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KASISA BHASMA – A PHARMACEUTICO-ANALYTICAL STUDY PREPARED BY TWO DIFFERENT METHODS

Dr. Anurag Saini*[1], Dr. Pardeep Kapil[2], Dr. Abhishek[3] and Dr. Manju Saini[4]

[1]P. G. Scholar, Dept. of R.S. & B.K. Govt. Ayurvedic College Patiala, Punjab.

[2]Guide, Professor, Govt. Ayurvedic College Patiala, Punjab.

[3]Co- Guide, Lecturer, Dept. of R.S. & B.K. Govt. Ayurvedic College Patiala, Punjab.

[4]Clinical Co- Guide, Reader, Dept. of Kaya Chikitsa Govt. Ayurvedic College Patiala, Punjab.

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***Corresponding Author**
Dr. Anurag Saini
P. G. Scholar, Dept. of R.S. & B.K. Govt. Ayurvedic College Patiala, Punjab.

ABSTRACT

The medicines are of herbal, mineral and herbo-mineral in origin. Bhasma are unique Ayurvedic preparations of metals/minerals formulated with herbal extracts or juices and used for the treatment of a variety of ailments. Bhasma is prepared by incinerating the metals and minerals. For incineration classical and modern methods are used. The Classical Method of Bhasma preparation is Puta and modern method is Electric Muffle Furnace. Kasisa is an iron mineral. In Rasashastra, it falls under Uprasa. Its Bhasma is frequently applied to a variety of illnesses. Agnimandya, Arsha, Kakatava, Gudabhramsha, Pandu, Shotha, Rajorodha, and Yonivyapada are among the conditions for which it is utilized. The processes of shodhana (purification) and marana (incineration) of ayurvedic mineral formulations of kasisa have been described in many ayurvedic classics. Even though numerous literature explains diverse ways of shodhana and marana, full physiochemical standardization is required to obtain the pure form and for quality assurance is essential to comprehending the molecular alterations following different ayurvedic procedures. In the present study Kasisa bhasma was prepared as per the reference of AFI (Ayurvedic formulary of India) and Rasatarangini will be analysed using classical parameters.

KEYWORDS: Bhasma, Kasisa, Shodhana, Marana, Puta.

INTRODUCTION

Ayurveda has many unique means to maintain the health and to cure the diseased conditions, like herbal medicaments and mineral preparations. The branch of ayurveda which deals with Aushadha Nimama is Rasa shastra and Bhaishjaya Kalapana. Rasa shastra is a specialized branch of Ayurveda dealing mainly with metals and minerals etc, which are known as 'Rasa dravya'. The products dealt under this discipline are an important component of Ayurvedic therapeutic. Since ancient times metals and minerals are playing an important role in the management of various health ailments. Bhasma preparations are unique ayurvedic metallic/minerals preparations, treated (Shodhana & Marana) with herbal juice or decoction and exposed for certain quantum of heat as per Puta system of ayurveda. Puta[1] is considered as unit of heat responsible for Supakva bhasma nirmana. Enhancement of properties of bhasma depends upon perfectly heating pattern measured by Puta system. Bhasma has got significant role due to its innate qualities like a maintaining alkalinity for optimum health, easy absorption, prolonged shelf life and reduced particle size (Nanoparticles).

The preparative procedure of Kasisa Bhasma is described very briefly in some of the most valuable Rasa Gransthas including Rasa Tarangini, Barihata Rasa Raja Sundra, Ayurveda Prakasha and also in AFI.

For current study two types of Kasisa bhasma will be prepared first according to AFI[2] and second according to Rasa Tarangini.[3] To prepare two types of Kasisa bhasma, shodhana of Kasisa will be done according to AFI[4] by giving three consecutive Bhavana of Bhringraja swarasa and it will be dried properly before giving another bhavana. Bhringraja swarasa will be taken as shodhana dravya for both. For Marana of shuddha Kasisa, in first method according to AFI, Kasisa bhasma will be prepared by giving bhavana with Nimbu swarasa. In second method of Rasa tarangini Kasisa bhasma will be prepared by giving bhavana with Snuhi patra swarasa.

Role of bhavana dravya may potentiate clinical efficacy of Kasisa Bhasma. Bhavana vidhi has been elaborated in ayurvedic classical textbooks. Purified metals and minerals are powered and taken in khalva yantra and triturated with specific liquid medias (herbal juice, decoction etc.) which are having particular diseases curing properties, until the mass is dried, it is called bhavana vidhi.[5] In modern parameters it is correlated with wet grinding or levigation. By triturating Aushadhi Dravya with selected liquid media which is also having

disease curing properties, will potentiate the main medicine. It also helps in size reduction as a particular friction is developed when trituration is done with certain liquids.

AIMS AND OBJECTIVES

1. To do Shodhana of Kasisa (for both types) according to reference of AFI.
2. To evaluate the comparison of pharmaceutical study of Kasisa bhasma prepared by two types one according to AFI (Nimbu swarsa bhavana) and second according to Rasa Tarangini (Snuhi patra swarasa bhavana).
3. To evaluate the comparison of Analytical study of Kasisa bhasma prepared by two types one according to AFI (Nimbu swarsa bhavana) and second according to Rasa Tarangini (Snuhi patra swarasa bhavana).

MATERIALS AND METHODS

PHARMACEUTICAL SOURCE

Raw materials after confirmation of grahaya lakshana for preparation of both types of Kasisa Bhasma will be collected from Sri Herbasia Biotech, Amritsar Punjab. For both types of Kasisa bhasma preparation shodhana of Kasisa will be done according to AFI. For that purpose three consecutive bhavana of Bhringraga swarasa will be given. Two types of Kasisa bhasma as mentioned in AFI (Nimbu swarasa bhavana) and Rasa Tarangini (Snuhi patra swarasa bhavana) will be prepared in Government Ayurvedic Pharmacy, Patiala.

Table 1: Certificate of Analysis of Raw Kasisa.

Sr. No.	Parameter	Specification	Result
1	Physical Appearence	Hygroscopic Powder	Hygroscopic Powder
2	Color	Light Green	Light Green
3	Odor	Characteristic	Characteristic

SHODHANA OF RAW KASISA

Shodhana of Kasisa was done as per AFI.

PRACTICAL-1. PREPARATION OF BHRINGRAJA SWARASA

At first, Bhringraja Swarasa was prepared for Kasisa Shodhan as per Sharangdhar Samhita. To extract fresh Swarasa in required quantity from Bhringraj was very difficult, So Swarasa was prepared by Swarasaabhava method illustrated by Acharaya Sharangadhara.[6] Swarasa was prepared by adding 8 times of water in raw drug and reduced to 1/4th of its volume by heating.

काशीशं भृंगनीरेण त्रिवारं भावितं शुचि ॥ (AFI)

Accurately weighed 2.5kg Ashuddha Kasisa was taken in Khalva Yantra and prepared fine powder. For the first Bhavana 800ml of Bhringaraja Swarasa was added into mortar. The mixture was subjected for trituration for three hours. After trituration it was properly sundried. Again the same process was repeated two times for 2nd and 3rd Bhavana. Every time fresh Bhringaraja Swarasa was used. When it became fully dry after 2nd and 3rd, weight was taken it was 1.900 grams.

Table 2: Bhavana with Bhringraja Swarasa.

Bhavana	Initial weight of Kasisa	Amount of Bhavana dravya	Duration of Bhavana	Weight of Kasisa after sundried
1	2.5KG	800ML	3HRS	1.926GM
2	1.926GM	1200ML	3HRS	1.920GM
3	1.920GM	1250ML	3HRS	1.900GM

Ashuddha Kasisa was green in colour, lusterous, crystalline in nature. After powdering, Kasisa became lusterless and pale green. When Bhringaraja Swarasa was added to Kasisa, Kasisa became liquid and after Shodhana Kasisa was found pale green in colour.

PRACTICAL- 2. PREPARATION OF KASISA BHASMA

KASISA BHASMA: TYPE 1 As per reference of AFI by using bhavana dravya as Nimbu Swarasa.

❖ **PREPARATION OF NIMBU SWARASA**

- Fresh Nimbu was taken, washed with water and made into small pieces with the help of knife.
- They were squeezed through the cotton cloth to obtain Swarasa of nimbu.

Weight of Nimbu: 1.5kg

Total Swarasa obtained in ml: 750ml

Total time taken to obtain Swarasa: 20min.

"काशीशं निम्बुनीरेण मर्दयित्वा तु चक्रिकाः।

कार्याः शुष्काः सम्पपुटस्था दशप्रस्थवनोपलैः॥" (AFI)

Shuddha kasisa1.900gms was divided into two equal batches here 950gms of kasisa was taken and Incineration was done by giving bhavana of Nimbu swarasa. All the standard

principles will be followed, chakkrika will be made and kept in sharava samputa and laghuputa (7kg of vanopala) will be given until rakta varna of bhasma and Bhasmasidhi lakshana will be achieved. The Bhasma sidhi lakshana and niramaltva of Bhasma was obtained after 2 puta in this method.

PRACTICAL-3. KASISA BHASMA: TYPE 2 As per reference of Rasa Tarangini using bhavana dravya as Snuhi patra swarasa.

❖ **PREPARATION OF SNUHI PATRA SWARASA**

- Fresh Snuhipatra was taken, washed with water and made into small pieces with the help of knife.
- Pieces of Snuhipatra were converted into paste form with the help of mixer grinder machine.
- Paste was squeezed through the cotton cloth and obtained Swarasa of Snuhipatra.

Weight of Snuhipatra: 2.00 kg

R.P.M. of mixer machine: 18000

Average minute of churning: 2 minutes

Total Snuhipatra Swarasa obtained in ml: 1200ml

Total time taken to obtain Swarasa: ½ hour

"स्नुहीपत्ररसेर्यद्वा मर्दितं पुटितं मुहुः।

निरम्लोभाव पर्यन्तं कासीसं भस्मतामियात्॥" (र. त. 21/256)

Left kasisa 950gms was taken here, Incineration was done by giving bhavana of snuhipatra swarasa. All the standard principles will be followed, chakkrika will be made and kept in sharava samputa and laghuputa will be given until niramlatva, rakta varna of bhasma and Bhasmasidhi lakshana will be achieved. The Bhasma sidhi lakshana and niramaltva of Bhasma was obtained after 3 puta in this method.

Table 3: Kasisa Bhasma (Type 1) Marana.

Sr. no.	Weight of initial sample (gm)	Nimbu swarasa volume (ml)	Weight of Pellets (gm) Before puta	After puta	Color
1	925	500	935	730	Brownish
2	730	300	732	530	Brownish red

Table 4: Kasisa Bhasma (Type 2) Marana.

Sr. no.	Weight of initial sample (gm)	Snuhi patra swarasa volume (ml)	Weight of Pellets (gm) Before putas	After putas	Color
1	890	550	910	600	Blackish red
2	600	330	620	500	Red
3	500	280	510	490	Rust red

Analytical study of Kasisa Bhasma

Table 5: Analytical study of Shudha Kasisa

Sr. No.	Analysis Parameters	Results
1	Colour	Greyish
2	Effect of Heat	Strong heat gives pungent smell of Burning Sulphur
3	Chemical assay (reaction with Barium chloride solution)	White precipitate of Barium sulphate appears on addition of Barium chloride solution

The two types of kasisa Bhasma i.e. Type 1 & Type 2 was analysed by classical parameters for quality control as described in ancient texts:

Kasisa Bhasma	**Organoleptic characteristics** Color Odour Taste	**Physio-chemical analysis** Loss on drying Loss on ignition Acid insoluble ash Assay for iron Apunarbhava Niruthikarana Rekhapurantva Varitara

Table 6: Organoleptic Characteristics of Kasisa Bhasma (Type 1 & Type 2).

Sr. No	Classical Parameters	Results Type 1	Type 2
1	Shabda	No perceptible	No perceptible
2	Sparsha	Smooth, no perceptible coarse particles felt	Smooth, no perceptible coarse particles felt
3	Rupa	Brownish red	Rust red
4	Rasa	Not any	Not any
5	Gandha	Odourless	Odourless

Classical Parameters (Bhasma pariksha)[7]

1. Rekhapurnatva: Very little amount of Kasisa Bhasma was taken in between index finger and thumb and rubbed and observed whether the Bhasma fill the furrows of finger tips or not.

2.Varitara: Water was taken into petri dish and allowed for stagnation. Then very small amount of Bhasma was sprinkled from a short distance on the surface of stagnant water in petri dishes. It was observed that Bhasma floats on the surface of the water.

3. Slakshanatva: Simple touch with finger tips.

4. Niswadu: A pinch of Bhasma was placed on the tongue and its taste was perceived to be tasteless.

5. Apunarbhava: One gram of Kasisa Bhasma was triturated with Guda (jaggery), Gunja (Abrus precatorius), Tankana (borax), Madhu (honey) and Ghrita (ghee) one gram each and a paste was prepared. This paste was kept in a Musha (crucible) and sandhi bandhana (sealing) was done. It was then subjected to teevragni (Intense heat up to 1000°C) for one hour. After swangasheeta (selfcooling), musha was opened and the charred mass was powdered and observed no any shining particles.

6. Niruttha: Kasisa Bhasma (2g) and a silver piece (2g) were kept in a Musha, Sandhi bandhana done and it was then subjected to teevragni for one hour. After swangasheeta, musha was opened and the silver piece was weighed. There was no increase in the weight of the silver piece which indicated the Bhasma passed the test.

Table 7: Observational results of Kasisa Bhasma (Type 1 & Type 2)

Sr. No.	Classical Parameters	Result	
		Type 1	Type 2
1	Rekhapurnatva	Present	Present
2	Varitara	Present	Present
3	Niswadu	Present	Present
4	Apunarbhava	Present	Present
5	Niruttha	Present	Present

Table 8: Physio-chemical results of Kasisa Bhasma (Type 1 & Type 2),

Sr. No.	Classical Parameters	Result	
		Type 1	Type 2
1	Loss on drying	0.37%	0.42%
2	Loss on ignition	1.54%	1.90%
3	Acid insoluble ash	41.84%	41.95%
4	Assay for iron	Positive	Positive

A. Preparation of Bhringraja Swarasa.

B. Nimbu Swarasa

C. Snuhi Patra Swarasa

D. Pharmaceutical procedure of Kasisa Bhasma

DISCUSSION

We have standardized the kasisa bhasma in this study at every stage of its creation, including raw, purified, and kasisa bhasma prepared using two distinct techniques and organoleptic and analytical testing techniques. We purchased 2 kg of raw kasisa from Sri herbasia Amritsar Punjab. Its chemical and organoleptic analyses were completed.

When we analyzed raw kasisa, it was in the form of bright green rough textured crystals with sour taste. The raw kasisa was purified in khalva yantra by triturating it with bhringraja swarasa for 3 hours. After bhavana the mixture was kept under sunlight till it completely dries. After purification, the shodhita kasisa gained a specific acidic odour like amchur, and colour of purified kasisa became greenish white, smooth crystals and sour in taste. There was loss of weight of 700 gm. This loss of weight was explained on the basis of evaporation of the water content of the unpurified kasisa. After shodhan, we got 1900 grams of purified kasisa which was equally divided into 2 parts 950 grams each.

For each part incineration was done by 2 methods, as mentioned in AFI and Rasa tarangini. Bhavana of Nimbuswarasa performed marana for the first part (type 1) after putting it to laghuputa. Fifteen cakes of cow dung were utilized to make laghuputa, and two laghuputas in sharava samputa were provided. Each puta was examined for sourness, rekhapurnata, and dantagrey kachakachabhava following each puta. The material was carefully removed as it started to become sour, and its weight 530 grams was recorded. Following this chemical analysis, the findings are recorded and shown in Table No. 7. In the second part (type 2), marana was done by bhavana of snuhipatra swarasa and after that laghuputa was given with 15 cow dung cakes. These three putas were administered till they became sourless, which is a unique test. Other Ayurvedic bhasmapariksha criteria, such as rekhapurnata and dantagrekachakachabhav, were also carried out. After Bhasma cleared every test, it was carefully taken out, and its weight of 490 grams was recorded. At this point, a chemical analysis was conducted, and the findings are shown in Table No. 8. Both varieties of Kasisa bhasama had a brownish red color, were tasteless, amorphous in appearance, and had a soft feel when touched. No particular odor was detected. There was no notable difference between chemical analyses of kasisa bhasma obtained by these two methods.

CONCLUSION

The primary goal of Marana is to structurally and chemically change metal into bioabsorbable metallic compounds, or Bhasmas. Eliminating toxicity and minimizing negative impacts of Bhasma, or the whole conversion of raw metal into Bhasma form, is essential. Certain Bhasma pariksha, or tests, are mentioned in Rasa shastra books to determine whether or not the Bhasma is correctly produced. Because they have a longer shelf life, require less medication, and are easier to store, well-prepared bhasma provide several benefits.

Analyzing kasisa at every step of its development into kasisa bhasma reveals the alterations in its chemical and physical characteristics brought on by its metamorphosis as heat causes thermal breakdown to occur. There are no appreciable differences in the chemical makeup of the kasisa bhasma generated by burning by Snuhipatra Swarasa Bhavana, and nimbu Swarasa Bhavana, according to chemical analysis. Depending on the availability of bhavana dravya, any method can be employed to prepare kasisa bhasma.

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