

Xrf Study Of Yashada Pushpa Prepared By Two Different Methods

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Abstract

Yashada Pushpa is useful in external application. The classical method of preparation of *Yashada Pushpa* is given in *Rasatarangini*. In the present study, *Yashada Pushpa* was prepared by two different methods. The pharmaceutical processes given in *Rasatarangini* and using an Electric muffle furnace (EMF). *Yashada Pushpa* samples were subjected to XRF (X-ray fluorescence) analysis. XRF report of both the samples stated that after subjecting the *Shodhita Yashada* to anyone of these methods it gets converted into its oxide form only but XRF analysis readings differs. Ayurvedic parameters were applied to *Yashada Pushpa* standardization after that XRF analysis was performed.

Keywords: *Yashada Pushpa*, XRF, Standardization

Introduction

Yashada was mentioned first time in 15th century in *Madanpala Nighantu*.⁽¹⁾ There is a detailed description of *Yashada* and its preparations in *Rasatarangini*. Among the 4 methods of *Yashada Marana* mentioned in *Rasatarangini* *Chaturtha Marana Prakara* (4th method) describes the method of preparation of *Yashada Pushpa*. *Shodhita Yashada* kept in an iron vessel on high flame, thus melting and vaporizing it. The endpoint of this procedure is *Kundendhudhawal* (flower like moon white) appearance hence called *Yashada Pushpa* or flowers of zinc.⁽²⁾ In the present study the *Shodhita Yashada* was subjected to *Marana* procedure with two different methods i.e., one as per the classical method and other in which Electric Muffle Furnace (EMF) was used for heating. Organoleptic, Ayurvedic parameters and XRF of the end products of both the methods were analyzed for comparative analysis.

Materials And Methods

Vishesh Shodhana of *Yashada* was done in *Churnodaka* according to *Rasatarangini*.⁽³⁾ *Ashodhita Yashada* was melted and poured through *Pithara Yantra* in a vessel containing *Churnodaka* for 7 times. After *Shodhana* this *Shodhita Yashada* was used for preparation of *Yashada Pushpa*. *Yashada Pushpa* was prepared using two different methods. *Yashada Pushpa* prepared using classical method was named Batch 1 and *Yashada Pushpa* prepared using Electric muffle furnace was named Batch 2.

Batch 1- Chaturtha Marana Prakara (as per classical method)

In this *Shodhita Yashada* was heated and melted in an iron vessel on high temperature and stirred continuously using a *Loha Darvi*, till it gets converted into powder like form. This

powder was allowed to cool down and then filtered through cotton cloth and used as *Yashada Pushpa*.

Batch 2- Using EMF (Electric Muffle Furnace)

In this, same principle was used as described in *Chaturtha Marana Prakara* (fourth method) of *Yashada Bhasma* in *Rasatarangini* but instead of classical heating in iron vessel on high flame, EMF was used for heating and melting. *Shodhita Yashada* was taken in silica crucible which was kept in the EMF with set temperature of 900°C. Then temperature was allowed to rise to 900°C and kept for 30 min after reaching at 900°C. After 30 minutes furnace was allowed to self-cool and after cooling the *Yashada Pushpa* was extracted and sample was used as *Yashada Pushpa*.⁽⁴⁾



Batch 1- Chaturtha Marana Prakara (as per classical method)



Batch 2- Using EMF (Electric Muffle Furnace)

OBSERVATIONS AND RESULTS

In the present study Organoleptic and XRF analysis of *Yashada Pushpa* of both the samples were done.

1. Organoleptic Characters

Organoleptic properties are the aspects of the substances as experienced by the senses, including taste, sight, smell, and touch.⁽⁶⁾

Parameters	Batch 1	Batch 2
Colour	Whitish grey	White
Odor	Odorless	Odorless
Taste	Tasteless	Tasteless
State	Fine powder	Fine powder

1. Ayurvedic Parameters

As per Rasaratnasamucchaya

1. Rekhapurnatwa

When batch 1 and batch 2 *Yashada Pushpa* were rubbed in between the thumb and index finger, they entered into the minute lines of the fingers.

2. Varitara

Batch 1 and batch 2 *Yashada Pushpa* were sprinkled on the surface of water taken in a glass and allowed to stand still. It was observed that most of the sample floated on the surface of water.

3. Nischandratwa

There were no shining particles in both the samples when it was observed under bright sunlight.

2. XRF Analysis Report

X Ray fluorescence (XRF) is an analytical method that makes use of X Ray interaction with target sample in order to determine elements present along proportions or the overall elemental composition.⁽⁷⁾

Compound	Batch 1	Batch 2
ZnO	97.9	96.2
Fe ₂ O ₃	1.27	-
Al, Of	0.181	-
CaO	0.0171	-

Discussion

Colour of batch 1 of *Yashada Pushpa* was whitish grey whereas colour of batch 2 was white. Both the samples were fine powders and had no taste and were also odorless. The XRF analysis of both the samples showed that most of the portion of raw zinc was converted into ZnO (zinc oxide). Whereas there was presence of Fe₂O₃ (ferric oxide), Al₂O₃ (aluminum oxide) and CaO (Calcium oxide) in batch 1 of *Yashada Pushpa* but not present in batch 2. This presence of Fe₂O₃ and Al₂O₃ may be because of the iron utensils used for the preparation of Batch 1 of *Yashada Pushpa* and presence of CaO may be due to *Shodhana* in *Churnodaka*. As per the reference from *Rasatarangini* the *Yashada Pushpa* should be used for external use only. For internal use *Yashada Bhasma* prepared using other *Marana* methods should be used.

Conclusion

Thus, we can state that *Yashada Pushpa* can be prepared using both the methods i.e., as per classical method and using an EMF by maintaining a high temperature for a particular time. There was slight difference between the colour of both samples but were more or less similar to the description given in the text *Rasatarangini*. Also, the XRF report of both the samples stated that after subjecting the *Yashada* to any one of these methods it gets converted into its oxide form only. Also, it was found from XRF analysis that there was presence of Fe₂O₃ and Al₂O₃ in batch 1. Therefore, we can say that the composition can have presence of other elements based on utensil used for preparation.

Sources of support – Nil

Conflict of interest – Nil

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