Ratna Samucchaya</i> ^[5] <i>Rasendra Choodamanj</i> ^[6]	<i>Koorma Puta</i> method

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Submission Date: 12/07/2020 Accepted Date: 09/008/2020

Access this article online

Quick Response Code



Website: www.jaims.in

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Ayurveda Prakasha ^[7] Rasendra Saara Sangraha ^[8]	
Rasa Jala Nidhi ^[9]	Bhavana method
Rasa Tarangini ^[10]	Taila Pachana and Nikshepana method
Rasa Tarangini ^[11] Rasa Ratna Samucchaya ^[12]	Damaru Yantra method
Rasa Tarangini ^[13]	Gandhanashana method

- 1. Swedana method** - Swedana Kriya is done for one hour and powdered *Ashuddha Gandhaka* is taken in a cloth, *Pottali* is prepared and suspended in *Dola Yantra* containing milk and ghee. By this the impurities will get mixed up in milk and ghee, *Shuddha Gandhaka* gets collected in *Pinda Roopa* and ghee starts floating.^{[1],[2]}
- 2. Dalana and Vastragalana method** - A *Mrutpatra* filled half the level with milk is taken, its mouth is covered with a porous cloth smeared with ghee and tied with a thread. Powdered *Ashuddha Gandhaka* is taken in a spatula, melted and poured over the porous ghee smeared cloth into an earthen pot. Melted *Shuddha Gandhaka* gets solidified in milk, taken out and washed with warm water, and dried in shade. This has to be repeated for three to seven times.^[3]
- 3. Kurmaputa method** - A pot is filled with milk and its mouth is covered with a cloth and *Ashuddha Gandhaka Choorna* is spread over it and covered with an inverted *Sarava*. *Upalas* are spread over the *Sarava* and ignited. *Gandhaka* melts and penetrates through the cloth and *shuddha gandhaka* gets collected at the bottom of the pot. Repeating this for 100 times, *gandhaka* becomes *nirgandha*.^[4-8]
- 4. Bhavana method** - One part of *Ashuddha Gandhaka* with one fourth part of *Shuddha Tankana* is given *Bhavana* with *Matulunga Swarasa* and then with *Eranda Taila*, dried in shade to obtain *Shuddha Gandhaka*.^[9]

- 5. Taila Pachana and Taila Nikshepa Vidhi** - A pot filled with *Tila Taila / Kusumba Taila / Sarshapa Taila* - subjected to heat by maintaining low flame and added with powdered *Ashuddha Gandhaka*. Heat is given until added *Gandhaka* melts and immediately poured into milk. Solidified *Shuddha Gandhaka* is removed from milk, washed with warm water and dried in shade.^[10]
- 6. Damaru Yantra Vidhi / Urdhwapatana of Gandhaka** - Four *pala* of powdered *Ashuddha Gandhaka* has to be taken in *Damaru Yantra* and subjected to *Urdhwapatana Kriya*. *Shuddha Gandhaka* can be obtained from the inner side of the upper pot of *damaruyantra*.^{[11],[12]}

DISCUSSION

Ratiocination of each method of *Gandhaka Shodhana*.

1. Swedana Method

The purpose of doing *Swedana* may be attributing the properties of *Swedana Dravya* to *Swedya Dravya*.

The chemical reactions that take place during the *Swedana* process may be due to diffusion and Osmosis. Diffusion refers to the process by which molecules intermingle as a result of their kinetic energy of random motion. Osmosis may also be used to describe a physical process in which any solvent moves, without the input of energy, across a semipermeable membrane (permeable to the solvent, but not the solute) separating two solutions of different concentrations. Although osmosis does not require an input of energy, it does use kinetic energy and can be made to do. Osmosis is a selective diffusion process driven by the internal energy of the solvent molecules.

Probable reason for time specificity of Swedana

Fick's law of diffusion says the flux of an atom of a substance travels from one concentration to another concentration in a fixed period of time. The diffusion of the materials from *Swedana Dravya* to the *Swedya Dravya* depends on the nature of the substance. Based on this factor exact time duration might have been calculated by our *Acharyas*.

Swedana is one such process that makes the drug biocompatible by converting it into an organometallic complex.

Hence In *Swedana*, following changes will be noted,

Reduction in hardness: By continuous heating in a liquid media the hard material becomes soft in consistency.

Chemical reaction: During *Swedana* minute particles of the material come in contact with the liquid media, so there may be every possibility of occurrence of a chemical reaction between the material and media. *Swedana* serves as a purificatory process.

Biological changes: Organic components of the liquid media are transferred to the material to make it organo-metallic or organo-mineral compounds, which are favorable to the body.

Liquid media also serves as a source of trace elements. The induction of trace elements helps in fulfilling the body requirement of trace elements and also acts in many physiological processes.

Dalana - Vastragalana and Kurma Puta Method - In these two methods, *Shodhita Gandhaka* will be shining yellow colour with a greenish tinge. *Shodhita Gandhaka* will be found in the form of tubular/ flake like and granular like jowar seeds respectively. Ghee absorbs toxic materials and helps in the removal of fat-soluble impurities. Water and colloidal soluble impurities will be removed by milk. By *Vastragalana* - filtering through a cloth, separation of stones and other physical impurities will be held up in the filtering cloth.

2. Bhavana Method

Charaka mentions the word *Karana*^[14] in the context of *Ashtavidha Aahara Vidhi Visheshayatana*, which means the procedures to change the innate quality of the drug. For this purpose, *Bhavana* is also a procedure employed which comes under *Samskaras* which inturn makes the drug to take the properties in them. As per *Acharya Sadananda Sharma*,^[15] *Bhavana* means any powdered drug added with suitable *Dravadravya* and ground well to dry it. According to

Acharya Sharangadhara,^[16] *Drava* should be added double the quantity of the powdered drug, which makes it *Plavita* or completely wet. According to the text *Bhaishajya Ratnavali*,^[17] if *Bhavana* time is not mentioned then it has to be done for seven days. The drug has to be ground under sunlight in the daytime, which will be soaked in *Dravadravya* previous night.

Thus *Bhavana* helps to extract special *Gunas* by doing *Samskara*. *Mardana* procedure employed in *Bhavana* is responsible for *Gunavardhana* and which inturn enhances the medicinal properties. Even if given in *Alpamatra*, *Bala* of drugs will be increased in the medicine. *Alpamatra* and *Alpaveerya* of the drug is changed to *Mahakarma* and *Mahaveerya*.

3. Taila Pachana and Nikshepa Method

When powdered *Gandhaka* is melted in *Taila* containing pot, *Taila* absorbs toxic materials and helps in the removal of fat-soluble impurities. Later when melted *Gandhaka* is poured into milk, water, and colloidal soluble impurities will be removed by milk.

4. Damaru Yantra Vidhi / Urdhwapatana of Gandhaka

Purification by sublimation is achieved by conversion of solid sulphur into gas and condensing the gas to produce only sublimed crystals or flowers of sulphur (rather similar to the distillation process to purify liquids). The purification of sulphur by "sublimation," with the formation of flowers of sulphur, can be carried out easily as the triple point pressure (the temperature and pressure at which a substance can co-exist in equilibrium in the liquid, solid, and gaseous states) of sulphur is low. Flowers of sulphur is the purest form of sulphur and is recommended for products intended for internal use. Its color will be light yellow (lime) and smells like a lemon.

The powdered form of sulphur produced by sublimation; may contain up to 30% of the amorphous allotrope; used in rubber vulcanization, agricultural dust, pharmaceutical products, stock feeds. Sublimed sulphur/"Flower of Sulphur" may help as a topical scabicide and antiparasitic agent.

Also, it helps in quick skin healing, and people usually mix it with cold cream. It may be widely used to treat many skin problems like acne, sores, insect bites, rashes, bacterial infections, bedsores, dermatitis, eczema, fungus/yeast infections, psoriasis type problems, ringworm, wounds that won't heal and more.

CONCLUSION

Among the various methods mentioned for *Gandhaka Shodhana*, the best method may be *Urdhwapatana* method as purest form of *Shuddha Gandhaka* can be obtained from this method. Also, method and media should be chosen as per the need by our *Yukti*, as the indications to each *Shodhana* procedure is not mentioned.

Thus, it can be concluded that, *Shodhana* mentioned in *Rasashastra* texts is to make *Gandhaka* absolutely non-toxic by removing the impurities and to improve the quality of material, to enhance its therapeutic efficacy, to bring *Laghutva*, to make *Gandhaka* palatable, to make its therapeutic actions broad-based and these purification methods remove impurities not only physically and but also brings suitable chemical changes without producing any harmful effects on internal/external administration.

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How to cite this article: Dr. Malavi Shayan, Dr. Praveen Kumar H. Recapitulation of Gandhaka Shodhana. J Ayurveda Integr Med Sci 2020;4:177-181.

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

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