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A Review on Standardization of Bhasma WSR to Kasis Bhasma

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ABSTRACT: Ayurveda and other Indian system of medicine use metals, but their use is also amply described in Chinese and Egyptian civilization in 2500 B.C. Bhasma are unique ayurvedic metallic/minerals preparation, treated with herbal juice or decoction and exposed for Ayurveda, which are known in Indian subcontinent since 7th century A.D. and widely recommended for treatment of a variety of chronic ailments. Animal's derivative such as horns, shells, feathers, metallic, nonmetallic and herbals are normally administered as Bhasma. A Bhasma means an ash obtained through incineration; the starter material undergoes an elaborate process of purification and this process is followed by the reaction phase, which involves incorporation of some other minerals and/or herbal extract. There are various importance of Bhasma like maintaining optimum alkalinity for optimum health, neutralizing harmful acids that lead to illness; because Bhasma do not get metabolized so they don't produce any harmful metabolite, rather it breakdowns heavy metals in the body. Methods including for Bhasma preparation are parpati, rasayoga, sindora, etc., Bhasma which contain Fe, Cu, S or other manufacturing process plays a specific role in the final product(s). Particle size (1-2 μ) reduced significantly, which may facilitate absorption and assimilation of the drug into the body system. Standardization of Bhasma is utmost necessary to confirm its identity and to determine its quality, purity safety, effectiveness and acceptability of the product. But the most important challenges faced by these formulations are the lack of complete standardization by physiochemical parameters.

KEYWORDS: Ayurveda, bhasma, marna, nano-particle, shodhna, standardization, Kasis, Nirman

I. INTRODUCTION

Preparation of bhasma (calcined powder of metal/minerals) includes various processing steps like purification (Shodhana), levigation (Bhavana), calcinations cycle (Marana), improving quality and removing blemishes (Amritikarana) etc, processing of bhasma aims at formation of herbo-mineral complex molecule which can act in minimal dosage, palatable, easy for assimilation, highly efficacious with minimal or no complication. Although the most important equipment mentioned for Marana i.e. cow dung cakes and some type of woods are not only difficult to collect but also expensive and create pollution during putra and it's difficult task to give controlled heat in traditional method. Hence, a Modified Portable Bhasma Nirman Yantra (MPBNY) was prepared for putra (equipment for calcination) procedure which is easy to handle, portable and facilitate to supply controlled heat.¹

In standardization of bhasma wsr to kasis bhasma, kasis Bhasma prepared by traditional method and by using MPBNY with special reference to physico-chemical properties. The prepared Kasis Bhasma was subjected to modern analytical parameters such as A.A.S. (Atomic Absorption Spectroscopy), X.R.D. (X-ray Diffraction) and Ayurvedic parameters eg. Rekhapurnatva (bhasma should enters in between lines of finger), Varitaratva (bhasma should float on the surface of water), Niramlatva (bitter less), Apunarbhava (bhasma should not regain its metallic nature after strong heating with jiggery, Abrus precatorius linn., honey and ghee) and Niruttha (bhasma should not regain its metallic nature after strong heating with silver). It was observed that Kasis Bhasma of both methods possesses similar organoleptic as well as physico-chemical properties. Kasis Bhasma is a powerful iron-based ayurvedic proprietary medication that contains ferrous sulfate as the active ingredient and also the benefits of aloe vera. Due to its high iron content, it is extremely beneficial for the treatment and management of anemia and menstrual disorders. Kasis Bhasma has a sour and astringent taste and hot potency. It also showcases alterative, diuretic, and hematinic properties and is widely indicated for treating gastrointestinal anomalies, liver and spleen enlargements, contipation, skin diseases, eye diseases, etc.²

Kasis Bhasma has the following remedial properties:

- Hematogenic
- Emmenagogue
- Digestive Stimulant



- Carminative
- Anti-spasmodic
- Hepatoprotective

Ayurvedic scriptures and journals have mentioned this herbomineral formulation for treating different menstrual anomalies and other health woes time and again. Some of its indications include:

- Pandu Roga (treats anemia)
- Garbhaprada (treats infertility)
- Sangrahini (treats diarrhea)
- Deepana (enhances stomach fire)
- Pachana (helps in digestion)
- Rochana (stimulates appetite)
- Arsha (treats piles)
- Yakrit Roga (treats liver problems)
- Vamana (prevents nausea and vomiting)
- Sonisthapana (treats bleeding)
- Chakushya (treats eye problems)
- Vamanopaga (treats vomiting)
- Vayasthapana (prevents aging)
- Balya (improves muscle strength)
- Gulmajit (useful in abdominal tumors)
- Varnya (improves complexion)
- Amahara (treats indigestion)
- Rasayani (rejuvenates the whole body)
- Kustha (treats skin disorders)
- Krimihara (relieves intestinal worms)
- Pushtida (gives nutrition)

Remedies and health benefits of Kasis Bhasma:-

Pandu Roga or iron deficiency anemia or microcytic anemia chiefly occurs due to the vitiation of Pitta doshas. Additionally, it is also extremely beneficial for dealing with the various symptoms of anemia like physical weakness, general fatigue, shortness of breath, dizziness, vertigo, yellow discoloration of the skin, laziness, swelling, and headaches. The abundance of iron in this powder is pivotal for the treatment and management of anemia.³

People dealing with anemia have an increased pulse rate and irregular heartbeat and, in such cases, intake of this medication along with Arjuna powder helps remedy the symptoms of anemia and fortifies the heart muscles and improves the functioning of the heart.

Endowed with powerful hepatoprotective and hepatostimulative traits, this traditional iron-rich formulation offers a magical remedy for treating liver aberrations like jaundice, hepatitis, cirrhosis, etc. Kasis Bhasma not only diminishes the bilirubin levels in the blood but also detoxifies the liver and enhances overall liver functioning. Thanks to its lipolytic properties, it is also useful for treating fatty liver disease by provoking lipolysis action. Also, Kasis Bhasma is a significant remedy for curing hemolytic jaundice. In general, the menstrual cycle in most women usually lasts for 3-5 days, but in case the bleeding stretches beyond this time, then this gynecological condition is referred to as Menorrhagia. Also termed Raktapradar in Ayurveda, it is depicted in the form of heavy menstrual bleeding. Moreover, when a woman has another menstrual flow at any time in between two menstrual cycles, then it is known as Metrorrhagia, a health problem in which the menstrual flow repeats after 10-15 days of the earlier cycle. According to Ayurvedic texts, both these menstrual woes are commonly termed Asrigdara, a gynecological issue that primarily stems due to a worsened Pitta dosha within the body. Kasis Bhasma having Sita (cold) and Kashaya (astringent) traits normalize the abnormal Pitta Doshas and treat and prevent both menorrhagia and metrorrhagia.⁴

Leucorrhoea, which is known as Sweta Pradara in Ayurveda is a condition depicted by a discharge of thick, white mucus from the female genitals. According to Ayurveda, Shweta Pradara usually occurs when there is an imbalance in the Vata Doshas in the body. Kasis Bhasma is a powerful mineral-based remedy that has an innate astringent quality that plays a pivotal role in the treatment of leucorrhoea. It extensively assists in regulating exacerbated Kapha and reduces



the symptoms of leucorrhoea. Apart from vaginal discharge, this medication also holds high importance in dealing with postnatal ailments, regulating periods, and even treating excessive abdominal pain/bleeding.

The presence of strong carminative and digestive traits of Kasis Bhasma is extremely beneficial for remedying all digestive woes. The Deepana and Pachana nature of aloe vera used in the medication alleviates the formation of gas in the alimentary canal, which in turn reduces bloating, flatulence, constipation, and abdominal distension. It is also pivotal in preventing the formation of excessive gastric acids thereby dealing with stomach woes like gastritis, indigestion, and ulcer, and promoting better absorption of nutrients within the body.⁵ Additionally, the Krimihara (worm killing) trait of the medication, helps to kill bacteria within the stomach by stimulating the digestive fire or Agni that destroys the ideal condition required for the growth of worms that might lead to diarrhea and dysentery. The accurate dosage of this herbomineral powder may differ from one person to another on basis of their age, the stringency of the disease, and the overall potential of the patient. One must consult an ayurvedic doctor or practitioner, as he or she will analyze the indications and prescribe the specific dosage required for the condition. Bestowed with powerful bioactive constituents of the herb and metal in use, this traditional herbomineral formulation showcases no recorded side effects when used in the correct proportion. However, if taken for long periods without medical advice, it may lead to side effects like nausea, vomiting, vertigo, difficulty breathing, stomach discomfort, constipation, or diarrhea. Being warm, Kasis Bhasma may induce bleeding and contractions during pregnancy and may lead to abortion or fetal anomalies, hence it is strictly indicated that pregnant women should avoid using this medication. Also, since the medication may secrete along with breastmilk, the baby might get some side effects, hence the doctor strongly recommends avoiding this medicine during the lactation period. Kasis Bhasma is a spectacular Striroga nirodhak herbomineral formulation that has dominant regenerative and detoxifying qualities. Imbued with the goodness of iron and aloe vera, it is widely used for the treatment and management of menstrual anomalies like anemia, dysmenorrhoea, amenorrhoea, menorrhagia, leucorrhoea, liver problems, gastrointestinal disturbances, etc.⁶

II. DISCUSSION

Pushpa kasis is grahya type of kasis according to the ancient Ayurvedic texts and hence the pushpa kasis was procured from local market (500 grams). Purification of the raw sample (500 grams) was done in dolayantra by bhringraj swaras for 3 hours. It is carried by the procedure mentioned in the rasa tarangini. After purification was complete the material was collected and sundried. when it became fully dry, weight was taken it was 400 grams. After purification, the purified sample was divided into two equal parts i.e. each 200 grams, sample A and sample B. In sample A, incineration was done by giving bhavana of kanji and nimbuwaras for 7 times and after subjecting it to laghuputa till it loses its sourness. In sample B, incineration was done by giving bhavana of snuhipatra swaras and subjecting it to laghuputa continuously till it loses its soreness.²⁰ Analytical study of both the samples was carried out by classical methods (bhasma pariksha) of Varna (color), sparsha (touch), rasa (taste), gandha (odor), shabda (sound), sukhsma wata, mrudu wata. Modern physiochemical parameters used for analysis included determination of PH, specific gravity, loss on drying, percentage of ferrous and ferric, assay of sulfur as So₄. In the present study, we have standardized kasis bhasma in each step of its preparation i.e. from raw kasis, purified kasis and kasis bhasma made by two different methods with organoleptic as well as analytical methods. We have procured raw kasis of pushpa kasis variety from local market (500grams). Its organoleptic and chemical analysis was done. When we analyzed raw kasis, it was in the form of bright green rough textured crystals with sour taste. The Ph was 4, loss on drying at 105 degrees was 24.91 %. Ferrous percentage was 18.81% and ferric percentage was 0 %. Assay of sulphur as so₄ was 11.40%.⁷

This raw kasis was purified in dolayantra by swedan method for 3 hours in bhringraj swaras. kasis was completely dissolved into the bhringraj swaras used for swedan purpose hence the mixture was kept under sunlight till it completely dries. After purification, the shodhit kasis gained a specific acidic odor like amchur, and colour of purified kasis became greenish white, smooth crystals and sour in taste¹⁹. There was loss of weight of 100 gm. This loss of weight was explained on the basis of evaporation of the water content of the unpurified kasis during swedan process. In purified kasis, the analytical study result is Ph was 4.2, loss on drying at 105 degrees was 17.56%, ferrous percentage was 24.344 %, and ferric percent was 0%. Assay of sulphur as so₄ was 14.58%. After shodhan, we got 400 grams of purified kasis which was equally divided into 2 parts 200 grams each. For each part incineration was done by 2 methods, as mentioned in Ras tarangini.⁸

For the first part (method A), maran was done by bhavana of kanji and nimbuswaras each for 7 times and after subjecting it to laghuputa. For laghuputa, 20 cow dung cakes were used and 3 laghuputas in sharava samputa were given. After each puta it was tested for sourness and rekhapurnata as well as dantagrey kachakachabhava. When it becomes sour less the material was carefully removed and weight was taken and noted which it was 120 grams. After this chemical analysis was done and the results are noted down as given in Table no 3. For second part (method



B), maran was done by bhavana of snuhipatra swaras for 7 times and after that laghuputa was given with 20 cow dung cakes.¹⁸ such 3 putas were given up to it becomes sourless which is a special test as well as other Ayurvedic parameters of bhasmapariksha like rekhapurnata and dantagrekachakachabhav was also done. When bhasma passed all the tests it was removed carefully and weight was noted it was 130 grams. Kasis bhasma of both types was brownish red in colour, tasteless, amorphous in appearance with no specific odour was found, and on touching both were soft in texture. After each puta, we observed that Ph increased. Finally it became neutral. Percentage of iron was found more in shuddha kasis than unpurified kasis. In the purification process of kasis, there is no oxidation. Ferrous was not converted into ferric form. In the incineration process by both methods, there was oxidation reaction; ferrous was converted into ferric form. SO₄ was minimally present in both the samples. Water evaporated and we got a final product as reddish colored ferric oxide. Ferric content in kasis bhasma produced by method A was 43.63% while that of method B was 41.70 %. Final product obtained (kasis bhasma) was almost one fourth of original quantity, taken as unpurified kasis. This can be explained by the fact that there was evaporation of water and sulphur as SO₄. LOD test shows the amount of moisture drying off from the matter¹⁷. During bhasma preparation the moisture content is reduced and it becomes non volatile inorganic material. Both the samples were colorless, odourless and passed all tests for final bhasma products as mentioned in bhasma pariksha. So there was no notable difference between chemical analyses of kasis bhasma obtained by these two methods, but further studies (randomized double blind) studies are necessary to assess clinical superiority and therapeutic efficacy of kasis bhasma obtained by either of two methods. Analysis of kasis at each stage of its formation to kasis bhasma shows the changes in physical and chemical properties due to its transformation as it is heated thermal decomposition starts. The chemical analysis of kasis bhasma shows the highest percentage of ferric iron in comparison with raw and shodhit form. Chemical analysis of kasis bhasma obtained by incineration process, by snuhipatra swaras Bhavana, and kanji and nimbu swaras bhavana does not show any notable difference in chemical composition. Both methods can be used to prepare kasis bhasma as per availability of bhavana dravya.⁹

III. RESULTS

Table-1

Company name	Marketed formulation of Bhasma
Shree Siddhashram Pharmacy, Jaipur, Rajasthan	Abhrak Bhasma, Bang Bhasma, Kashish Bhasma, Ropya Bhasma, Tamra Bhasma, Swarna Bhasma
Shree Baidyanath Ayurved Bhawan (P) Ltd. Kolkata	Abhrak Bhasma, Akik Bhasma, Vaikrant Bhasma, Godanti (Harital) Bhasma
Dindayal Aushadhi Pvt. Ltd. Dindayal City Mall, Gwalior	Kashish Bhasma, Ropya Bhasma, Tamra Bhasma, Swarna Bhasma, Naga Bhasma
Gurukul Kangri Pharmacy, Haridwar	Swarna Bhasma, Ropya Bhasma, Tamra Bhasma
Unjha Ayurvedic Pharmacy, Unjha, Gujarat	Abhrak Bhasma, Bang Bhasma, Kashish Bhasm, Dhanwantary Prasad, Ropya Bhasma, Tamra Bhasma, Swarna Bhasma

Traditionally, the end points of incineration of a metal and its conversion to a Bhasma state are evaluated based on the following criteria:

1. Lusterless: There should be no chandrika or metallic luster (nischandrika)
2. Rekhapurnatvam: When a Bhasma is spread between the index finger and thumb and rubbed, it should be so fine as to get easily into the lines and crevices of the fingers and should not be washed out from the lines of the fingers
3. Varitaratavam: When a small quantity is spread on cold and still water, it should float on the surface
4. Apurnabhava: The Bhasma should not revert to the original state
5. Tasteless: Bhasma should be tasteless
6. Avami: The Bhasma should not produce nausea on administration.¹⁰



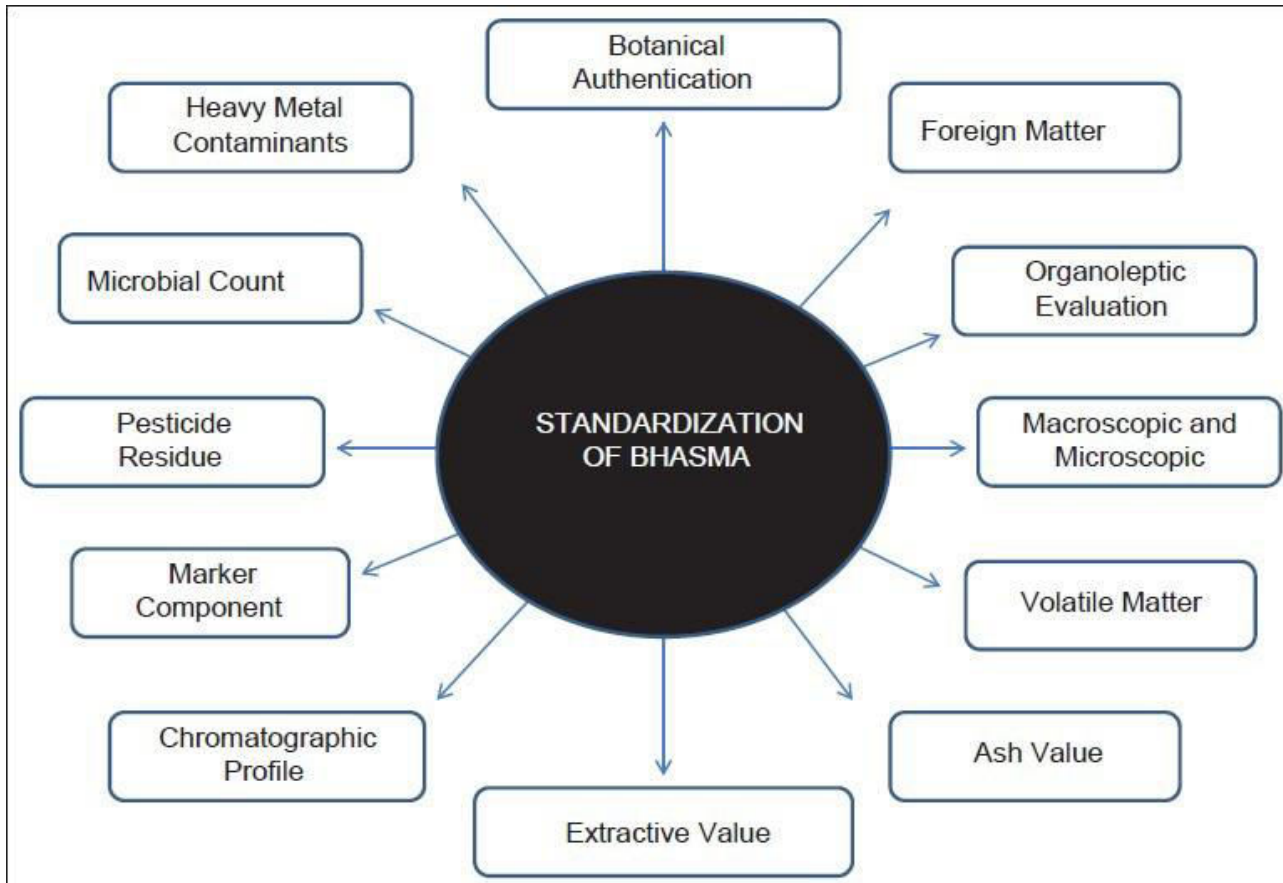
Table-2

Marketed Bhasmas products and their uses

Name	Ingredients	Dosage	Uses
<i>Navrattankalp amrit ras</i>	Calcined ash of expensive gems, minerals like ruby, sapphire, emerald, cat's eye stone, pearl, coral, silver, gold, iron, zinc	62.5 mg twice daily	Cancers of all types, anemia, complications of diabetes
<i>Heerak Bhasma</i>	Diamond	12.5-25 mg twice daily	Useful in cancers, immunity disorders, crippling rheumatoid arthritis, bone marrow depression
<i>Tsrailokya chintamani ras</i>	Diamond, gold, silver, iron	62.5 mg twice daily	Severe respiratory tract infections, bone marrow depression, ovarian cysts, uterine fibroids
<i>Swarna basant malti ras</i>	Gold, <i>piper-nigrum</i> , white pear powder	62.5 mg twice daily	Tonsillitis, fevers, cough, bronchitis, decreased immunity, cancers, auto-immune disorders
<i>Kamdudha ras</i>	Ochre, <i>Tinospora cordifolia</i> , mica (calcined)	250-500 mg twice daily	Hyperacidity, headache, fever, blood pressure
<i>Vasant kusumakar ras</i>	Gold, silver, coral	62.5-125 mg twice daily	Complications of diabetes, neuropathy, general weakness
<i>Kumar kalian ras</i>	Gold, iron, mica, copper pyrite, red sulfide of mercury	62.5-125 mg twice daily	General debility in children, fever, respiratory tract infections
<i>Tamra Bhasma</i>	Copper, mercury, sulfur	62.5-250 mg twice daily	Anemia, jaundice, digestive disturbance, abdominal disorders
<i>Loha Bhasma</i>	Iron, cinnabar	125-250 mg twice daily	Enlargement of liver, anemia, jaundice
<i>Vaikrant Bhasma</i>	Manganese, sulfur (Tourmaline)	62.5-125 mg twice daily	Diabetes, can be used in place of diamond ash in case of poor patients
<i>Loknath ras</i>	Mercury, sulfur, conch shell	62.5-125 mg twice daily	Diarrhea, respiratory disorders, immunity disorders, cancers, ovarian cysts
<i>Abhrak Bhasma</i>	Calcined purified mica ash	125-250 mg twice daily	Respiratory disorders, diabetes, anemia, general weakness
<i>Swarna Bhasma</i>	Ash of gold (Calcined gold)	12.5-62.5 mg twice daily	Improves body immunity, general weakness, anemia, energetic
<i>Rajat Bhasma</i>	Silver ash (Calcined silver)	62.5-125 mg twice daily	Irritable bowel syndrome, acidity, pitta disorders
<i>Ras raj ras</i>	Red sulfide of mercury, mica, gold, iron, silver, with ania somnifera, <i>Syzygium aromaticum</i>	62.5-125 mg twice daily	Paralysis, hemiplegia, rheumatism, insomnia, stroke
<i>Shwaskuthar ras</i>	Black sulfide of mercury, aconitum ferox, sodium bicarbonate, piper. nigrum, 'Trikatu'	125-250 mg twice daily	Cough, pneumonia, bronchitis
<i>Swarnmakshik Bhasma</i>	Copper pyrite (calcined), mercury, sulfur	125-250 mg twice daily	Anemia, jaundice, stomatitis, chronic fever
<i>Kaharva pishti</i>	Amber of succinite (trinkantmani), rosa centifolia (rose)	125-250 mg twice daily	Bleeding
<i>Yogender rasa</i>	Red sulfide of mercury, gold (calcined), magnetic iron, mica, <i>myristica fragrans</i>	62.5-125 mg twice daily	Polio, paralysis, muscular weakness, insomnia, headache
<i>Bolbadh ras</i>	Black sulfide of mercury, <i>Tinospora cordifolia</i> , <i>Commiphora mukul</i>	125-250 mg twice daily	Bleeding
<i>Praval pishti</i>	Purified powder of corals	125-250 mg twice daily	Calcium deficiency, blood pressure, insomnia, agitation
<i>Praval panchamrit</i>	Powder of corals, pearls, conch shells	125-250 mg twice daily	Richest source of natural calcium, agitation, acidity, burning sensation
<i>Jaharmohra pishti</i>	Powder of serpentine orephite	125-250 mg twice daily	Natural source of calcium, useful in burning sensation, acidity, heart burn
<i>Sarvatobhadra Vati</i>	Mercury, sulfur (purified and calcined), with gold	62.5-125 mg twice daily	Renal failure, nephrotic syndrome, dialysis, high urea and creatinine
<i>Punarnavam andoor</i>	Iron ore ash, <i>Boerhavia diffusa</i> , <i>Picrorhiza Kurroa</i> <i>Embelia ribes</i>	125-250 mg twice daily	Diuretic, anemia, swelling around joints, blood pressure, liver cirrhosis, ascites
<i>Akikpishti</i>	Agate stone calcined	125-250 mg twice daily	Heat/pitta diseases, blood pressure, acidity, ulcers
<i>Mukta pishti</i>	Pearls powder (moti pishti)	62.5-125 mg twice daily	Calcium, cooling and soothing, blood pressure, acne, headaches, acidity, ulcers, heat disorders
<i>Vriht vat chintamani ras</i>	Herbs and minerals for vitiated vata- calcined mercury, sulfur (purified) and other metals and minerals	62.5-125 mg twice daily	Stroke, paralysis, parkinsonism, epilepsy, tetany, muscle stiffness, joint pains



Standardization of Bhasma



Bhasma which contains metals, minerals, and animal products, the manufacturing process plays a specific role in the raw material mixture in the final product. These could be important chemical markers for Bhasma prepared using a particular method. As a result of different stages of processing techniques like shodhana (which involves roasting, with addition of herbal juices and continuous stirring) and marana [which involves bhavana (wet trituration) and puta system of heating],¹⁶ the particle size reduces significantly, which may facilitate absorption and assimilation of the drug into the body system. The particle size in the Bhasma is 1-2 μ, which could be specified as the criterion for the final product conforming to all the traditional parameters under Bhasma pariksha (examination of properly prepared Bhasma). Although Bhasmas are complex materials, physicochemical analysis using modern techniques will be most attractive for the standardization of Bhasma medicines. This would definitely help in building confidence in use of such products for medication by ensuring safety, efficacy, and batch to batch uniformity.¹¹

Modified Portable Bhasma Nirman Yantra (MPBNY)

In MPBNY, LPG is used as fuel and required extent of heat is maintained with the help of LPG burner. Two thick iron rings were prepared on the stand for Sharava (earthen pot in which metal or mineral to be subjected for incineration is placed) and firebricks made to cover the outer portion of the instrument.¹⁵ The thick iron rings with crossed thick iron rods, heated during Puta and thus heat will get absorbed in them, after stopping the heat supply, the iron rod and ring emits the absorbed heat, this helps to keep the inner temperature of the instrument high for longer time.¹⁴ The fire brick also helps to prevent heat loss. The structure of MPBNY can be divided into three parts viz protective, supportive and active parts, the protective parts include, metal stand for Yantra (instrument) and fire brick with nut and bolts, the supportive parts which is made up of metal holder, upper iron cauldron, lower iron cauldron, metal stand for Sharava, aperture for pyrometer and the active parts contains heat convergent vessel, upper metal rods, lower hollow metal rods, pyrometer, and LPG burner.⁹



IV. CONCLUSIONS

There are two types of Kasisa viz Pushpa Kasisa and Valuka Kasisa, Pushpa Kasisa which is crystalline with bluish green colour; is acceptable type and used for medicinal purpose hence taken for bhasma preparation.¹³ The raw Kasisa of quantity 1500 gm was taken for Shodhana. The Shodhana was carried out by 3 hour sudation with Bhringaraja Swarasa (extract of *Elipta alba* Niss.). Obtained shodhit kasisa was divided into four equal batches; each batch contains 300 gm of kasisa. The batch were named as Batch A, B, C and D, each batch was levigated with Kanji for seven times followed by preparing small cakes and subjecting to puta, from 2nd Batch A was used to prepare kasisa bhasma by traditional method, i.e. puta for this batch were given by using cow dung cakes. 20 cow dung cakes were taken for one puta, such two puta were required to obtain kasisa bhasma.¹² The other three batches were subjected for puta in MPBNY, four puta were required to obtain Kasisa bhasma. The maximum temperature observed, time required to reach this level and time required to fall temperature up to 30°C in traditional method of Puta were 624°C, 23 minutes and 4 hour and 20 minutes respectively. In MPBNY 4 Puta's were required to prepare Kasisa bhasma. The maximum temperature observed, time required to reach this level and time for fall of temperature up to 30°C were 610°C, 1 hour and 35 minutes and 6 hour and 15 minutes respectively. Kasisa bhasma prepared by both methods were dark red, not sour, smooth and with no specific luster and odour. Prepared Kasisa bhasma was tested for Apunarbhava, Niruttha, Niswadu, Rekhapurnatva, Varitaratva and Niramla pariksha. All batches satisfactorily passed above mentioned bhasma pariksha's. Kasisa bhasma prepared by traditional method and by MPBNY are nearly same with respect to their organoleptic characters and physico-chemical properties. The maximum temperature required to prepare Kasisa bhasma by traditional method was 624°C and in MPBNY it was 610°C. Puta procedure of bhasma preparation in MPBNY is more convenient than traditional method of puta.^{11,20}

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