



COMPARATIVE EVALUATION OF METHODS OF PREPARATION ON THE QUALITY PARAMETERS OF KANSYA BHASMA

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ABSTRACT

This article explored comparative evaluation of methods of preparation on the quality parameters of *Kansya Bhasma*. The study compares two methods one using *Manashila* and *Gandhaka*, while other using *Hingula* for the preparation of *Kansya Bhasma*. Various purification processes and incineration cycles were used, and the *Bhasma* was evaluated based on physicochemical parameters like color, ash value, copper content, and mercury presence. Method 2, involving *Hingula*, yielded superior results, showing greater refinement, therapeutic potential, and adherence to Ayurvedic standards. In the first method, based on chemical analysis showing 64.30% copper (Cu), 5.66% sulfur (S), and 92.14% ash value, the principle of incineration can be reviewed in terms of lightness and fineness. However, the absence of *Parada* is noted in this method. In the second method, chemical analysis shows the presence of 74.30% copper, 1.24% sulfur, and an ash value of 94.6% w/w. The study highlights the importance of standardization to ensure the safety, efficacy, and quality of Ayurvedic *Bhasmas*.

KEYWORDS: *Ayurveda, Kansya, Bhasmas, Manashila, Gandhaka, Hingula.*

INTRODUCTION

The purpose of making mineral substances into *Bhasma* using Ayurvedic methods is to transform the subtle qualities of these substances, making them highly fine and capable of penetrating sensory channels without causing harm to the body when consumed. The therapeutic properties of the substances increase

significantly during the various processes involving in *Bhasma* preparation. The various process involve during the preparation of *Bhasma* includes purification, powdering, stirring, washing, filtering, heating, triturating and detoxification.^[1-4] The Ayurveda terminologies of these processes involve in *Bhasmikaran* is depicted in **Figure 1**.

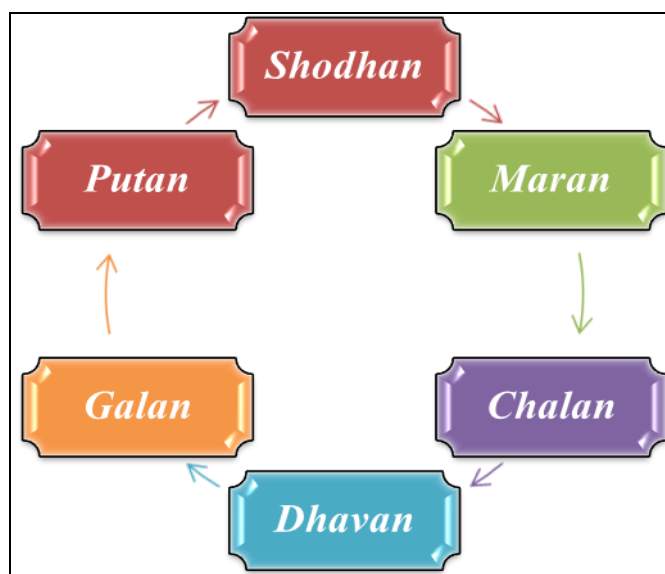


Figure 1: Various processes involve in *Bhasmikaran*.

Kansya Bhasma is an Ayurvedic formulation prepared from bronze, a combination of copper and tin. It possesses numerous medicinal properties that make it valuable in treating various disorders. Primarily, *Kansya Bhasma* offers *Vata-Pitta Shamak* effect, thus helps to pacify imbalances in both *Vata* and *Pitta doshas*, making it particularly effective for conditions caused by these *Dosha* disturbances. It also acts as a *Balya* or strengthener, providing support in cases of muscle weakness and general debility, enhancing overall physical strength. *Kansya Bhasma* is considered a *Medhya* or cognitive enhancer, improving memory, concentration, and cognitive function. It is often used to

address neurological issues. It promotes longevity, vitality, and youthfulness, supporting general well-being. Additionally, *Kansya Bhasma* exhibits antioxidant properties, helping to reduce oxidative stress and protect cells from damage caused by free radicals. Furthermore, it is regarded as a *Hridya* since it strengthens the heart and is beneficial in managing heart-related ailments, improving cardiovascular health. Its anti-inflammatory effects make it useful for treating inflammatory conditions such as arthritis and bronchitis. According to ancient Ayurveda there are various method as depicted in **Table 1**, utilizes for the preparation of *Kansya Bhasma*.^[3-7]

Table 1: Various methods utilizes for the preparation of *Kansya Bhasma*.

Method	Ingredients
Manashila and Gandhaka Method	<i>Kansya</i> , <i>Manashila</i> , <i>Gandhaka</i> and <i>Ghrithumari</i>
Hingula and Lemon Juice Method	<i>Kansya</i> , <i>Hingula</i> and lemon juice
Nimbu Swarasa and Gandhaka Method	<i>Kansya</i> , <i>Nimbu Swarasa</i> and <i>Gandhaka</i>
Aloe Vera and Herbal Juice Method	<i>Kansya</i> , <i>Ghrithumari</i> juice, other herbal juices
Samanya Marana Method	<i>Kansya</i> and <i>Sudha Dravya</i>

As mentioned above there are various methods for the preparation of *Kansya Bhasma*, these methods selected on the basis of need of therapeutic goals and availability of suitable ingredients. Different methods shows different quality attributes since techniques and ingredients play vital role in the quality of final formulation. Considering this fact present article evaluates various methods of preparing *Kansya Bhasma* and their impact on quality parameters, which is critical in Ayurvedic pharmaceuticals.

MATERIALS AND METHODS

Gas burner, blower, spatula, mortar and pestle, cloth, sieve (200 Mesh), spoon, muslin cloth, mud, lemon juice, grass and other utensils were used for research work. Two methods were used for preparing *Kansya Bhasma*. One using *Manashila* and *Gandhaka*, while other using *Hingula* for the preparation of *Kansya Bhasma*.

First method

In this method, *Kansya Bhasma* was prepared using Pure *Kansya* (Bronze) in equal parts mixed with *Manashila* and sulfur. Firstly equal part of sulfur, *Ghrithumari* juice was added and thoroughly ground. The mixture of *Kansya* powder was prepared and kept for purification. After purification, subjected for *Shushkikaran* (allowed to dry) followed by subsequent purification. Once

purified, the mixture was heated and added with *Gajput*. The *Gajput* was ignited with the mixture. Once the *Gajput* was purified, the bronze-colored fine powder was taken out. This process was repeated three times. The mixture of *Gajput* was kept between 700-715°C. The obtained powder was then crushed in a pestle and mortar and filtered. After that, it was packed into plastic packets.

Second method

The pure *Kansya* pieces were mixed in equal parts with *Hingula*, lemon juice was added and thoroughly grounded. The *Kansya* mixture was prepared and kept for purification. Once *Kansya* was purified, it was placed in a container, covered and kept in the furnace for seven rounds of *Kapadmitti*. After purification, the mixture was heated with 200 cow dung cakes in *Gajput* (three times) for further purification. Once the *Gajput* process was completed, the mixture was taken out, and the purified *Kansya* was obtained in a dark bronze form.

The *Bhasma* prepared with two different methods were further evaluated for their physicochemical parameters like color, ash value, copper content, mercury presence and others quality parameters as mentioned in **Table 2**.^[7-10]

Table 2: Quality evaluation of prepared *Bhasma*.

Parameter	Description	Methods of Testing
Varna (Color)	The specific color of the <i>Bhasma</i> is a key indicator of proper calcination.	Visual observation
Rekhapurnatva	Finger test: <i>Bhasma</i> should enter and fill the fine skin lines.	The fineness of <i>Bhasma</i> was checked by rubbing it between fingers to see if it fills the fine lines (<i>Rekha</i>).
Nischandratva	Absence of metallic shine in <i>Bhasma</i> , indicating complete	Visual observation under light: The <i>Bhasma</i> should be dull and non-

	incineration.	reflective.
<i>Varitara</i>	The ability of <i>Bhasma</i> to float on water, which indicates its lightness and proper processing.	Sprinkle <i>Bhasma</i> on water: It should float.
Loss on Drying (LOD)	Moisture content affects its stability and shelf life.	Weighed <i>Bhasma</i> before and after heating to 105°C: weight loss was recorded
Ash Value	Total inorganic content, indicating the purity of the <i>Bhasma</i> .	Ashing of the sample at high temperatures: Total ash and acid-insoluble ash were calculated.
Sulphur and Mercury Content	Specifically tested in <i>Sagandha Bhasmas</i> to ensure proper levels.	Chemical analysis using standard techniques.

RESULT AND DISCUSSION

In the preparation of *Kansya Bhasma*, two different methods involving distinct herbal and mineral substances have been utilized. The choice of auxiliary substances affects the properties and therapeutic efficacy of the final product. The calcination processes for the *Bhasmas* prepared by both methods were different. In the first method, the *Kansya* was processed with equal parts of *Manashila* and *Gandhaka* by grinding them together with the juice of *Ghrithkumari*. The mixture was applied to bronze sheets, formed into discs, dried, and enclosed in a sealed container, then subjected to *Gajaputa* fire, with a recorded temperature of 700°C. This process was repeated three times.

In the second method, the *Kansya* was processed by grinding *Hingula* and *Nimbu* juice and then applying the mixture to bronze sheets. Again, the bronze was subjected to three *Gajaputa* fires, with temperatures ranging from 700 to 715°C. There was a notable difference between the *Bhasmas* produced by the two different processes.

Standardization of *Bhasma*

The standardization of prepared *Bhasma* was crucial to ensure its safety, efficacy, and quality. Standardization ensures the reproducibility and consistency of *Bhasma* by defining its physicochemical properties, bioavailability, safety, and therapeutic efficacy. The result of standardization is depicted in **Table 3**.

Table 3: Quality Standardization of *Kansya Bhasma* Prepared by Two Methods.

Test parameter	First method	Second method
<i>Odour</i>	Odourless	Odourless
<i>Appearance</i>	Black coloured powder	Black coloured powder
<i>pH Value</i>	4.84	8.22
<i>Ash Value</i>	92.14% w/w	94.6% w/w
<i>Acid Insoluble Ash</i>	21.70% w/w	82.348% w/w
<i>Loss on Drying</i>	2.35% w/w	0.116% w/w
<i>Copper (Cu)</i>	64.30% w/w	74.30% w/w
<i>Arsenic (As)</i>	1.464% w/w	-
<i>Sulfur (S)</i>	5.66% w/w	4.244% w/w
<i>Mercury (Hg)</i>	-	21.81% w/w
<i>Tin (Sn)</i>	11.80% w/w	15.80% w/w

All physical and chemical tests, when evaluated in light of Ayurvedic *Bhasma* principles such as the number of *Putra*, intensity of heat and procedural accuracy, the *Bhasma* prepared by Method 2 was found superior. In the preparation of *Bhasma*, the presence of the signs of proper incineration (*Samyak Marana*) is of utmost importance. Only when the material exhibits qualities like lightness (*Laghu*) and fineness (*Sukshma*), along with proper attributes, can its therapeutic effectiveness be ensured.

Study reported 64.30% copper (Cu), 5.66% sulfur (S) and 92.14% Ash value in formulation prepared by first method, however study observed absence of mercury (*Parada*) in this method. In the second method, chemical analysis showed presence of 74.30% copper, 4.244%

sulfur and an ash value of 94.6% w/w., additionally due to the incineration process involving *Hingula* (cinnabar), mercury (*Parada*) was also found to be 21.8%.

The findings reflected optimal quality parameters in terms of fineness, bioavailability, and safety. The *Bhasma* powder was found to be fine and homogenous along with good texture and lightness. Chemical analysis confirmed complete transformation of the metal into its oxide or sulfide form, with no traces of free metal. The test showed minimal residue, indicating efficient incineration. The organoleptic properties such as color, taste and texture were also aligned with classical descriptions of *Bhasma* formulation, and pH analysis indicated compatibility of formulation with the body's internal environment.^[9-11]

CONCLUSION

Incineration of metals is considered superior for all metallic *Bhasmas*. In this study, the importance of mercury and sulfur was well established. On the basis of findings of physicochemical analysis and standardization testing, the second method was considered superior. The optimum quality standards of second method can be attributed to the presence of *Sagandha Parada*.

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