

**CRITICAL ANALYSIS OF GANDHAKA TAILA WITH SPECIAL
REFERENCE TO IT'S APPLIED ASPECTS OF PHARMACO-
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ABSTRACT

Introduction: *Gandhak* is one of the important materials extensively used in Ayurvedic practice of medicine, in different dosage form like, suddha gandhak, gandhak vati, gandhak taila, gandhak Rasayan etc. Among different dosage form gandhak taila is potentially effective in various skin disorders, whether it is in chronic or in acute stage. **Aim and Objective:** Many literatures are pronouncing the pharmaceutical preparation of gandhak taila with different methods. Hence in the current literary research, it is aimed to sort out apparently, an easy and convenience method of manufacturing by critically analysing different processes described in the literatures with respect to cost and availability of genuine raw materials, amount of labour and time factor required; along with processes leniency. **Methodology:** Different manufacturing processes for Gandhak taila were studied in different ancient literatures and in published articles of different journals. The pharmaceutical,

therapeutical and analytical data were gathered and critically analysed to sort out apparently an easy, suitable and rational method for manufacturing of gandhak taila on the basis of available literary data. **Result and Discussion:** Gandhak taila is a potential ayurvedic medicine used to treat different disease conditions, specifically various skin disorders. As there is multiple method of manufacturing by using different raw materials were described in

the literature, it is necessary to have right choice for selecting the appropriate method of preparation having rational physico-chemical properties for its intended use. In current literary research work, data available from different sources were analysed and it is tried to explore the most suitable pharmaceutical method. **Summary and Conclusion:** On analysing the collected data it is observed that the pharmaceutical manufacturing method of *gandhak taila* described in *Rasaratnasamucchaya*, *Rasatarangini*, *Rasendra Chintamani* may be suitable in all aspects. However this review article is based on critical analysis of currently available literatures and certain published analytical and clinical research data, available in online platform, hence the rational revalidation is always open with more data and new research.

INTRODUCTION

Gandhak (sulphur) is one of the main substances in ayurvedic medicine after *parada* (mercury). It has been valued for its strong healing properties since ancient times. During the *samhita* period, *gandhak* became widely used both on the skin and as an internal medicine.^[1] It was known to help treat many health issues and appeared in various traditional remedies. Consuming *suddha gandhak* eliminates all types of diseases such as *kustha*, old age diseases and early age death. It stimulates the *agni*, possesses *ushna veerya*, and increases vitality and *veerya* in the body.^[2]

Gandhaka taila is an ayurvedic oil prepared by using sulphur (called *gandhaka*) and other medicinal herbs. It has traditionally been used to treat skin problems. The main ingredient, *suddha gandhaka*, has strong antimicrobial, anti-inflammatory, and wound-healing effects.^[3,4] When combined with oil and other herbal materials, it helps the medicine absorb better through the skin and augment the desired therapeutic effect.

There are several references which have been mentioned in the ancient text about *gandhak* and its medicinal properties like *suddha gandhak* is potentially effective to treat the diseases like *kustha*, *pama*, *vicharchika* etc.^[5,6] The topical application of *shuddha gandhak* on areas suffering from inflammation due to *amavata* and pain associated with *sciatica* has been observed to provide symptom relief^[7] and consuming *suddha gandhak* alongside ripe banana (*pakka kadali phala*) has been traditionally recognized as beneficial for various skin ailments.^[8]

Gandhak taila described in different literatures contain suddha gandhak as chief material and other different raw materials of herbal origin and animal product. Preparation of gandhak taila involves collection of cow's milk, butter, arka ksheer, snuhi ksheer, trikatu, goat milk and mustard oil for one and other method.

MATERIALS AND METHOD

Gandhak taila, available in ancient rasa literatures i.e. rasaratna samuchhaya, rasataranginee, and rasendra chintamani were reviewed critically for the ingredients, pharmaceutical manufacturing process and its therapeutic implication.

Certain online available article on physico-chemical analytical discussion of gandhak taila were reviewed to collect the physico-chemical analytical data responsible for the rational therapeutic effect and shelf life of the medicated oil. The journals/publications followed are as mentioned under.

Table Showing Different Publication on Analysis of Gandhak Taila

Name of Journal	Name of Article with publication details	Analytical data			Author (s)
International Journal of Ayurvedic and Herbal Medicine ^[9]	Article: Gandhaka Taila, Its Analytical Evaluation Publication : Ijahm, Volume 8, Issue 4, 2018, Pages 3271–3277 DOI: 10.31142/ijahm/v8i4.01	Parameters	Initial		Aiswarya A, Nayak Dinesh J
		Specific gravity	0.940		
		Viscosity	55.28		
		Refractive index	1.486		
		Acid value	1.671		
		Iodine value	6.67		
		Saponification value	70.032		
		Peroxide value	0.797		
		Rancidity test	Negative		
Journal of Ayurveda and Integrated Medical Sciences ^[10]	Article: Preparation of Gandhak Taila by Patalyantra method and Pharmaceutico-analytical Study of Gandhak Taila cream Publication : Jaims, Vol , Issue 3, April 2022 DOI: 10.21760/jaims.7.3.6	Test	Values		Sachin S. Sheth, Gangaprasad R. Asore, Pooja A. Tambe
		Colour	Dark Brown		
		Odour	Charred		
		Rancidity	Complies		
		Total Acidity	1.98 %		
		pH	5.48		
		Loss On Drying	71.46		
International Journal of Ayurveda & Medical Sciences ^[11]	Article: Analytical Study of Gandhaka Taila- An Approach to Standardization of Topically Applied	Parameters	G.T1	G.T 2	Himshikha Verma, Sameet Masand, Sudhaldev Mohapatra
		pH Value	6.0	6.0	
		Specific Gravity	1.043	1.030	
		Refractive	1.470	1.458	

	Medicated Oil Publication : IJAMS, Vol. 3, Issue 2, April–June 2018	Index			
		Acid Value	1.16	1.07	
		Saponification Value	45.28	45.75	
		Iodine Value	58.40	48.22	

METHOD

- The references of gandhak taila in ancient rasa literatures were studied and the ingredients, SOP for pharmaceutical manufacturing and therapeutic application were noted and critically analysed.
- The analysis was done with respect to availability of genuine raw materials, apparent cost of raw materials and process followed, amount of labour and time factor required; along with processes leniency.
- At first the raw drugs required were analysed by their number, collection and storing method along with possible therapeutic potency towards the said clinical implication; for each method.
- Cost of raw material procured for each method were analysed.
- Each method was evaluated with respect to required amount of time and labour.
- Physico-chemical analytical data of gandhak taila such as saponification value, acid value, peroxide value etc. available in online journal, platform for different method of manufacturing were analysed.

OBSERVATION AND RESULT

Gandhak taila described in available various literatures are studied by following the protocols specified in methodology. It is observed that there are 07 different types of gandhak taila are available in different Rasa literatures. Among 07 types 04 are described in Rasa Taranginee, 02 are described in Rasendra Chintamani and 01 is described in Rasaratna Samuchhaya.

Table showing different methods described in different Literature

Sl. No	Name of Gandhak Taila	Ingredients		Clinical use	References Search in these books	Special Remark if Any
		Metal/ Mineral	Herbal/ Animal product			
1.	Gandhak Taila 1	Gandhak	Cow Milk	Kshudra Kusta, Visharp, Raktadusti	Rasataranginee (8/94-95)	-----
2.	Gandhak Taila 2	Gandhak	<ul style="list-style-type: none"> • Ark Ksheer • Snuhi Ksheer 	Kshudra Kusta and Twaka Roga	Rasataranginee (8/96-98)	-----

			<ul style="list-style-type: none"> Butter 			
3.	Gandhak Taila 3	Gandhak	<ul style="list-style-type: none"> Trikatu <ul style="list-style-type: none"> Pippali Maricha Sunthi Mustard Oil 	Kasaswashar, Grahani Roganivarak, Aamvata, Increase Digestive fire	Rasataranginee (8/99-104)	<ul style="list-style-type: none"> Gandhak Churna 1 part & Trikatu 1/16 part. 3 drops of this Taila is used with Parada and <i>Paanpatra</i> (betel leaves) as anupaan
4.	Gandhak Taila 4	Gandhak	<ul style="list-style-type: none"> Palash seed Aja Ksheer 	Not exactly mentioned. May be for skin diseases.	Rasatarangini (8/105-108)	This Taila is same as Gandhak extract. 2 Ratti Taila, 1 Ratti Rasashindoor is mixed together on <i>Paanpatra</i> (betel leaves) for consumption.
5.	Gandhak Taila 5	Gandhak	<ul style="list-style-type: none"> Ark Ksheer Snuhi Ksheer Butter 	External & Internal application in Galita Kustha	Rasendra Chintamani (5/14-15)	-----
6.	Gandhak Taila 6	Gandhak	Cow Milk	External & Internal application in Galita Kustha	Rasendra Chintamani (5/17)	With the combination of suddha Parad, its <i>vatika</i> (pills) can also be prepared and used in the treatment of <i>galit-kushtha</i> (worsening skin diseases).
7.	Gandhak Taila 7	Gandhak	<ul style="list-style-type: none"> Ark Ksheer Snuhi Ksheer Butter 	Kustha	Rasaratnasamucchaya (3/43-44)	-----

N.B.-Rasatarangini - RT, Rasaratna samuchhaya – RRS, Rasendra Chintamani -R.Chi

It is also observed that Ark Ksheer, Snuhi Ksheer and butter are the common material used in all the texts but in different method. Cow's milk is used in Rasendra Chintamani and in Rasataranginee but not used in Rasaratna Samuchhaya. Mustard oil and Trikatu are used in Rasataranginee. Goat milk and palas seed are used in Rasataranginee. In one of the methods in each Rasataranginee and Rasendra Chintamani is prescribing the prepared gandhak taila with suddha parada and betel juice and in the form of pills with parada respectively, internally. In all the methods heating procedure is employed to achieve Gandhak taila.

Result and Critical analysis of different pharmaceutical process

- **Gandhak Taila 1 and 6**

These may be the easiest and suitable method of preparing *gandhaka* taila because it requires only milk. The ingredients which are used in preparation are easily available in the market and this process is less time consuming. The therapeutic use in the same process described in Rasataranginee is cost effective while clinical implication as per Rasendra Chintamani is costlier, because it requires suddha parada. Medicine is said to be used in *Kshudra kustha* and all type of skin disorders.

- **Gandhak Taila 2, 5 and 7**

Preparing *gandhak* taila with these methods is little tedious because it becomes difficult to collect the raw materials such as *Ark ksheer* and *Snuhi ksheer*. After drug collection, it is required to coat the cotton cloth 07 times in the latex of each plant, each coating essentially follows the drying of previous coating. The process though is not expensive but demands enough time drugs collection and to prepare the initial material to hold the gandhak and other materials for preparing gandhak taila.

- **Gandhak Taila 3**

This process is moderately cost-effective for small-scale production, but all the raw material used in this method are easily available in the market. For commercial scale, labour cost and mercury procurement may increase expenses, as suddha Parada needs to be mixed with gandhak taila for therapeutic use. Hence in this method the overall cost may increase.

- **Gandhak Taila 4**

The Patalyantra method for Gandhak Taila extraction is difficult and therapeutic administration is costlier because of using suddha parada.

Analytical data collected from various researches shows the product is stable and safe for external use when the said pharmaceutical procedure is properly followed with established ancient assessment criteria.

DISCUSSION

Gandhak taila is one of the most important therapeutic agents used for treating various skin diseases in current Ayurveda practice of medicines. It is almost always used as topical route of drug delivery system with some exceptions where it is used internally to cure bronchial tree diseases such as asthma, bronchitis, and chronic obstructive pulmonary disease (COPD).^{[12][13]} There are multiple pharmaceutical methods have been described in different ancient Ayurvedic literatures of different era. On compiling all the available methods in the ancient texts it is observed that there are 04 types of different methods are used for manufacturing Gandhak taila. While observing the pharmaceutical processes it is revealed most of the processing required heating process and another medium such as oil or butter to hold the therapeutic value of gandhak for achieving the final product to be used in patients. The process described in Rasaratnasamucchaya requires different types of alkali herbal materials such as Snuhi ksheera and Arka ksheera indicating the augmentation of therapeutic value of gandhak with the involvement of alkaline materials. But these processes require longer time duration and little difficult procedure of raw drug collections. The analytical findings of such gandhak taila obtained by different research scholars are.^{[9][10][11]} within the limit suggesting the ration clinical application. In the other hand the second method of preparation described in Rasendra Chintamani is quiet easier and involves heating and butter as the medium. This process is also less time consuming and reduces the labour cost and time cost effectively. The 3rd process though modestly cost effective and time effective but demands suddha parada to mixed up well for successful clinical use hence the overall cost effectiveness and rational clinical practice now a days is interrogative. The 4th process requires the specially designed tool i.e. patalyantra for the preparation of same medicine. It requires special attention and skill for achieving the product, else there is chance of burning out of all the materials. On quality control assessment through analytical study by various research scholar available reveals that the samples obtained after all the methods are within the physico-chemical characteristics suitable for human use. Hence 1st and 2nd methods may be considered suitable on the basis of current review so far as pharmaceutical conveniency is concerned. How ever wide study on clinical parameters would explore the actual effectiveness and ADR in the subject.

CONCLUSION

The therapeutic effectiveness is directly proportional to the quality standard at pharmaceutical level. The gandhak taila, prepared with use of alkali materials and butter may be suitable pharmaceutically but the clinical data is having significant role to rationalize the most suitable method for preparing gandhak taila.

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