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# A critical study of *Gandhaka Shodhana*

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## ABSTRACT

*Gandhaka* or Sulphur is a non-metallic solid element found in nature. *Gandhaka* or Sulphur is required in human body for proper functioning. It is the third most abundant mineral (after calcium and phosphorus) based on percentage of total body weight. It is the sixth most abundant macro mineral in breast milk. It is present in saliva, bile, protein, amino acids, and insulin. Sulphur is mainly present in sulphur containing amino acids like cystine. *Gandhaka* in the body purifies blood, aids healthy digestion, and prevents toxic build-up. In Ayurveda, *Gandhaka* is used in the treatment of variety of diseases since time immemorial. It as a free element cannot be utilized by the body, so in Ayurveda, first it is detoxified to get *Shuddha Gandhak*, and then given *Bhavana* of herbal ingredients that make it suitable for use. *Shuddha Gandhak* is combined with *Shuddha Parad* or purified mercury to form *Kajjali* which is further used to prepare *Ras-Aushadhi*. In combination with mercury, it is used in almost all diseases.

**Key words:** *Gandhaka Shodhana*, *Sulphur Purification*, *Godughda*

## INTRODUCTION

*Gandhaka* is included under *Upasas* by all the *Rasa Granthas*. *Gandhaka* is the principal material used for making the most important preparations like *Rasalinga*, *Rasabandhas*. In modern science it similar to Sulphur. Sulphur is known since ages, in *Brahatrayi*, Sulphur is used in several diseases as a therapeutic agent. Later, after 7th century A.D. Sulphur was used extensively both in *Dehavada* (in maintaining the health and eradicating the diseases) and *Loha Vada* (converting lower metals into gold and silver).<sup>[1]</sup>

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Synonym of *Gandhaka* is *Shulbari* i.e., *Tamrashatru*. It is an essential agent for the various processes of *Parada Samskaras*, *Marana*, *Jarana* and *Bandhana* etc. Mercurial preparations without *Gandhaka* are considered to be more toxic. The mythological origin<sup>[2]</sup> is explained as, the product obtained while churning *Ksheera Sagara / Samudra Manthana* along with *Amrita* (nectar). Different synonyms<sup>[3]</sup> like *Gandhapashana*, *Pamari*, *Kruragandha*, *Navanita Saugandhika*, *Gandhi*, *Bali*, *Gandhaka*, *Daityendra*, *Atigandha*, *Sugandhika*, *Balivasa*, *Gandha*, *Daityendra* and *Kushtari* etc. In ancient texts mentioned *Graha Lakshnas* of *Gandhaka* as the colour of genuine *Gandhaka* should resembles that of the tail of parrot (greenish yellow).<sup>[4]</sup> It should be smooth, hard and unctuous. It should be having the luster of *Kapikacchubeeja* and *Navanita* (soft to touch). For *Rasayanartha* and *Loha Vadartha*, it should be translucent like the fruits of *Amalaki* (*Amalasara Gandhaka*).

The pharmacological and therapeutic properties explained in Ayurveda are;

*Rasa*: Madhura,<sup>[5]</sup> *Katu*, *Tikta*, *Kashaya*

*Guna*: *Ushna*, *Sara*, *Snigdha*

*Virya: Ushna*

*Vipaka: Katu*

*Karma: Deepana, Pachana, Vishahara, Jantughna*

*Dosha Prabhava: Kapha Vatahara, Pittavardhaka.*

*Vyadhi Prabhava: Kandu, Visarpa, Krimi, Kustha, Kashaya, Pleeha, Rasayana.*<sup>[6]</sup>

The modern view of *Gandhaka* (Sulphur)<sup>[7]</sup> Aryans, Greeks, Romans and Indians used it for fumigation and as medicine. It is estimated as the 9<sup>th</sup> most abundant element in the universe. The general properties of sulphur are:

Name - Sulphur

Symbol - S

Hardness - 1.5 to 2.5

Boiling point - 440.60°Celsius

Melting point - 112.80° Celsius

Atomic Number - 16

Atomic mass - 32.06

Specific gravity - 1.9 to 2.3

## AIM AND OBJECTIVES

1. Review the classics for *Gandhaka Sodhana*
2. Analyze the *Gandhaka Sodhana* methods

## MATERIALS AND METHODS

There are different methods of *Gandhaka Shodhana* available in classical of *Rasagranthas*. Among these some methods are described here-

1. **Swedana** : *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.<sup>[8,9]</sup>
2. **Dalana and Vastragalana** : A *Mrut Patra* 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.<sup>[10]</sup>

3. **Kurmaputa** : 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*.<sup>[11-13]</sup>
4. **Bhavana** : 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*.<sup>[14]</sup>
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.<sup>[15]</sup>
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*.<sup>[16,17]</sup>

## DISCUSSION

The discussion section is one of the final parts of a research paper, in which an author describes, analyzes, and interprets their findings. In this article discussion based on methods used in *Sodhana* of *Gandhaka*.

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. *Swedana* is one such process that makes the drug biocompatible by converting it into an organometallic complex. During *Swedan Karma* following actions seen - Reduce hardness and biochemical changes favorable to body. In *Dalana* two methods described here 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.

*Bhavana* helps to extract special *Gunas* by doing *Samskara*. *Mardana* procedure employed in *Bhavana* is responsible for *Gunavardhana* and which in turn 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*.

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.

In *Damaru Yantra Vidhi / Urdhwapatana* of *Gandhaka* - 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

Sulphur is used widely in therapeutic hence it's important to use it after purification. To get desired therapeutic effect and to lessen the untoward, toxic or harmful effect caused after its internal administration. The colour changes occurred can be suggestive of removal of some of the physical and chemical impurities from Sulphur in the form of sand particles and loss during washing. 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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