

Synthesis and Characterisation of Genuine Bhasma by EDAX Analysis

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ABSTRACT

The supreme role of the plant kingdom as a whole and of medicinal plants in particular in the human welfare was properly realized in India since the time of Vedas, and ayurvedicians have made maximum utilization of plant kingdom in the field of pharmacy. In the subsequent periods also most of the research and interest has been centered on the detailed studies of medicinal plants. For the safer use of bhasma characterization of genuine mettali bhasmas and confirmation of their identity is important to lose all metallic characteristics. Complete conversion of metallic powder to the Bhasma is essential for this purpose. Using plant extract we synthesized Bhasmas and then characterization of it is done by EDAX analysis.

Keywords- Lohabhasma, Marana, Gajputa etc.

INTRODUCTION

Iron has been one of the most important metal which has played significant role in ancient Indian civilization and Indian system of medicine. The chemistry and metallurgy of iron was highly developed in India from ancient times. The *ayurvedic* principles and method of treatment involving ayurvedic medicine are quite different as compared to those of other pathies, especially modern allopathy.

This must be taken into account while undertaking any research programme related to *ayurvedic* drug. Thus, most of the modern allopathic drugs are designed for specific purpose and they work effectively for that purpose only. On the other hand, an *ayurvedic* drug specially one belonging to drug of mineral origin, is designed according to class and condition of patients and it may not be useful for other patients. Because the origin of the disease or complaint may be quite different in two cases. Second differential aspect which is more important for research investigation of a *ayurvedic* drugs is that it is possible to induce desired medicinal properties in metallic *bhasmas* by modifying the method of synthesis. In the case of *bhasma* therapy, there is one more parameter- *anupana* (medium of drug administration) through which the same drug can be used for different ailments. Therefore, these *bhasmas* can work as versatile drugs if used according to *ayurvedic* pharmacology. Now, we are concerned here with the first aspect in which the medicinal properties can be changed by modifying synthetic procedure. This modification is developed by Nagarjun, a reputed authority in *rasashastra* according to which specific medicinal property can be induced on an *ayurvedic bhasma* with the help of an appropriate

medicinal plant. The use of medicinal plant for this purpose is done as follows.

MATERIAL AND METHOD

Using *Trifala* Extract:

In this method firstly the iron powder (500g) was subjected to general method of purification in which the powder was heated to red heat and then dipped successively in *til* oil, butter milk, cow urine and aqueous extract of *dolichos* (*kulith*) and rice (*kanji*). Then special purification was done in *trifala* extract (aqueous extract of the powder of *Terminalia chebula* (*hirada*) + *Terminalia bellirica* (*behada*) + *Phyllanthus emblica* (*awla*) all taken in equal parts). The destruction of metallic character (*marana*) was done by triturating the purified iron powder in *trifala* extract for about six hours. The process of *bhasmikiranana* was also done using concentrated extract of *trifala* for which above processed powder was triturated in a mortar with *trifala* extract till a homogeneous paste is formed. This was then subjected to *gaja-puta* in a closed crucible system. This entire process of *bhasmikiranana* was repeated seven times to get the desired *lohabhasma*.

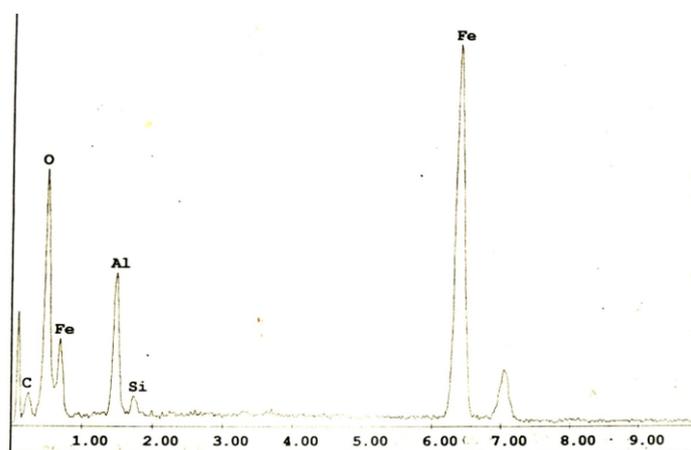


Figure: EDAX of Loha-01 Bhasma

Chemical constituents of synthetic loha-01 bhasma samples

Element	CK	OK	AIL	SiK	FeK
Wt %	12.95	24.66	9.86	1.01	51.52

Sample	Major constituent			Minor / Trace constituents								
	Iron	O	C	Si	S	Na	K	Ca	Al	P	Cr	Mg
Loha-01	51.52	24.66	12.95	1.01	0.65	-	1.02	-	9.86	-	-	-

RESULTS

The significant percentage of carbon identified by E-DAX and the nature of the IR spectra of loha bhasma (as well as for metallic bhasmas obtained from other metals) give some indications in favour of the presence of organic components associated with loha bhasma particles.

CONCLUSION

It is hoped that the results and conclusions from this attempt, will provide some appreciable base and guidelines for more extensive and intensive work in future. The significant results and conclusions of this work are as follows.

- a. The major constituent of all five samples is Fe_2O_3 irrespective of their preparation, its percentage being in the range 58-76 Carbon is found another major constituent of fundamental importance. Its percentage varies from 6.9 to 36.9. The exact form in which this carbon is present is not yet known.
- b. Other minor constituent include SiO_2 , Na, K, Ca, P and S whose percentage show slight variation depending on the methods of preparation.
- c. As referred above, presence of carbon in substantial amount is an encouraging observation. It is consistent with the previously observed and confirmed work on synthesis and characterization of tamra *bhasma* and swarna *bhasma*.

Where also percentage of carbon was found to be high to the extent of 10-30 percent. This percentage of carbon depends on correctly followed technique and skill of the process of *bhasmikarana*. Introduction of carbon in these *bhasmas* is expected to take place during purification and trituration with plant juices where the metal in its finely divided juices interacts strongly with vegetable or organic matter. Identification of such carbon supports the *ayurvedic* concept of imparting organic component to *bhasma* particles so that they are easily assimilable to human system. This also may be major factor behind differential medicinal properties of metallic *bhasma* and their pure oxides.

Conflicts of interest: The authors stated that no conflicts of interest.

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