EUROPEAN JOURNAL OF BIOMEDICAL AND PHARMACEUTICAL SCIENCES
http://www.ejbps.com

ISSN 2349-8870
Volume: 8
Issue: 3
164-166
Year: 2021

PHARMACEUTICO ANALYTICAL STUDY OF *ABHRAKA BHASMA* PREPARED BY VARIOUS *SHODHANA* PROCEDURES

***[1]Dr. Pramod K. Patel, [2]Dr. Deepika Thakur and [3]Dr. K. Shankar Rao**

[1]Lecturer, Department of RS & BK, Pt. Khushilal Sharma Govt. Ayurved College & Institute, Bhopal (M.P).
[2]Lecturer, Department of *Agad Tantra*, Pt. Khushilal Sharma Govt. Ayurved College & Institute, Bhopal (M.P).
[3]Professor & HOD, Dept. of RS & BK, NIA Jaipur 302002.

***Corresponding Author: Dr. Pramod K. Patel**
Lecturer, Department of RS & BK, Pt. Khushilal Sharma Govt. Ayurved College & Institute, Bhopal (M.P).

Article Received on 24/12/2020 **Article Revised on 14/01/2021** **Article Accepted on 04/02/2021**

ABSTRACT

Introduction: Ayurveda is a highly evolved and codified system of life and health science based on its own unique and original concept and fundamental principles. Rasashastra has becomes a well-established branch of Ayurveda serving humanity with its unique heritage of drugs derived from metallic and mineral sources. The innate qualities like quick action, less dose, tastelessness, prolonged shelf life and better palatability of *Rasaushadhis* have helped them to conquer the compliance of the patients.

These properties are not present in raw metals and minerals. Before using any metals and minerals they have to be *shodhita*. As *Shodhana* is not only purification but also a *Sanskaar* which removes its impurities, reduces its toxicity and potentiates its efficacy. So this study was done to analyze the importance of *shodhana* in preparation of *Abhraka bhasma*.

Materials & Methods

Table showing three samples of *Abhraka bhasma* for Analysis.

Sr.No.	*Shodhan*	*Marana*	Reference
Sample1 AB-T	by *nirvapa* method in *Triphla kwath*	By *Arka ksheer* and *Vatajatakwath*	Rasendra Sara Sangrah 1/149, 1/163-164
Sample2 AB-K	by *nirvapa* method in *Kanji*	By *Arka ksheer* and *Vatajata kwath*	Rasendra Sara Sangrah 1/149, 1/163-164
Sample3 AB-G	By *nirvapa* method in *Godugdha*	By *Arka ksheer* and *Vatajata kwath*	Rasendra Sara Sangrah 1/149, 1/163-164

Results: Organoleptic parameters have not shown much difference in different samples. X-Ray diffraction has shown peaks of major crystalline components present in *Abhraka Bhasma*. In EDS different percentages of elements were seen in all samples. **Discussion:** The values of loss of drying showed a marginal difference in *Abhrak bhasma* sample AB-G when compared to the Abharak bhasma AB-T sample. The reason could be varying amount of *bhavna dravya*. Sample AB-T contains Phosphorus, sample AB-K was found to contain Carbon and Sample AB-G shows presence of Sodium and Sulphur.

INTRODUCTION

Rasa Shastra, the branch of *Ayurveda* secures a unique place in field of medicine because it deals with the preparation of medicines from metals, minerals and poisonous drugs, and that too with composition of herbs.

Abhrak bhasma is such a calcinated mineral. *Abhraka* (mica) occupies a significant position in *Rasa Shastra* because of its tremendous potential in the management of a variety of ailments. Utility of *Abhrak bhasma* is well established through its continuous use as an excellent medicine since medieval period. We perceive its importance in terms of trace element requirement of human body and its possible catalytic action. A large number of herbs and other organic materials have been quoted in reference to various procedures performed in order to prepare *Abhrak bhasma*. It is wonderful that different pharmacological actions have been attributed to different *dravya*. The indication of the *bhasma* changes with the change in *dravya* used in processing.

As all metals and minerals are toxic in raw form, proper processing is needed to eliminate their toxicity so they can be absorbed in body systems. To achieve this target,

the of *Shodhan* in *Ayurveda*, is not just cleaning or purification. Rather it is the term applied for the process which reduces the toxicity of minerals and metals and makes them ready for further processing. In this way, various *Rasa dravyas* are converted into excellent medicines.

Different *shodhan* methods for *Abhraka* are mentioned in different Rasa texts. But it is not clear that by adopting a particular *shodhan* method, which special properties are imparted to *Abhrak bhasma*. If we can acquire this knowledge, we can use *Abhraka bhasma* more efficiently and specifically. So this study was carried out to analyze the importance of *shodhana* in preparation of *Abhraka bhasma* by adopting various *shodhana* drugs.

MATERIALS AND METHODS

Materials used in this preparation were based on availability, feasibility according to classical indication of *Rasa Shastra*, traditional value and expert opinions. Raw materials include *Abhraka* and drugs used for *shodhan* and *maaran*.

Abhraka Bhasma has been prepared by adopting standard methods advocated in A.F.I[3] - the Government approved official formulary, by following instructions quoted in legal notice of A.F.I. All the pharmaceutical processes were carried out in laboratory of Department of *Rasa Shastra* and *Bhaishjya Kalpna*, N.I.A., Jaipur.

Table showing three samples of *Abhraka bhasma.*

Sr.No.	*Shodhan*	*Marana*	Reference
Sample1 AB-T	by *nirvapa* method in *Triphla kwath*	By *Arka ksheer* and *Vatajatakwath*	Rasendra Sara Sangrah 1/149, 1/163-164
Sample2 AB-K	by *nirvapa* method in *Kanji*	By *Arka ksheer* and *Vatajata kwath*	Rasendra Sara Sangrah 1/149, 1/163-164
Sample3 AB-G	By *nirvapa* method in *Godugdha*	By *Arka ksheer* and *Vatajata kwath*	Rasendra Sara Sangrah 1/149, 1/163-164

RESULTS

1. Organoleptic parameters

Table showing Organoleptic parameters of three samples of *Abhraka bhasma.*

Sr.No.	Parameters	AB-T	AB-K	AB-G
1.	Colour	Brick red	Brick red	Brick red
2.	Texture	Smooth	Smooth	Smooth
3.	Odour	Specific Odour	Specific Odour	Specific Odour
4.	Taste	Salt like	Salt like	Salt like

All the observations were same for all the three samples. No difference was found in organoleptic parameters.

2. Physico chemical parameters

Table showing Physico-chemical parameters of three samples of *Abhraka Bhasma*

Sr.No.	Name of the Test		Test values			Mean
			AB-T	AB-K	AB-G	
1.	Percentage Loss on Drying		0.133	0.160	0.230	0.174
2.	Percentage of Total Ash		99.93	99.90	99.93	99.92
3.	Percentage of Water soluble Ash		6.4	8.8	8.2	7.8
4.	Percentage of Acid Insoluble Ash		52.3	49.0	50.6	50.65
5.	pH	5.0% w/v. solution	7.45	7.64	7.56	7.55
		10% w/v. solution	7.94	7.89	7.90	7.91

Namburi Phased Spot Test

Spot readings of all the three samples were found same that of standard for *Abhraka Bhasma*. No difference was observed in three samples as shown in photographs.

3. Elemental analysis

- **X-Ray Diffraction**

X-RD study revealed the peaks of major crystalline components of the *Abhraka bhasma* and their standard reference numbers. Though each peak could not be identified due to scarcity of the resources, identification of major compounds was successfully done. The data obtained can be used as a standard for future reference. Graphs of all the three samples were exactly same.

- **EDS (Energy Dispersive X-ray Spectroscopy)**

Sample - AB-T.

Element	Weight%	Atomic%
O K	48.44	64.32
Mg K	12.67	11.07
Al K	3.38	2.66
Si K	11.67	8.83
P K	5.99	4.11
K K	4.62	2.51
Ca K	9.83	5.21

Fe K	3.41	1.30
Totals	100.00	

Sample - AB-K.

Element	Weight%	Atomic%
C K	25.30	35.24
O K	50.34	52.64
Mg K	6.03	4.15
Al K	2.34	1.45
Si K	5.45	3.25
K K	2.72	1.16
Ca K	1.82	0.76
Fe K	2.10	0.63
Zr L	3.88	0.71
Totals	100.00	

Sample AB-G.

Element	Weight%	Atomic%
O K	56.19	72.33
Na K	2.34	2.09
Mg K	10.92	9.25
Al K	2.22	1.69
Si K	6.86	5.03
S K	4.33	2.78
K K	7.23	3.81
Fe K	5.45	2.01
Zr L	4.46	1.01
Totals	100.00	

DISCUSSION

After the process of shodhana the gain in weight of Abhraka was observed. The reason behind weight gain was addition of iron sloughing from red hot iron pan during quenching and some amount of triphala decoction was added to the Abhraka in the form of charcoal.

During the process of Dhanayabhrakikarana the weight of Abharka reduced up to 28%. The reduction in weight was due to removal of silica particles from the shodhana of Abhraka. No doubt the traditional method for Dhanayabhrakikarana is very scientific but it can be used only for small scale manufacturing. It is not practical for industrial purpose so there is a need to develop an alternative method.

It was observed that the quantity of ksheera used for Ist Bhavana was more than subsequent bhavana. Dhanyabhraka being light in nature occupied the whole khalva and the more ksheera was required for wetting and trituration of material.

In the 1st puta the weight of abhraka was remarkedly reduced but after that it increases gradually in every puta. The reason behind it was the addition of ash value of Arka ksheera and vata jata Kwatha.

The values of loss of drying showed a marginal difference in *Abhrak bhasma* sample AB-G when compared to the Abharak bhasma AB-T sample. The reason could be varying amount of *bhavna dravya* which contribute to *kshar* content attracting moisture or inevitable manual error during analysis.

Water soluble Ash of Sample AB-K shows slightly higher percentage. The reason could be variation in ash value of *bhavna dravya.*

Acid Insoluble Ash of the *Abhrak bhasma* sample AB-T has showed higher values of acid insoluble ash when compared to the other two samples. It denotes the silica content present in the sample. That means the AB-T contains more silica than the other. The reason is the AB-T was triturated in a stone mortar and pestle due to scarcity of means. Rubbing of stone with trituration liquids will certainly add some silica content to the main formulation.

Namburi Phased Spot Test shows no major changes. The reason may be that it is qualitative test and just indicates the presence of that substance for which it is to be performed.

EDS (ENERGY DISPERSIVE X-RAY SPECTROSCOPY)

This study presents qualitative and quantitative elemental analysis of drug formulation. Major elements in all the three samples were found to be same. Some observations are as under:-

- Sample AB-T contains Phosphorus while the other two samples have not.
- Sample AB-K was found to contain Carbon in considerable proportion.
- Sample AB-G shows presence of Sodium and Sulphur. Sodium may be from alkaline ash of *bhavna dravya.* Source of Sulphur is point to be researched further.
- Presence of Zirconium in one sample is from coating preparation while preparing sample for EDS analysis. Another source may be from fireproof wool coated inside muffle furnace in which *puta* was given to the samples.