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# Review on Gandhaka Druti: An Unexplored Herbo-mineral Formulation

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# **ABSTRACT:**

Gandhaka is a Rasa-dravya that is commonly used in Ayurvedic practice. One of the most unique dosage forms involving Gandhaka is "Gandhaka-druti," which is a herbo-mineral formulation with an oil base indicated in various diseases. Despite its applicability in different diseases and promising results with minimum dose, the various methods of its preparation and entirety of its indication need to be explored. The present study is an effort to compile different textual references related to the formulation pertaining to its preparation and applicability beyond skin diseases along with recent research updates in order to pave way for the Ayurvedic fraternity to make utmost use of this wonder drug. Through thorough review, 13 different varieties of Gandhaka druti was obtained from different literature and also 8 different studies related to this. Most of the study was based on the popular method and other indications are still unexplored. Furthermore, research based on various indications is required in Ayurveda. The present study has reviewed the scope from the classical texts to emphasize the application of Gandhaka druti in various conditions rather than the skin disorders.

**Key words:** Gandhaka Druti, Herbo-mineral formulation, Druti kalpana

## INTRODUCTION

Druti Kalpana are the processes that convert hard and dense metals and minerals into a liquefied state after processing with specific herbs and intense heat, with characteristics such as Nirlepatvam (Nonstickiness), Drutatvam (Liquified state), Tejastvam (Lustrous), Laghuta (Lightness), Drutam Yogasca sutena (Mixes quickly with mercury)<sup>1</sup>.

Gandhaka Druti is a unique Herbo-mineral formulation with wide range of indications. Gandhaka (Sulphur) and its different preparations are well known drugs of Ayurveda used in Kshudra Kushta (A type of skin disease) and other skin disorders especially Gandhaka druti and Gandhaka

taila. There are different references of Gandhaka Druti is available in classics like Rasa Ratna Samuchchaya, Rasa Tarangini, Rasendra Chintamani, Rasa Yoga Sagara and Ayurveda Prakasha etc, which have indication for Kasa (Respiratory problems), Pandu (Anaemia), Pama (Scabies), Vicharchika (Eczema), Vipakva karna Nadi (Otitis), Amavata (Rheumatoid arthritis), Kshudra Kushta (Skin diseases) and for Rasayana (Rejuvenation) purpose as well. Some of the preparations are same and is called Gandhaka taila instead of Gandhaka druti. In the present study we are tried to combine all the Gandhaka druti preparations explained in the classics and its critical



appraisal.

## MATERIAL AND METHODS

To learn more about *Gandhaka Druti* preparations, many *Rasashastra* classic literatures were reviewed. Previous articles on the same topic in various journals and electronic media were also combed through. *Gandhaka Druti* history and alternative preparation methods are gathered as well as a critical evaluation of the formulation.

# **OBSERVATIONS AND RESULTS**

#### History of Gandhaka Druti:

For mercurial process, it was first mentioned in the Rudra Yamala Tantra<sup>2</sup> and Vangasena has adopted it as a means of treatment<sup>3</sup>. Later works, such as Rasakamadhenu, Rasa RatnaSamucchaya etc adopted and changed the formula. Rasa Tarangini, RasaKamadhenu, and others termed *Gandhaka Druti's* formula as *Gandhaka Taila*.

# Method of preparation of Gandhaka druti:

Different method of preparation is explained in classics for *Gandhaka Druti*. Different ingredients and materials used for *Gandhaka druti* are explained in table no 1 and 2. Indication for *Gandhaka druti* is explained in table no 3.

1. Varti method<sup>4</sup>: Suddha Gandhaka (Purified sulphur) and other specified drugs are to be sprinkled over a cloth and rolled from one end to another to form a Varti (candle). This Varti (candle) is tied with a thread and immersed in a beaker containing taila for 3 hours. Varti (candle) is removed from the beaker, made to hold at the middle and ignited from both the ends. The dropping oil collected from burning Varti (candle) is called Gandhaka Druti.

# Cloth specifications for *Varti* (candle) preparation:

- a) Plain white coloured clean cloth with 1 aratni pramana (Approx. 16.5" × 16.5").
- b) Cloth smeared with Arka Ksheera and Snuhi Ksheera.
- c) Cloth smeared with Swarasa of Shyama Dhatura, Surasa, Bilwa, Kasamarda, Punarnava, Durva, Pippali, Eranda, Vasa, Somaraji, Tila parni and Arka.
  - 2. Bhavana Method<sup>5</sup> (Trituration): In this method, Gandhaka (Sulphur) is given Bhavana (Trituration) of prescribed drugs.
  - 3. *Puta paka* method<sup>6</sup> (Incineration): In this, Gandhaka (Sulphur) is given Bhavana of mentioned drugs and subjected to *Puta Paka* (Incineration).
  - 3. *Krithrima varti* method<sup>7</sup>: In this, *Kshara* (Alkaline substance) is added in *Gandhaka* (Sulphur) then kept for *Sandhana* (Fermentation) for 21 days.
  - 4. Soxhlet extraction method<sup>8</sup>: In this, the mentioned drugs

are subjected for extraction separately and mixed together in given ratio.

5. Heating and Mixing method<sup>9</sup>: In this, specified quantity of *Gandhaka* (Sulphur) melting in the taila.

## Table No: 3 Indications of Gandhaka druti's

#### Research updates related to Gandhaka druti:

- Classically prepared Gandhaka Druti and evaluated it for antibacterial and antifungal activity by invitro method (diffusion method). Bacteria such as S. aureus and P. aeruginosa showed resistance to Gandhaka druti, however the fungus C. albicans showed sensitivity with an 18-mm zone of inhibition<sup>22</sup>.
- Classically prepared Gandhaka Druti & Gandhaka Taila is evaluated for its clinical efficacy on scabies – single blind clinical study. The findings indicated that both medications are efficient against scabies, however Gandhaka Taila was found to be somewhat more effective<sup>23</sup>.
- Rasendra chudamani, RasaRatnaSamucchaya, Ayurvediya Khanija Vigyaan and Vangasena references are followed and four forms of Gandhaka druti was created with the reference. According to the findings, Rasendra Chudamani's method was simple to implement and yielded the highest possible return<sup>24</sup>.
- Gandhaka taila prepared with the Murchita katu taila & Amurchita katu taila, and compared the quality control parameters by physico-chemical analysis. Quality, efficacy and stability concerned, Gandhaka taila prepared with Murchita Katu taila is better than the one prepared with Amurchita Katu taila<sup>25</sup>.
- A clinical trial was conducted to determine the role of *Gandhaka druti* paint in the treatment of Tonsilitis. Tonsillitis patients aged 2 to 16 years were chosen for the study. *Gandhaka Druti* paint was administered to all of the patients in a single group. Inflammations, throat pain, fever, swallowing difficulty, and cough were used to assess the therapy's efficacy. The effectiveness of the present research indicated promising outcomes that were statistically significant. Finally, the article found that applying *Gandhaka Druti* to inflamed tonsils may provide great alleviation from Tonsillitis<sup>26</sup>.
- Clinical Trial was conducted on the Effect of Gandhaka Druti Local Application in the Treatment of Kitibha (Psoriasis). With clinical symptoms such as scaling, redness, skin thickness, and itching, 30 patients were chosen for the study. Significant (p < 0.001) reduction in symptoms such as loss of sweating, plaque size, scaling, blackish discoloration, itching, dryness of skin, blisters,</li>

patches, and redness after application was observed. The study concluded that Gandhaka druti is effective in *Kitibha* (Psoriasis) for local application<sup>27</sup>.

- A case study was carried out in the management of Vicharchika by Gandhak Druti Followed by Virechana (Purgation) with complaints of Kandu, Karsya, Rukshata, and Vedana. In the study, patient was first subjected to Koshtha Shuddhi which is done by Haritaki Churna orally at bed time for initial 15 days. Then after that Gandhak Druti, Arogyavardhini Vati, and Guduchi ghana Vati is given orally for 30 days and Shatadhoutha Ghrita for external application. Patient got significant relief after 4<sup>th</sup> follow up. The study concluded that Gandhak druti is very useful in Vicharchika followed by Shodhana Karma i.e., Mrudu Virechana and some medication<sup>28</sup>.
- Screening of anti-bacterial and anti-fungal activity of *Gandhaka druti* was carried out against bacteria like *Staphylococcus aureus*, *Pseudomonas auregenosa* and *E coli* and fungi like *Aspergillus niger*, *Cryptococcus neoformans*, *Candida albicans* and *Trycophytum rubrum* taking Fluconazole as standard for comparison. *Gandhaka druti* showed a significant zone of inhibition against three strains of bacteria and four strains of fungi when compared to Fluconazole standard. Antibacterial activity was significant compared to antifungal activity<sup>29</sup>.

## DISCUSSION

Different methods of preparation have been mentioned in several classics, and the recommendations vary. Despite the fact that *druti kalpana* is primarily used in *Parada samskaras* (Processing of mercury), *Gandhaka druti* has a variety of clinical applications that have been described in the classics. After any drug of mineral origin is melted at a specific high temperature, it eventually solidifies when the temperature drops. As a result, melting alone through high heat cannot be labelled as "*Druti*," because by definition, a *Druti* must retain its liquidity even after cooling.

Gandhaka druti is commonly made using Gandhaka and Trikatu/Rajika churna. Gandhaka is primarily used to treat skin diseases and as a rasayana. Trikatu and Rajika work as bio-potentiators<sup>30</sup> of Gandhaka, increasing bioavailability and thereby its efficacy. Due to the properties of Trikatu and Rajika, we may understand that they are synergistic to Gandhaka in the formulation. Some acharyas have added additional ingredients to strengthen the formula based on its medicinal value. Gandhaka possesses the attributes of Atirasayana, Kandughna, Kushtaghna, Visarpaghna, Deepana, Pachana, Amahara, Soshana, Vishahara, Krimihara, Jarahara, Mrutyuhara,

Veeryavruddhi, and Deerghaayu<sup>31</sup>. In addition, tila taila is widely employed for the varti technique and is advised for kapha-vata haram, deepanam, medyam, twachyam<sup>32</sup>, and so on. Some authors used katu taila instead of tila taila and used mainly for kandu, kushta rogas and more amapredominant avashtas. Theekshnatva of katu taila is more than tila taila and is effective for this indication due to its lekhaneeyam, kapha-vata deepaneeyam, haram, medhaghnam, kandughnam, kushtaghnam, diminishing svitra, and kota<sup>33</sup>. Ghrita's qualities include rasayana, madhura rasa, seetha virya, vata-pitta hara, kanthya, chaksusyam, agnideepanam, swara-smruti karam, balakaram, medyam, ayushyam, guru, snightam, kshayaharam, visarpaharam, vrushyam34 used with Gandhaka to improve body lustre, strength, and good Agni etc. So, based on the therapeutical indication, acharyas used different oils for dipping the varti. pharmaceutical and clinical research are undertaken for Gandhaka druti (the popular method), primarily for skin diseases. Other indications are still unexplored. Furthermore, research based on various indications is required in Ayurveda. The present study has reviewed the scope from the classical texts to emphasize the application of Gandhaka druti in various conditions rather than the skin disorders.

## **CONCLUSION**

A thorough review of the classical *Rasashastra* literature on *Gandhaka Druti Kalpana* has been conducted. The study examined several procedures given in classical literature for the preparation of *Gandhaka Druti*, as well as various studies done. Variations in preparation procedures may be attributed to their use in various ailments.

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Table No: 1 Different Gandhaka druti's explained in the classics

Sl. No	Grantha	Name	Ingredients	Method
1.	R.R.S <sup>10</sup> – I	Gandhaka Druti	Su. Gandhaka – 1 p Trikatu Churna – 1/16th p	Varti method
2.	R. R. S <sup>11</sup> – II	Gandhaka Taila	Arka Ksheera, Snuhi Ksheera Shu. Gandhaka Navaneeta.	Varti method
3.	R.R.S <sup>12</sup> – III	Gandhaka Druti	Gandhaka powder - 10 Nishka Tuttha - 10 Nishka Abhraka Bhasma - 10 Nishka Tamra Bhasma - 10 Nishka Shilajeet - 1 Karsha Nilanjana - 1 Karsha Ardaraka Juice QS	Putapaka method
4.	R.T <sup>13</sup> – I	Gandhaka Taila	Arka Ksheera Snuhi Ksheera Shu. Gandhaka Navaneeta.	Varti method
5.	R.T <sup>14</sup> – II	Gandhaka Taila	Su. Gandhaka – 1 p Trikatu Churna –1/16 <sup>th</sup> p	Varti method
6.	Rasendra Chintamani <sup>15</sup>	Gandhaka Taila	Arka Ksheera, Snuhi Ksheera Shu. Gandhaka, Navaneeta	Varti method
7.	Rasa Yoga Sagara <sup>16</sup> – I	Gandhaka Druti	Shu. Gandhaka Churna – 1 p Rajika – 1 p Ghrita	Varti method
8.	Rasa Yoga Sagara <sup>17</sup> -II	Gandhaka Druti	Swarasa of Shyama Dhatura, Surasa, Bilwa, Kasamarda, Punarnava, Durva, Pippali, Eranda, Vasa, Somaraji, Tila parni and Arka. Shu. Gandhak- 4p Ghrita- 16p	Varti method
9.	Vangasena Samhita <sup>18</sup>	Gandhaka Druti	Shu. Gandhaka Churna – 1 p Rajika – ¼ p Varti m	
10.	Ayu. Prakasha <sup>19</sup>	Gandhaka Kalpa	Shu. Gandhaka – 1 p Varti metho Trikatu Churna –1/16th p	
11.	Ayurvediya Rasashastra <sup>20</sup>	Gandhaka Druti	Su. Gandhaka – 1/16 <sup>th</sup> p Taila – 1 p	Heating and mixing method
12.	Rasa Kamdhenu <sup>21</sup>	Gandhaka Druti	Su. Gandhaka – 1p Devadali swarasa, Kakamachi swarasa – QS	<i>Bhavana</i> Method
13.	Ayurvediya Khanij Vigyan	Gandhaka Druti	Gandhakamla (H2 SO4) – 3 ounce Alcohol - 90% 29½ ounce Tincture Ginger (Zingiber officinale) - 10 ounce Tincture Dalchini (Cinnamomum zeylanica) - ½ ounce	Soxhlet extraction method

Table No: 2 Oil used and Time duration for dipping of varti.

Sl. No	Grantha	Oil used for dipping of Varti	Time Duration for
			Dipping in oil
1.	R.R.S	Tila Taila	3 hours
2.	R.T	Katu Taila	3 hours
3.	Rasa Yoga Sagara – I	Ghrita	3 hours
4.	Vangasena Samhita	Ghrita	3 hours
5.	Ayu. Prakasha	Katu Taila	3 hours
6.	Rasa Yoga Sagara – II	Ghrita	-
7.	Ayurvediya Rasashastra	Tila taila/ Katu taila/ Nimba taila/ Narikela taila	-

# Table No: 3 Indications of Gandhaka druti's

Table No. 5 Indications of Gananaka articles				
Grantha	Indication			
R.R.S – I	Deepana, Ama nashana, Cures Kasa, Shwasa, Shula and Sangrahani. Brings about laghuta in shareera.			
R. R. S – II	Cures Kushta, Delays Jara, Agni kari and Veerya Vruddhi.			
R.R.S – III	Used for Sarvanetramaya, Cures Vrana, Kushta, Pillam, Kacham, Kukunakam, Dadru, Kitibha and Pama etc.			
R.T – I	Bahya Prayoga in Kshudra Kushtadi Tvak Roga			
R.T – II	Increases Pachakagni, aama dosha hara, kasa shwasahara, Grahani roga nivaraka and Aama vata roga nashaka.			
Rasendra Chintamani	Lepanartha and Bhakshanartha in Kushta.			
Rasa Yoga Sagara – I	Its regular use improves body lustre, strength and good Agni.			
Rasa Yoga Sagara – II	Continuous usage over a period along with appropriate dietary regimen, cures different types of Kushta, Prameha, Kshaya, Kamala, hridroga, garahani, pandu, Kasa, Shwasa, Bhagandhara, Vividha Vrana, Krumi Roga, Shula, akshi, Vadana, Karna aasya aatanka, agni mandya, Shandya, Rakta Pitta etc.			
Vangasena Samhita	Its regular use improves body lustre, strength and happiness in the body			
Ayu. Prakasha	Increases Pachakagni, Ama dosha hara, Kasa Swasa hara, Grahani roga nivaraka and Aama vata roga nashaka.			