



## Research Article

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### EVALUATION OF MICA (ABHRAKA) PURIFICATION AND DHANYABHRAKA FORMATION: A PHARMACEUTICAL STUDY

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#### ABSTRACT

Ancient Indian life science, Ayurveda, is once again in vogue. It was developed centuries ago by Indian masters. The medical community and patients accept Ayurvedic treatments, it is important to demonstrate their effectiveness through modern studies. Abhraka is a mineral mix that contains small amounts of silicon, magnesium, calcium, potassium, and aluminium. This research aims to analyse the pharmaceutical properties of Abhraka shodhana and Dhanyabhraka Nirman. The shodhana process for Abhraka was performed according to the method outlined in Rasa Ratna samuchchaya, using Triphala kwatha as the solvent. Shodhit Abhraka was utilized in Dhanyabhraka Nirman. Shodhana of Abhraka was carried out by quenching Abhraka in Triphala kwatha followed by Dhanyabhraka in same liquid media. Dhanyabhraka Nirmana further enhances the purification process by refining Abhraka into an even finer and more homogeneous powder. This extended form of shodhana ensures the mica is thoroughly purified and finely processed, making it suitable for subsequent procedures and incorporation into Ayurvedic formulations. Abhraka reached red hot stage at about 8340C after 55 minutes of heating, as found. About 7 hour is needed for seven-time nirvapa (quenching) of Abhraka. The solid content and alkalinity of the Triphla kwatha was boosted following shodhana process.

**Keywords:** Mica, Abhraka, Shodhana, Purification, Triphala kwatha, Dhaynabhraka nirman.

#### INTRODUCTION

Ancient Indian science of life, Ayurveda, is becoming popular once again. Indian gurus created it hundreds of years ago. To render Ayurvedic medicines more acceptable to doctors and patients who are ill, it is essential to show their utility in the context of modern experimental studies. The branch of Ayurveda involved in the manufacture of drugs is Rasa Shastra. After they were introduced, bhasmas and herbal mineral medicines became most sought after for treatment. With the creation of Rasa Shastra, several pharmacological methods were established, including shodhana (purification), marana (incineration), satvapatana (metal extraction), and bhavana (levigation). These methods aim to make medication safe and more effective. The therapies mentioned above use different plant-based media in the form of swaras (juice) or kwatha (decocotion). Metals have been increasingly emphasized in Rasa literature for therapeutic and alchemical functions. Among these, Abhraka (mica) occupies a pivotal place due to its rejuvenating (Rasayana), immunomodulatory, and therapeutic actions.

Abhraka is used in various forms in Rasa preparations. It is categorized based on colour and quality, with Shyama Abhraka (black mica) being the most preferred for medicinal purposes.

Before using Abhraka in formulations, it must undergo a series of processes to make it suitable and safe for internal use. Ayurveda classifies Abhraka into four categories: Pinak, Naag, Manduk, and Vajra. It is further classified into four types based on colour: Shweta Abhraka (white), Peeta Abhraka (yellow), Rakta Abhraka (red), Shyama Abhraka (black).

Raw Abhraka contains various impurities and toxic elements that can be harmful if consumed directly. Therefore, Shodhana is essential to eliminate physical and chemical impurities, enhance its therapeutic efficacy, and make it suitable for further processes like Marana (incineration).

#### Types of Shodhana

There are two types of shodhana process mentioned in Ayurveda treaties as Samanya Shodhana (general purification) and Visheshha Shodhana (specific purification). The textual references of Abhraka Shodhana can be found in texts such as Rasa Ratna Samuchchaya, Rasa Tarangini, Ayurveda Prakasha, and Rasa Hridaya Tantra.

The term Dhanyabhraka is derived from: Dhanya- grain (most often rice) and Abhraka- mica.

This step is a specialized procedure in the processing of Abhraka Bhasma, where mica is infused into grains and fermented to further soften it. It lowers the size of mica particles, aids in homogeneous heating during Marana, improves absorbability in the body, and serves as a secondary purification process.

In Ayurveda, Abhraka is utilized in the form of bhasma, which is a fine powder. Abhraka bhasma is a component of many revitalising formulas and is utilised in the treatment of a wide range of diseases. There have been a few studies on Abhraka bhasma and physicochemical characterization of Abhraka bhasma, but only a few of them have evaluated the influence of various media in shodhana, dhanyabhraka nirmana.

## MATERIALS AND METHODS

The raw material is procured from Pt. Khushilal Sharma govt. (autonomous) college and institute, Bhopal Pharmacy, Department of Rasa shastra evum Bhaishajya kalpana.

### Shodhana process

Abhraka shodhana was carried out following the procedure outlined in Rasa Ratna samuchaya 2/16. We used 1 kg of Abhraka and 14 litres of Triphala kwatha as the medium. An iron pan was put on a charcoal burner until it reached the right temperature. The Abhraka flakes were then heated on both sides until they turned red hot. After reaching this point, the flakes were dipped in the Triphala kwatha. Once the Abhraka was fully submerged in the medium for a few minutes, we strained the medium through an iron sieve. The softened Abhraka pieces were collected in an iron pan for the next quenching. This process was repeated seven times, with each cycle using a new batch of Triphala kwatha.



Figure 1: Raw Abhraka

### Procedure

The purification of Abhraka (mica) begins with the careful selection of thin, lustrous flakes that can be easily split. These

chosen flakes are then subjected to intense heating until they become red hot. Once adequately heated, the red-hot mica flakes are immediately quenched in Triphala decoction. This heating and quenching process, known as Niravapa, is repeated seven times, or as directed by classical Ayurvedic texts, to ensure thorough purification and detoxification. After the final cycle, the mica flakes are carefully collected and dried completely, making them ready for the use in further Ayurvedic pharmaceutical processes such as Marana (incineration).

### Liquids used in Shodhana

Different media are used based on the disease-specific application and textual instruction:

- Godughdh (cow milk)- Provides proteins, fat, and calcium that binds toxin particles reduce thermal stress and enhance biocompatibility of mica
- Triphala Kashaya - Commonly used, balances all three Doshas.
- Gomutra (Cow's urine)- Especially for Kapha and Vata disorders.
- Kanji- Softening and making metals brittle
- Badri Kwatha- Leaching out surface impurities and unwanted oxides from mica.

### Transformations in Abhraka Following the Shodhana (Purification) Process

Abhraka released fumes during the heating process. It became brittle after each nirvapa, breaking into smaller particles and turning into a coarse powder after seven nirvapa. The lustre intensified, and the colour changed to a greyish black. There were changes in the media after the shodhana (Purification) process. With each nirvapa, the temperature of the media raise, and its colour became darker.



Figure 2: Shodhana process of Abhraka -A. Heating of Abhraka, B. Triphala kwatha, C. Quenching, D. Abhraka after quenching

Table 1: Changes in Abhraka after shodhana

Initial wt. (gm) Before shodhana	Final wt. (gm) After shodhana	Triphala kwatha Required	Duration (Hours)
1000 gm	1000 gm	14 litre	7 hours

Table 2: Results of the Organoleptic characters of Abhraka before and after shodhana procedures

Organoleptic characters	Before shodhana	After shodhana
Colour	Black	Blackish brown odourless soft brittle and shiny particles
Odour	Odourless	tasteless
Texture	Hard	
Taste	Tasteless	

### Dhanyabhraka Niramana

As per Rasa Ratna Samuchchaya, Dhanyabhraka was prepared by mixing shodhit abhraka with one-fourth its quantity of dhanya in an enamel tray, placing the mixture in a jute pottali, immersing it in Triphala Kwatha for 72 hours, then repeatedly kneading it in fresh water until the abhraka was fully extracted-requiring eight to ten water changes- with the sedimented extract from the second day being decanted and the remaining liquid evaporated to obtain black Dhanyabhraka.

### Procedure of Dhanyabhraka

Fine consistency of purified Abhraka is achieved by thoroughly powdering it, marking the first step in the process of Bhavana or

Bhasma preparation. A cloth pouch (pottali) is then prepared by filling it with whole rice grains, which serve as a support medium. The finely powdered mica is placed inside this rice-filled pouch, which is then securely tied. This pouch is immersed in a vessel containing Triphala Kwatha and allowed to remain submerged for a period of 24 to 72 hours. During this soaking period, mild fermentation takes place within the decoction, facilitating the release of ultrafine mica particles through the mesh of the cloth pouch. After the desired time has elapsed, the pouch is removed, and the fine mica particles that have escaped into the decoction are carefully collected. These particles are then dried thoroughly and are considered suitable for the next stage of processing.

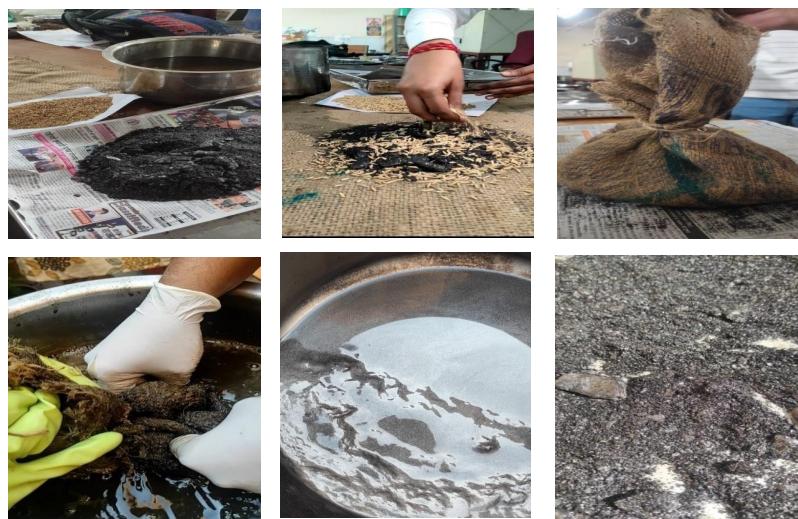


Figure 3: Dhanyabhraka niramana

Table 3: Yield Result of Dhanyabhraka

Shodhit Abhraka (gm)	1000
Dhanya (gm)	250
Triphla kwatha (ml)	5000
Dhanyabhraka yield (gm)	900
Loss (gm)	100

### RESULTS AND DISCUSSION

The shodhana technique, which means "purification," is a preliminary process used to remove contaminants from mercurial kingdom medications. It is essential for neutralizing or removing harmful or ineffective properties of chemical substances. Abhraka shodhana followed the guidelines in R.R.S.2/16-17 by quenching Abhraka pieces in Triphala kwatha. This process was repeated seven times, and observations were made. Large pieces of Abhraka turned into smaller pieces of Shodhit Abhraka, which was brittle and had less shine. In this shodhana process using Triphala Kwatha, we started with 1000 grams of raw Abhraka and obtained 1000 grams of purified Abhraka (Shodhit Abhraka) at the end of the procedure. No significant weight loss was noted, likely because components of Triphala were absorbed into the Abhraka during quenching. Figure 2 shows the complete Shodhana procedure step by step. Table 2 provides the results of the organoleptic examination of Abhraka before and after purification.

Dhanyabhraka Nirman was done using Triphala Kwatha instead of the traditional Kanji. Dhanyabhraka was prepared according to R.R.S 2/18. We used 1000 grams of Shodhit Abhraka for this process and obtained 900 grams of Dhanyabhraka, which

indicates a loss of 100 grams during the procedure. Figure 3 illustrates the step-by-step process of Dhanyabhrakaran. Using Triphala Kwatha in this process is scientifically significant. Triphala is rich in tannins, phenolic compounds, and antioxidants, which help with detoxifying residual impurities, improving the drug's bioavailability, and softening the mineral structure.

This softening makes it easier to convert Abhraka into a finer, more absorbable form. Substituting Triphala for Kanji keeps the process effective while possibly offering more therapeutic benefits due to the pharmacological properties of Triphala. The procedure generally resembled what is described in the literature.

### CONCLUSION

The use of Triphala Kwatha in both the Shodhana and Dhanyabhraka Nirman processes proved to be effective and scientifically meaningful. In the Shodhana process, no significant weight loss was observed, suggesting good absorption and retention of therapeutic components, while organoleptic changes indicated successful purification. During Dhanyabhraka Nirman, the substitution of Kanji with Triphala not only maintained the integrity of the traditional method but also enhanced the purification process due to Triphala's rich phytochemical profile. The loss of 100 grams was within expected limits and reflects the removal of residual impurities. Overall, Triphala Kwatha served as a potent alternative medium, contributing to both purification and therapeutic enhancement of Abhraka, aligning well with classical guidelines and offering a potentially superior pharmacological advantage.

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