

Research article

Comparative analytical review of *Hartal Bhasma* prepared by *Shukti marit (s.m)* and *Palasha marit (p.m)* methods wsr to *rasatarangini*

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ABSTRACT:

Article is content comparative analytical review of Hartal Bhasma prepared by Shukti Marita and Palash Marita method. Analytical study provides objective parameters to fix up the standards for quality of raw drugs as well as finished products. Analytical study of a drug also helps to interpret the pharmacokinetics and pharmacodynamics of the same. With the help of analytical studies, it is possible to standardize the plant and drug, differentiate the adulterants, which is the need of present era. Analytical study is the application of a process or a series of processes in order to identify and authentify or quantify a substance, the components of a solution or mixture, or the determination of the structures of chemical compound. Hartala is inorganic compound of arsenic and sulphur. Which is toxic to body internally and externally. Hence to reduce its toxicity and to change its form from inorganic to organic compound rasa grantha has mentioned lots of Shodhana process of Hartala with different Shodhana dravyas. and also mentioned different method of its Marana process. Satvapataana of Hartala also mentioned in texts. The pH scale is derived from the actual concentration of the hydrogen in the solution. convenient method of indicating the relative degree of acidity and alkalinity of aqueous solutions. The loss on drying is the loss in weight in % w/w resulting from water and volatile matter of any kind that can be driven off under specified conditions. It indicates the total moisture (water) contents in drug. More is the moisture content, greater the value of loss on drying. As moisture is media for many pathogenic microorganisms, it should have maximum limit nearest whole number. The residue remaining on incineration is the ash content of the drug, which represent the inorganic salts naturally occurring in drug or adhering to it or deliberately added to it as a form of adulteration. Acid Insoluble ash represents a silicious matter. The degree of coarseness of a powder is differentiated and expressed by the size of the mesh of the sieve through which the particle is able to pass. XRF is the emission of characteristics secondary X-rays from a material that has been excited by bombarding with high energy x-rays or gamma rays. The phenomenon is widely used for elemental analysis and chemical analysis, particularly in the investigation of metals, glass, ceramics and building materials, and for research in geochemistry, forensic science and archaeology.

KEY WORDS: Shukti Marit, Palash Marita, Bhasma, Puta, XRF, pH

INTRODUCTION:

The Aim of Ayurveda is not only to maintain the healthy conditions of body, but also to restore the unhealthy conditions under various impairing causes as diseases etc. to normally with a view to achieve prolong life span, maintain positive health and cures diseases, different types of metals, minerals and herbal drugs, found in nature have been used since a long time. Hartala (Orpiment or Yellow arsenic) is mentioned in Uparasa varga by almost all Acharyas. Hartala is also comes in Malla varga (Somala, Manashila and Hartala). Chemical combination of Hartala is 2 AS2S3 i.e. Arsenic with sulphur in nature. Hartala was used since ancient periods for colouring of face, eye brows by artists. During samhita period it was used to treat various disease like Kushta, Vatarakta

firang etc There is so many methods are mentioned to prepare Hartala Bhasma but in present day only few methods are used for Bhasma preparation. Instead of Hartala Bhasma Rasamanikya was used mostly all over. The present study deals with comparative analytical study of Hartala Bhasma by two methods. 1st by reference of Rasatarangini 11/ 39- 41 and 2nd by reference of Rasatarangini 11/ 42- 44, also comparative study of their physico-chemical properties. In this two methods, In one method Hartala Bhasma will be prepared with help of Shukti Bhasma i.e. Sudha varga dravya and Second method Hartala Bhasma will be prepared with the help of Palash mula and Mahisha mutra which are easily available and also affordable.

To maintain the therapeutic effect of a medicine, the quality and purity of the ingredients are to be maintained. So the standardization of a medicine begins from the selection of crude drugs itself. To establish an effective standardization system, every Ayurvedic manufacturing industry should maintain collection of crude drugs which are properly standardized. Samples collected from market are compared to standard collection maintained by the industry to check quality and purity of crude drugs purchased and thus improving the quality of Ayurvedic medicines.

In present study Hartala Bhasma is prepared by two different methods –

- 1 st method with ref. of Rasatarangini 11/39-41
- 2 nd method with ref. of Rasatarangini 11/42-44

MATERIALS:

pH meter ,Filter paper , Distil Water, Sample, Crucible, Muffle furnace , Desiccators with drying agent, Weighing machine, Stop watch.

RESULTS

Classical Organoleptic parameters:

Table No. 1: Comparative Results of S. M. Hartala Bhasma and P. M. Hartala Bhasma as per Organoleptic parameters

Sr. No.	Parameter	S. M. Hartala Bhasma	P. M. Hartala Bhasma
1	Varna	Off White	Light Grey
2	Sparsa	Soft, smooth	Soft, smooth
3	Rasa	Tastelessness	Tastelessness
4	Gandha	Odourless	Odourless
5	Shabda	Soundless	Soundless

Classical Physico-Chemical Parameters:

Table No. 2: Comparative Results of S. M. Hartala Bhasma and P. M. Hartala Bhasma as per Ayurvedic Physico-Chemical parameters

Sr. No.	Parameter	S. M. Hartala Bhasma	P. M. Hartala Bhasma
1	Rekhapurnatva	Positive	Positive
2	Varitaratva	Positive	Positive
3	Nischandratva	Positive	Positive
4	Nirdhoomatva	Positive	Positive
5	Unam Pariksha	Positive	Positive
6	Mruta Talak Pariksha	Positive	Positive

Modern chemical parameters:

Table No. 3: Comparative Results of S. M. Hartala Bhasma and P. M. Hartala Bhasma as per Modern Physico-Chemical parameters

Sr. No.	P. M. Hartala Bhasma		S. M. Hartala Bhasma	
	Elements	Mass %	Elements	Mass %
1	Magnesium (Mg)	1.830	Sulfur (S)	5.746
2	Silicon (Si)	4.118	Calcium (Ca)	29.195
3	Phosphorus (P)	0.565	Iron (Fe)	0.125
4	Sulphur (S)	8.668	Copper (Cu)	0.033
5	Chlorine (Cl)	6.339	Arsenic (As)	33.349
6	Potassium (K)	27.422	Strontium (Sr)	0.109
7	Titanium (Ti)	0.515	Antimony (Sb)	0.350
8	Manganese (Mn)	0.182	Oxygen (O)	31.092
9	Iron (Fe)	5.709	Sulphur (S)	5.746
10	Copper (Cu)	0.151		
11	Zinc (Zn)	0.075		
12	Arsenic (As)	8.815		
13	Strontium (Sr)	0.063		
14	Antimony (Sb)	3.817		
15	Mercury (Hg)	0.000		
16	Oxygen (O)	31.733		

DISCUSSION:

Shukti Marita Hartala Bhasma passed Rekhapurnatva test in single Laghu Puta while Palash Marita Hartala Bhasma passed this test after 9th Kapota Puta. Shukti Marita Hartala Bhasma passed Varitaratva test in single laghu Puta while Palash Marita Hartala Bhasma passed this test after 15th Kapota Puta. Shukti Marita Hartala Bhasma passed Nischandratva test in single laghu Puta while Palash Marita Hartala Bhasma passed this test after 12th Kapota Puta. Shukti Marita Hartala Bhasma passed Nirdhoomatva test in single laghu Puta while Palash Marita Hartala Bhasma passed this test after 16th Kapota Puta. Shukti Marita Hartala Bhasma passed Unam Pariksha test in single laghu Puta while Palash Marita Hartala Bhasma passed this test after 16th Kapota Puta. Shukti Marita Hartala Bhasma passed Mruta Talak Pariksha in single laghu Puta while Palash Marita Hartala Bhasma passed this test after 16th Kapota Puta.

Modern chemical parameters- Total Ash, It indicates inorganic matter present in the Bhasma. It is found more in mineral and herbo-mineral compounds. It is 100.00 % in Shukti Marita Hartala Bhasma and 98.24 % in Palash Marita Hartala Bhasma respectively. Acid Insoluble Ash, It is 07.01 % in Shukti Marita Hartala Bhasma and 17.46 % in Palash Marita Hartala Bhasma. These changes may be occurred due to earthen pots used for the puta. Water soluble Ash, It indicates quantity of inorganic salts which is soluble in water. It is 08.09 % in Shukti Marita Hartala Bhasma and 41.44 % in Palash Marita Hartala Bhasma. Palash Marita Hartala Bhasma solubility is more than Shukti Marita Hartala Bhasma. Loss on Drying, It indicates presence of amount of moisture in the Bhasma. Its percentage should be less in Bhasma as bhasma is considered as ash. Its value in Shukti Marita Hartala Bhasma is 00.29 % and in Palash Marita Hartala Bhasma is 01.47 % Particle Size, It indicates fineness of product, It is 61.04 μm of Shukti Marita Hartala Bhasma and 45.77 μm in Palash Marita Hartala Bhasma. Palash Marita Hartala Bhasma particle size is less than Shukti Marita Hartala Bhasma. pH value, it indicates the Bhasma is acidic or alkaline, pH of Shukti Marita Hartala Bhasma is 10.20 and pH of Palash Marita Hartala Bhasma is 8.23 Shukti Marita Hartala Bhasma is more alkaline in pH than Shukti Marita Hartala Bhasma. Arsenic % in Shukti Marita Hartala Bhasma is more than Palash Marita Hartala Bhasma which means Palash Marita Hartala Bhasma is more safer than Shukti Marita Hartala Bhasma. Sulfur % is more in Palash Marita Hartala Bhasma than Shukti Marita Hartala Bhasma which means Palash Marita Hartala Bhasma has more sulphide form than Shukti Marita Hartala Bhasma. Shukti was used as Marana dravya in 1st method of Hartala Bhasma hence 29.195 % calcium is traced in Shukti Marita Hartala Bhasma. Palash Mula Ghana Kwatha and Mahish Mutra is used as Bhavana dravya in 2nd method, both has Kshariya property. Hence Potassium is traced in this % in Palash Marita Hartala Bhasma.

CONCLUSION:

Arsenic % is less in P.M. Hartala Bhasma than S.M. Hartala Bhasma. Hence P.M. Hartala Bhasma was safer to use than S. M. Bhasma because chances of getting deposition in long term use of Arsenic in body is less and toxicity is low compare to that of S.M. Hartala Bhasma. Particle size of P.M. Hartala Bhasma is significantly small hence efficacy, absorption may faster than that of S.M. Hartala Bhasma. P. M. Hartala Bhasma has more water soluble ash than S. M. Hartala Bhasma. i.e. P. M. Hartala Bhasma - 41.44 % and S. M. Hartala Bhasma - 08.09 %. Particle size of P. M. Hartala Bhasma was smaller than S. M. Hartala Bhasma i.e. particle size of P. M. Hartala Bhasma is 45.77 μm and S. M. Hartala Bhasma particle size is 61.04 μm . Sophisticated instrumental technique XRF was carried out at Varsha Bullion & Elemental Analab, Mumbai. Which shows elemental percentage of S. M. Hartala Bhasma and P. M. Hartala Bhasma. S. M. Hartala Bhasma has more arsenic percentage than P. M. Hartala Bhasma i.e. Arsenic % in S. M. Hartala Bhasma - 33.349 % and in P. M. Hartala Bhasma it is - 8.815 %. P. M. Hartala Bhasma has more sulphur percentage than S. M. Hartala Bhasma i.e. 8.668 % Sulphur in P. M. Hartala Bhasma and 5.746 % Sulphur in S. M. Hartala Bhasma. The comparative analytical study of both the Bhasmas showed that P. M. Hartala Bhasma was analytically safer than S. M. Hartala Bhasma.

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