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### Pharmaceutical Study of *Gandhak Druti* and *Gandhak Taila* by different Classical Techniques

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#### ABSTRACT

*Druti kalpana* is one of the important formulations in *Rasashastra*. *Druti* of *ratna* and *dhatu*s are mentioned in various *Rasa* texts but the preparation procedure is so difficult. Among the *druti kalpana*, *gandhak druti* is very easy to prepare and its efficacy in skin disorder is well-known to Ayurvedic practitioners. In the present study *gandhak druti* was prepared by several classical methods. Four types of *gandhak druti* were prepared and analyzed by the organoleptic parameters. Various methods of preparation of *gandhak druti* are available in classics. The method which was described by the *Rasendra Chudamani* was easy to prepare. The maximum yield was also observed in the procedure mentioned in *Rasendra Chudamani*.

#### KEYWORDS

*Gandhak, Druti, Taila, Kalpana, Rasendra Chudamani*



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## INTRODUCTION

The nature possesses an immense valuable and powerful medicine in the form of metals, minerals and plants. But, most of the drugs as such are not absorbable into the biological system, until and unless they have certain modifications. The pharmaceutical techniques to make these drugs absorbable therapeutically are called as *kalpana* or pharmaceutical process. By applying these pharmaceutical techniques number of *kalpanas* developed, one of them is *druti kalpana*. The strategic technology for preparing *drutatva* of prescribed drugs (liquified state) in *rasashastra* is designed as *druti kalpana*.<sup>1</sup> *Gandhak druti* is one among the *druti kalpana* where the sulphur is converted into stable liquified state.

*Acharya Vangasena* was first scholar who mentioned the formula of *Gandhak Druti* in *rasayan* for the purpose of treatment<sup>2</sup>. A similar preparation but with a different name in *Rasendra Chudamani* was

prepared by changing its ingredients<sup>3</sup>. This formula was gradually adopted by successive authors. *Rasaratna samucchaya* mentioned the preparation of *gandhak druti* in two places, in the previous one<sup>4</sup> was same as the formula of *Rasendra chudamani*. The other variety was different in formula<sup>5</sup>. *Rasakamdhenu* also described two types of *gandhak druti*. The ingredients of the second method of preparation of *gandhak druti* are different<sup>6</sup>. In the present scenario *Kaviraaj Prataap Singh* invented a new formula which can be used as *gandhak druti*<sup>7</sup>. In the present study *Gandhak druti* was prepared by four different classical methods.

## MATERIALS AND METHOD

*Gandhak druti* and *gandhak taila* were prepared by the reference of *Vangasena*, *Rasendra chudamani*, *Rasa ratna samucchaya* and *Ayurvediya Khanija Vigyaan*. (as shown in Table no 1)

**Table 1** The formula of *gandhak druti* and *gandhak taila* was named as F1,F2.F3,F4.

F1		F2		F3		F4	
Varti method		Varti method		Varti method		Soxhlet extraction method	
1.Purified Gandhak	48g	1.Purified Gandhak	100g	1.Arka ksheer	378 ml	1.Gandhakamla(H <sub>2</sub> SO <sub>4</sub> )	3 Ounce
2.Rajjika	12g	2.Trikatu	6.25g	2.Snuhi Ksheer	532ml	2.Alcohol 90%	29.5 Ounce
3.Trikatu	12g	3.Tila taila	1 L	3.Purified Gandhak	100g	3.Tincture of dry ginger	10 Ounce
4.Ghrita	192g			4.Navaneeta	300 g	4.Tincture Cinnamon	½ Ounce

For preparation of *gandhak druti* and *gandhak taila* 600 g *amlasar gandhaka*

was purified in *go dugdha* and *go ghrita*.<sup>8</sup> Milk, 2.4 L was taken into a vessel; it was

then covered with a clean cotton piece of cloth and tied. The *asuddha gandhak* was taken in a iron pan, Some amount of *ghrita* was heated and melted along with the *gandhak*. It was then immediately poured through a cloth into the milk. The *gandhak* was collected from the bottom of the vessel containing milk. The process was repeated for 3 times using fresh ghee and milk. After completion of the process, purified *gandhak* was taken out, washed with hot water and dried. (Table no 2.)

**Table 2** Observations during *Gandhak Shodhana*

S. No.	Parameters	Observations
1.	Initial wt.of <i>Gandhak</i>	600g
2.	Initial wt of milk	2.4 L
3	Initial wt.of <i>ghrita</i>	150g
4	Temparature of <i>gandhak</i> at melted stage	$\pm 116^\circ$
5	Colour of <i>gandhak</i>	Yellow granules
6.	Loss of <i>gandhak</i>	25g
7.	Duration	3 hour

### ***Gandhak druti* and *gandhak taila* preparation:**

*Gandhak druti* and *gandhak taila* was prepared by two different methods. 1. Varti method (F1, F2, F3) 2. Soxhlet extraction method (F4)

#### 1. Varti method(F1,F2,F3):

In this process,the *churna dravya* of *trikatu* were sprinkled /pasted over the cotton cloth(1 *aratnee praman*) and was rolled gradually from one end to another end till forms *varti*(candle).This *varti* was then tied with a thread and immersed in a beaker containing *tila* oil.(except F1 and

F3, *Ghrita* and butter were used instead of *tila taila* respectively. *Snuhi* and *arka ksheer* smeared cotton cloth was used here) for a period of three hours. The *varti* removed from beaker and was holded with a forceps at one end and the other end is ignited by fire. The oil was collected in a glass bottle.

#### 2. Soxhlet extraction method (F4):

In this process the prescribed drugs were subjected for extraction separately and then mixed together in prescribed ratio. Accurately weighed 200 g dried coarse powder of *Shunthi (Zingiber officinale)* taken into a soxhlet apparatus and unit sample was continuously extracted with 500ml of alcohol (90%) for 24 hours.

This process was repeated twice and the samples were collected and stored in a clean narrow neck airtight bottle. The same procedure was applied for the preparation of tincture cinnamon (*Cinnamomum zeylanicum*).

After preparation of tincture ,accurately measured 29.5 ounce (885ml) alcohol was taken into a clean dried round bottom flask and gradually 3 ounce conc. sulphuric acid was poured slowly and the tincture was poured carefully from the side of the flask then added tincture of Dry Ginger 10 ounce(300ml) and tincture cinnamon ½ ounce(15ml) and stirred continuously and slowly. Lastly, the drug

was transferred into a clean and dried airtight bottle.

## RESULTS AND OBSERVATIONS-

In F1 method, the colour of the *gandhak* was shining yellow and the *ghrita* was whitish in colour. The colour of the prepared *druti* was brownish in colour. Total *druti* was obtained 150ml. In F2 method, on observation the colour of the *gandhak druti* was brownish dark, burnt smell of sulphur present in the final product. Total *gandhak druti* was obtained 182 ml. In the F3 method, the final colour of the *gandhak druti* was light brown. Initially the plain cloth was 30g in weight, after *bhavana* of *arka* and *snuhi ksheer*, it became 67g. The final *druti* was obtained 98ml.

In the formation of *gandhak druti* by tincture method it was observed that colour of the alcohol turned to brownish due to tincture Ginger and tincture cinnamon. There was a distinct smell change in the alcohol, which may be due to transfer of active constituents present in the drugs used. Profuse smoke was also seen in the flask when conc. Sulphuric acid was added to alcohol during process. An exothermic reaction was also took place. Hence, Conc.

Sulphuric acid should be added slowly and gradually. The final yield was 1290ml.

## DISCUSSION

In the present study 4 types of *gandhak druti* were prepared. Though the formula no F3 is named as *gandhak taila* by the *Rasaratnasamucchaykar* but somehow it is same as the *gandhak druti* preparation. The yeild was more in the F2 method as in this method the *varti* was soaked in *til taila* for long duration. The method of preparation was also very suitable.

The soxhlet extraction method was newest method, but in this process the extraction process was much complicated. The colour of *gandhak druti* prepared by F1 is slightly light in color due to the whitish colour of *ghrita*. In the F2 process *gandhak druti* was blackish or dark brown might be due to the presence of *trikatu*, which is dark in color. The *trikatu* may be burnt during preparation of *druti* and the carbonated part was mixed in the *taila*. In F3 process collection of the *snuhi* and *arka ksheer* was difficult one. By the overall work it can be concluded that the F2 Procedure of *gandhak druti* is the best method of preparation of *gandhak druti*.

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