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Research Article

PHARMACEUTICAL PREPARATION OF *ABHRAKA BHASMA*: A CLASSICAL APPROACH COVERING ALL STAGES OF PROCESSING

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ABSTRACT

Abhraka (mica) is essential in *Rasashastra* for its *Rasayana* properties and therapeutic applications. However, its raw form is unsuitable for direct medicinal use. To make it safe, effective, and easy for the body to absorb, it goes through special Ayurvedic processes. These include *Shodhana, Dhanyabhraka, Marana, Amritikarana,* and *Lohitikarana*. **Materials and Methods:** Raw *Abhraka* underwent sequential procedures *Shodhana, Dhanyabhraka, Marana, Amritikarana*, and *Lohitikarana.* Observations were recorded for changes in weight, texture, color, and classical parameters such as *Nischandratva, Rekhapurnata,* and *Varitaratwa.* **Results:** *Shodhana* caused 9.8% weight loss with improved brittleness and reduced impurities. *Dhanyabhraka* showed 23.83% weight loss, effective leaching, and pH reduction. *Marana* led to a 14.7% weight loss with color transition from blackish red to dull red. *Amritikarana* enhanced stability and reduced toxicity, while *Lohitikarana* imparted a red tinge and improved therapeutic potential. The final *Bhasma* was non-lustrous, floatable, and therapeutically active. **Discussion:** Stepwise processing confirmed the classical principles of *Rasashastra*, validating Ayurvedic principles of purification and incineration, ensuring safety, bioavailability, and *Rasayana* potential.

INTRODUCTION

Abhraka (mica) holds great significance in *Rasashastra* of Ayurveda because of its wide therapeutic uses and *Rasayana* qualities. Before it can be administered as medicine, it undergoes several traditional processes such as *Shodhana* (purification) literally means purification that includes physical as well as chemical purification of the drug along with which enhances therapeutic properties of drug[1], *Dhanyabhraka* (grain treatment), *Marana* literally means process of killing of any metallic drug to make it fit for internal administration is called as *Mārana* or incineration[2]. *Amritikarana* (enhancement and detoxification) eliminate the remaining *Dosas* of any ' *Dhatu bhasma* (incinerated metal)[3], and *Lohitikarana* (color conversion) carried out on prepared '*Bhasma*' to induce *'Rakta varṇa'* (red colour)[4]. Through such detailed procedures, raw *Abhraka* is converted into *Abhraka Bhasma* a safe, effective, and bioavailable form. Internal administration of *Ashuddha Abhraka* leads to various disorders like *Kshaya, Kustha, Karshya, Pandu, Shotha*, and *Hrit parshvashula*[5]. Clinically, it is employed in managing respiratory, digestive, and chronic conditions, while also serving as a rejuvenator, immunity booster, and anti-inflammatory agent, with standardized preparation ensuring consistency and safety. *Abhraka Bhasma* has the capability to induce insulin secretion from pancreatic b-cells, thereby reducing the blood glucose level by acting as a cellular regenerator[6].

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MATERIALS AND METHODS

Selection & Procurement of material

Authentic *Abhraka* was identified using *Grahya Lakshanas*- black color, smooth heavy texture,

resistance to fire, and easy laminar separation. To ensure safety, the raw sample was also tested by ICP-MS. Results showed aluminium 58,912.788mg/kg, Iron 110,774.422mg/kg, and magnesium 35,035.388mg/kg, with no toxic heavy metals detected. Thus, both traditional parameters and modern analysis confirmed the purity and suitability of the procured *Abhraka*.

Pharmaceutical processing's of *Abhraka*

***Shodhan* of *Abhraka*[7]**

Principle: *Nirvapa* in *triphala kwath* for seven times.

MATERIALS AND METHODS

Raw materials

- *Krishnavajrabhraka* – 1 kg
- Media Used: *Triphala Kwatha*

***Shodhana* process**: As part of the *Shodhana* of *Abhraka*, 1000gm of raw mica had to be cleansed, left to air dry, heated until red hot, and then quenched in *Triphala Kwatha*. The quenched *Abhraka* was collected and left to dry in the sun after being stirred into finer particles. This *Nirvapa* process was repeated for each cycle to ensure complete purification.

Showing preparation of *Abhraka Bhasma*

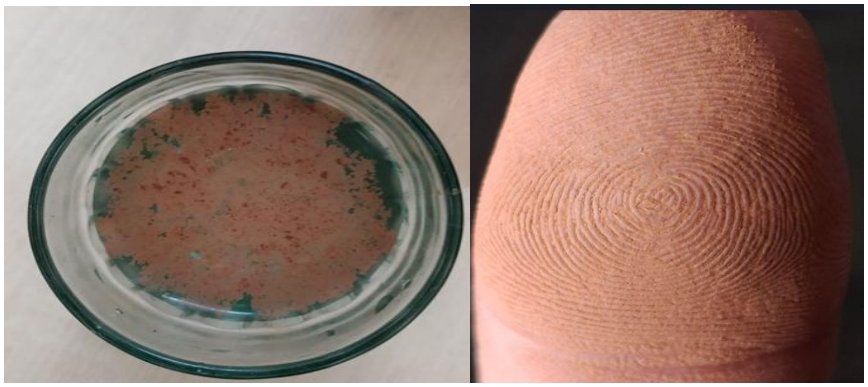
A **B** **C**

D **E** **F**

G **H** **I**

J **K** **L**

M **N** **O**



P **Q**

Figure: (A) Heat testing of Raw *Abhraka* (B) Red hot by fire gun (C) *Nirvapa* process (D) *Abhraka* after *Shodhana* (E) *Dhanyabhraka* (F) *Bhawana* Process (G) *Chakrika Nirmana* (H) *Sharava Samputikarana* (I) *Sharava* put in the puta (J) *Marana* Process (k) After 15th put *Abhraka* (L) *Bharjana* process (M) After *Amritikarana Abharaka* (N) *Lohitikarana* Dravya Bhawana (O) Final *Abhraka Bhasma* (P) *Varitara* (Q) *Nischandra*

Table 1: Depicts changes observed in *Abhraka* in each *Nirvapa*

Nirvapa	**Colour**	**Appearance**
Initially	Black	Solid mass
*1st	Shiny Black	Pieces softened; layers separated
*2nd	Shiny Black	Small pieces and chunks present
*3rd	Shiny black with golden sheen	Semi powder form with small chunks present
*4th	Shiny black with golden lustre (+)	Powder form, fine dispersed particles
*5th	Black with stronger golden lustre (++)	Fine dispersed particles in surroundings
*6th	Bright golden lustre (+++)	Fine dispersed particles in surroundings
*7th	Shiny black with intense golden lustre (+++)	Fine dispersed particles in surroundings

*After

Table 2: Depicting results of *Nirvapa*

Process of *Nirvapa*	**Quantity of *Kwatha* Used (ml)**	**Initial Wt. of *Abhraka* (g)**	**Final Wt. after *Nirvapa* (g)**	***Kwatha* left (ml)**	**Time Taken to become red hot (min)**	**Remark on Gain/Loss of *Abhraka***
1st	3000	1000	1080	2400	100	Gain due to absorption of T*riphala.*
2nd	3200	1080	1214	2600	140	Weight increased due to *Triphala kwatha.*
3rd	3200	1214	1509.2	1500	180	Gain due to more absorption of T*riphala,* moisture contain & rainy Season
4th	3200	1509.2	1375	1100	100	Evaporation of absorbed

						Triphala.
5th	3200	1375	1193.5	1300	90	*Kwatha* evaporated and particles dispersed in surrounding.
6th	3200	1193.5	1290.6	1900	100	*Kwatha* evaporated, moisture contain & rainy Season
7th	3300	1290	902	2400	110	Fine *Abhraka* particles dispersed in surrounding.

Table 3: Depicts yield of *Shuddha Abhraka* after purification

Sample	Initial wt. (g)	Final wt. (g)	Loss/Gain (g)	Percentage Loss
Abhraka	1000	902	Loss- 98	9.8 % loss

Preparation of *Kanji*[8]

Purpose: For making *Dhanyabhraka*

S.No	Ingredients	Quantity
1.	*Rajika*	240 gm
2.	*Saindhava lavana*	480 gm
3.	*Kulattha*	480 gm
4.	*Odana* (cooked rice)	480 gm
5.	*Haridra churna*	120 gm
6.	*Vamsha patra*	120 gm
7.	*Shunti*	60 gm
8.	*jeeraka*	60 gm
9.	*Hingu*	5 gm
10.	*Masha pishta*	120 gm
11.	*Sarshapa taila*	120 ml
12.	*Water*	4800 ml

Once all the ingredients were prepared, a pre-treated pot- coated on the inside with *Sarshapa taila* (mustard oil)- was taken. Into this pot, 4800ml of water was added, followed by 960ml of *Kulattha kwatha* and 480gm of *Odana*. The fried *Masha chakrikas* and the fine powders of all remaining ingredients were then added and mixed thoroughly. The mouth of the pot was sealed tightly and left undisturbed to allow proper fermentation.

Table 4: Observations During Fermentation

Confirmatory tests	Day 0	Day 39
Color	Dull yellow	Dark yellow
Odor	Pungent	Strong
pH	7	3.5
Match stick test	Negative	Positive
Effervescence	Absent	present

Process of *Dhanyabhraka*[9]

Materials Used

S.No.	Ingredients	Ratio	Quantity taken
1.	*Shuddha Abhraka*	1 part	902 g
2.	*Dhana (Unhusked Rice Grain)*	1/4th part	226 g
3.	*Kanji*	Q.S.	6 L

Preparation of *Dhanyabhraka*: Purified *Abhraka* and one-fourth part *Dhanya* were placed in a jute pouch and immersed in fermented *Kanji* for 72 hours. Distilled water was then used to knead the pouch until the *Dhanyabhraka* was completely gone.

RESULT

Purified *Abhraka* (g)	*Dhanya* (g)	*Kanji* used (L)	Yield of *Dhanyabhraka* (g)	% Loss
902	226	6	687	23.83%

Incineration of *Abhraka*

Method I [10]

The mixture of *Dhanyabhraka* (650g), *Guda* (650g), and adequate *Erand Patra Swarasa* and *Vata Patra* was processed using *Puta* (incineration) to purify it and enhance its therapeutic effectiveness.

Method II [11]

One-eighth of the quantity of *Abhraka* (*Guda*, or jaggery) and 591.5g of *Dhanyabhraka* were utilized in the preparation. Adequate amounts of *Erand Patra Swarasa* (leaf juice from *Ricinius communis*) and *Vata Patra* (leaves from *Ficus benghalensis*) were also administered as needed.

Table 5: Changes observed in *Abhraka Bhasma* after every *Puta*

After *Puta* No.	Colour	Appearance & Texture	*Nischandra*	*Rekhapurna*	*Varitara*
1st	Blackish red colour	Particles become fine than before, *Chakrika* becomes hard after *Puta.*	-ve	+	-ve
2nd	Blackish red colour	Particles become fine than before, *Chakrika* were soft than before	-ve	+	-ve
3rd	Blackish red colour	*Chakrika* were soft than before	-ve	+	-ve
4th	Blackish red colour	Same as above	-ve	+	-ve
5th	Blackish red colour	Same as above	-ve	+	-ve
6th	Blackish red colour	Same as above	-ve	+	-ve
7th	Color changes from black to brownish red color	*Chakrika* broke with some pressure, rough texture	+	+	-ve
8th	Color same as above	*Chakrika* broke with some pressure, smooth texture	+	+	-ve
9th	Brownish red	Less hard, easy breakage, texture becomes slightly smooth	++	++	+ve, 30%
10th	Color same as above	Less hard, easy breakage, texture becomes slightly smooth	++	++	+ve
11th	Brownish red gradually increased	Same as above	++	++	+ve
12th	Brownish red gradually increased	Same as above	+++	++	+ve
13th	Dull red	*Varitaratwa* increases gradually after each *Puta*. Softness and colour was maintained.	+++	+++	+ve, 40%

14th	Dull red	Same as above	+++	+++	+ve
15th	Dull red	*Chakrika* easy breaking with "*Kat*" sound, smooth texture.	+++++	+++	+ve, 60%

Table 6: Results of incineration of *Abhraka*

***Puta* No.**	***Swarasa* added (ml)**	***Guda* added**	***Abhraka* Weight of material (g)**			**Duration of levigation (h)**	***Puta* Methods**	**No. of Cow dung cakes**	**Max. Temp.**
			Before	**Dried pellets**	**After *Puta***				
1st	1150	650	650	1121	615.4	16	EMF	-	824°C
2nd	650	615.4	615.4	1034	591.5	16	EMF	-	772°C
3rd	450	74	591.5	635.1	586.3	16	*Gajaputa*	130	869°C
4th	450	73	586.3	620.3	582.9	16	*Mahaputa*	230	912°C
5th	450	73	582.9	602.3	579.5	16	*Mahaputa*	250	967°C
6th	450	72	579.5	598.3	577.3	16	*Mahaputa*	270	982°C
7th	450	72	577.3	602.7	589.3	16	*Mahaputa*	260	957°C
8th	450	74	589.3	596.3	584.7	16	*Mahaputa*	250	953°C
9th	450	73	584.7	596.8	582.6	16	*Mahaputa*	240	933°C
10th	400	73	582.6	592.5	579.8	16	*Mahaputa*	240	947°C
11th	400	73	579.8	598.7	573.5	16	*Gajaputa*	150	897°C
12th	400	72	573.5	589.3	569.7	16	*Gajaputa*	165	934°C
13th	350	71	569.7	586.7	563.2	14	*Gajaputa*	160	912°C
14th	350	70	563.2	579.2	559.9	14	*Gajaputa*	160	924°C
15th	350	70	559.9	572.2	554.3	14	*Gajaputa*	175	937°C

Note – weight of 10 cow dung cakes = 2.7 kg

Table 7: Average yield of *Abhraka Bhasma* after 15 *Puta*

Sample	**Initial wt. (g)**	**Final wt. (g)**	**Loss (g)**	**Percentage Loss**
Abhraka	650gm	554.2gm	95.8gm	14.738

***Abhraka Bhasma Amritikarana*[12]**

Abhraka Bhasma (10 parts), *Go Ghrita* (cow's ghee, 6 parts), and *Triphala Kwatha* (16 parts) are among the components. This preparation is based on the *Bharjan* (frying) principle.

Procedure

Each ingredient was accurately measured and mixed with ghee. The *Abhraka Bhasma* was then heated in a skillet, and the *Triphala* decoction was gradually added with continuous stirring. The mixture was cooked until the ghee was completely consumed and the decoction fully evaporated, leaving behind dry, blackened, and charred *Abhraka Bhasma.*

Table 8: Depicts the results of *Amritikarana*

Initial Wt. of *Abhraka Bhasma* (g)	**Initial Wt. of *Triphala Kwatha* (ml)**	**Initial Wt. of *Go-Ghrita* (ml)**	**Final Wt. of Obtained *Abhraka Bhasma* (g)**	**% Gain in weight (g)**	**Heating Time (hrs)**
550	880	330	600	18.66%	10:30

***Abhraka Bhasma Lohitikarana*[13]**

The incineration (*Puta*) procedure was conducted using *Amritikrit Abhraka Bhasma* supplemented with 30gm each of *Rubia cordifolia* (*Manjistha*), *Vitex negundo* (*Nagabala*), *Cyperus rotundus* (*Musta*), *Curcuma longa*

(*Haridra),* and *Vetiveria zizanioides (Vata Mula*). Aqueous decoction was prepared using 1200ml of water and reduced to 300ml prior to incineration.

Table 10: Depicting results of *Lohitikarana*

Bhavana		**Wt. of *Abhraka* (g)**			***Puta* Methods**	**No. of Cow dung cakes**	**Max. Temp.**
***Kwatha* added (ml)**	**Duration (h)**	**Initial wt.**	**Wt. of dried pellets (g)**	**Final Wt. after *puta* (g)**			
675	16	600	689.3	589	*Gajaputa*	155	903°C
450	12	589	664.7	574	*Gajaputa*	180	917°C
400	12	574	672.8	568	*Gajaputa*	190	929°C
-	-	568		557	EMF	-	912°C

DISCUSSION

Traditional *Grahya Lakshanas* ensured authenticity of the raw mineral, while modern ICP-MS analysis confirmed high levels of iron, aluminium and magnesium key contributors to therapeutic activity without toxic heavy metals, validating safety[14]. *Shodhana*, or repeated quenching in *Triphala Kwatha*, resembles thermal shock and hydrothermal reactions. Rapid heating and cooling induce lattice stress, fragmentation, and removal of surface impurities[15], while *Triphala* phytochemicals including gallic acid, ellagic acid, quercetin, luteolin, saponins, and tannins act as natural chelators, binding and eliminating undesirable elements[16]. *Dhanyabhraka*, is analogous to biochemical and microbial processes. The acidic medium and microbial activity facilitate ion leaching, while organic acids drive ion-exchange reactions and particle size reduction. This enhances solubility and bioavailability, similar to modern nanosizing techniques[17]. *Marana*, the repeated incineration process, parallels calcination in materials science. Successive *Puta* cycles induce oxidation, phase transitions, and structural reorganization, transforming crystalline mica into amorphous, bio-assimilable oxides. Classical *Siddhi Lakshanas*, such as *Rekhapurnatwa* and *Varitaratwa*, reflect formation of submicron to nanoparticle-sized material[18]. *Amritikarana*, acts as a surface coating with lipids and bioactive compounds, improving stability, compatibility, and therapeutic efficacy, akin to lipid-conjugate systems in pharmaceutics[19]. *Lohitikarana*, imparting a reddish hue via herbal decoctions, introduces organic complexes and trace minerals, enhancing *Rasayana* effects and resembling nanoparticle functionalization[20].

CONCLUSION

The *Abhraka Bhasma* preparation described in *Rasa Tarangini* is more appropriate than *Rasa Ratna Samuccaya*. Classical *Mahaputa* and *Gajaputa* methods for *Abhraka Bhasma* often suffer from uneven heating, as in these methods the temperature remains above 900°C for only 10-15 minutes. In contrast, using an Electric Muffle Furnace (EMF) ensures uniform temperature control at 920°C for 30-45 minutes, achieving complete incineration. This produces a homogeneous *Bhasma* with consistent physicochemical properties and improved therapeutic reliability.

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