

## PHARMACEUTICO- ANALYTICAL STANTARDIZATION OF MRUDDARA-SRUNGA BHASMA

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### ABSTRACT

*Mruddarasrunga* is one of the least explored drugs *Ayurveda Rasashastra* is concerned. Chemically *Mruddarasrunga* is Lead oxide. There are of medicinal formulations of *Mruddarasrunga* available in classical *Rasashastra* text books regarding the external use such as ointment and oil preparations in general. There are not much available references regarding the internal use of *Mruddarasrunga* in *Ayurveda Rasa Shastra* text books except in *Rasayogasagara*. In *Rasayogasagara* we could find the formulation by the name *MruddaraBhasma* yoga. Till now no study is conducted regarding the method of preparation of *MruddarasrungaBhasma*. *MruddarasrungaBhasma* was prepared by classical method and it was subjected to analysis. The analytical report of the *Bhasma* showed Moisture value, Acid insoluble ash Value, Water Soluble ash Value, pH value, XRD, Particle Size Analysis, and Zeta Potential etc. The EDX results shows the elements present in *Mruddarasrunga Bhasma* Lead- 9.19%, Oxygen-80.94%, Carbon-4.91%, Magnesium -0.46%, Silicon-1.89%, Chlorine-1.16%, Potassium -1.45%.

**Keywords:** *Mruddarasrunga*, Lead oxide, *MruddarasrungaBhasma*.

### INTRODUCTION

Only after 8<sup>th</sup> century we can see the references about *Mruddarasrunga* in *Ayurveda Rasa Shastra* texts. In Classical texts like *Rasaratna Samuchaya*<sup>[1]</sup>, *Rasaprakasa Sudhakara*<sup>[2]</sup> *Mruddarasrunga* has been included one among *Saadharana rasa*. In *Rasaamrutha*<sup>[3]</sup> the reference of *Mruddarasrunga* can be found in *Uparasa Vijnaneeya Adhyaya*. In some other texts like *Rasa Tarangini*<sup>[4]</sup> *Mruddarasrunga* is included in *Naga Prakarana* (while describing lead and its compounds). Only external usage of *Mruddarasrunga* is explained in most of the *Ayurveda Rasashastra* texts.

The drug *Mruddarasrunga* is not a

familiar drug in practice in *Ayurveda Rasashastra* field. In compilation works also only a few references are available about *Mruddarasrunga* and its practical utility. But there are some *Vaidyas* belonging to South India, who have been using this drug in practice for various ailments both internally as well as externally.

### Materials and Methods

1. Pharmaceutical study
2. Analytical Study

### PHARMACEUTICAL STUDY

**Reference:** *Rasa Yoga Sagara* 2<sup>nd</sup> Vol.  
**Pakaradi Rasa, Yoga No.697.**  
**Sloka No. 3229-3232**

The Pharmaceutical study was carried out

in 4 main stages.

- *Nimajjana*<sup>[5]</sup> (Immersion) of *Mruddarasruna* in *NimbuSwarasa*.
  - *Shodhana*<sup>[6]</sup> (Purification) of *Mruddarasruna*.
  - *Marana*<sup>[7]</sup> (Incineration) of *Shodhita Mruddarasruna*.
  - *Bhavana*<sup>[8]</sup> (Trituration) of *MruddarasrunaBhasma*.
- ❖ **Nimajjana:** The *Mruddarasruna* sample was pounded into small pieces and soaked in *NimbuSwarasa* (*Nimajjana*) for 3 days. While pounding impurities were removed from the sample. On 4<sup>th</sup> day *Mruddarasruna* was taken out from *NimbuSwarasa* and washed with luke warm water.
- ❖ **Shodhana:** The *Mruddarasruna* (375g) was triturated well with *NimbuSwarasa* for three days. Fresh *NimbuSwarasa* was used for trituration every day.
- ❖ **Marana:** For Marana process *Shodhita Mruddarasruna* was triturated well with *Nimbuswarasa* and made into *Chakrikas* (coined shaped like structure) of uniform size and was subjected to *KapotaPutra* (using 8 upalas). The procedure was repeated for 12 times. The color of *Mruddarasruna* powder changed from grey to yellow during the *putra* process.
- ❖ **Bhavana:** The fourth and final stage of *MruddarasrunaBhasma* preparation consists of 3 sets of *Bhavanas* with *TriphalaKwatha*, *KumariSwarasa*, *Gomutra*, *NimbuSwarasa* respectively.

The first set of *Bhavana* was done with freshly prepared *TriphalaKwatha*. After

*TriphalaKwathaBhavana* the colour of *Bhasma* changed from yellow to brownish yellow.

The second set of *Bhavana* was done with freshly prepared *KumariSwarasa*. An unpleasant smell was noticed, the colour of *Bhasma* changed to yellow again after *KumariSwarasaBhavana*.

The third set of *Bhavana* was done with freshly collected *Gomutra*. The colour of *Bhasma* changed to dark yellow and the characteristic smell of *Gomutra* was felt after the *Bhavana*.

The fourth and final set of *Bhavana* was done with *NimbuSwarasa*. The *Bhasma* regained its yellow colour. But even after the *NimbuSwarasaBhavana*, *Bhasma* was having the smell of *Gomutra*.

#### OBSERVATION

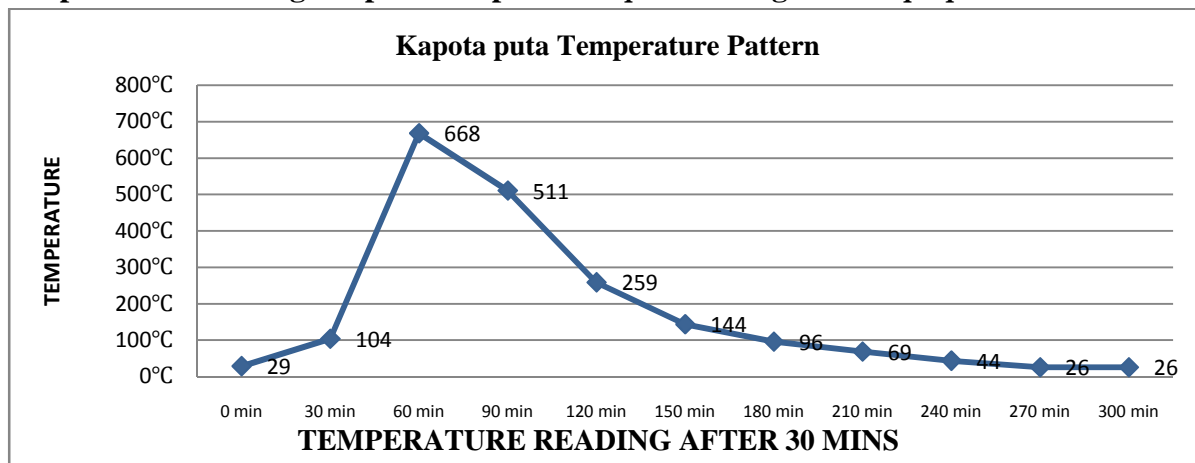
- Whitish coating was found on the surface of *Mruddarasruna* pieces after *Nimajjana*.
- The metallic lustre was found decreased and sample was found smooth to touch. The colour of sample changed from brownish orange to grey after *Shodhana* Process.
- *Nischandratva* (powder become lustreless) was attained after 3<sup>rd</sup> *Putra*.
- The colour of *Mruddarasruna* was changed from grey to yellow.
- *Laghutva* (lightness) was attained to the sample after whole process.
- *Varitaratva* attained partially after 10<sup>th</sup> *Putra* and completely after 13<sup>th</sup> *Putra*.
- *Rekhapurnatva* was attained completely after 12<sup>th</sup> *Putra*.

#### RESULT

**Table no. 1: Showing the change in weight of Mruddarasruna Sample:**

Stages	Initial weight	Final weight	Percentage loss/gain
<i>Nimajjana</i>	400g	375g	6.25%
<i>Shodhana</i>	375g	380g	1.31%
<i>Marana</i>	380g	330g	13.15%

<b>Bhavana</b>	330g	348g	5.45%
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**Graph no. 1: Showing temperature pattern ofputa during bhasma preparation:****Analytical study**

For providing knowledge about identity, size, structure of chemical constituents and physical properties Analytical study is essential. It also gives approximate idea whether the prepared drug is suitable for internal administration. Investigating Physico- Chemical systems makes possible to determine the nature of interactions between the components of sample through a study of relationship between sample physical properties and composition.

**BhasmaPareeksha**

❖ The *Bhasma* sample showed *Rekha-Poornatva* partially after 8<sup>th</sup> *Putra* and

completely by the end of 12<sup>th</sup> *Putra*. A pinch of the drug was taken in between thumb and index finger and rubbed. It was observed that the drug entered into the furrows of the finger and was not easily washed out from the cleavage of the lines. This test indicates fineness of the Drug.

❖ The *Bhasma* sample was showing *Vari-taratvalakshanas* from 9<sup>th</sup> *Putra* onwards. A small amount of Drug was sprinkled over the still water in a vessel. It was found that the drug particles floated over the surface of the water.

**Table no. 2: Showing Organo-leptic study of Mruddarasrunabhasma:**

S. No.	Name of the parameter	Results
1.	Colour	Yellow
2.	Taste	Non specific
3.	Odour	Smell of Gomutra
4.	Touch	Smooth
5.	Appearance	Lusterless

**Table no. 3: Showing Physico chemical study of Mruddarasrunabhasma:**

S.No	Test	Value
1.	Moisture value	1.1%
2.	Total Ash value	77.7%
3.	Acid insoluble Ash value	61.9%
4.	pH value	6.67

**Table no. 4: Showing the result of Analytical test of *Mruddarasrungabhasma*:**

S.No	Test	Result
1.	X-RAY Diffraction Studies	Major peaks identified are of PbO (tetragonal & orthorhombic crystal) structure.
2.	Particle Size analysis	120.5 nm.
3.	Scanning Electron Microscope Studie	115.0nm at 5KX magnification 82.1 nm at 7KX magnification
4.	Zeta Potential	125.2 mV

**Table no. 5: Showing the XRD results of *MruddarasrunngaBhasma*:**

Elements	Weight %	Atomic %
Carbon	3	4.91
Oxygen	37.36	80.94
Magnesium	0.31	0.46
Silicon	1.51	1.89
Chlorine	1.21	1.16
Potassium	1.65	1.45
Lead	54.96	9.19
<b>Total</b>	100	100

## DISCUSSION

For the preparation of *Mruddarasrunnga Bhasma* classical method was adopted. The Pharmaceutical study was *Nimajjana of Mruddarasrunnga* in *NimbuSwarasa*. The pH of *Nimbuswarasa* was changed from 3 to 4, which shows the alkaline nature of *Mruddarasrunnga* sample. *Shodhana of Mruddarasrunnga* was done according to the *SamanyaShodhanaprocedure of Sadharana Rasa*. In *Rasayogasagara 2<sup>nd</sup> Vol Marana of Mruddarasrunnga* is mentioned along with its internal administration. So this stage is the highlight of the present study. The reason behind in the selection of *KapotaPutra* for *Mruddarasrunnga Marana* was that because of the instability of Lead oxide in higher temperature. Lead oxide will be reduced to Metallic Lead at 1200°C. The maximum temperature noted was 668°C during the *Putra* process. The colour change of the sample (grey to yellow) is due to the change in Enthalpy. After attaining all *Bhasma* qualities the *Mruddarasrunnga Bhasma* was triturated with *TriphalaKwatha, KumariSwa-*

*rasa, Gomutra and NimbuSwarasa*. The *Bhavana* procedure make the *Bhasma* more Bio-available and capable of reducing remaining blemishes.

Moisture value of the final product was very less i.e. **1.1%w/w** which indicates the preparation is almost free from the moisture, suggesting its long shelf life. Total Ash value of *MruddarasrunngaBhasma* is **77.7% w/w**. The higher Total ash value indicative of presence of very high inorganic content. Acid insoluble Ash value of the drug was **61.9 % w/w** .which indicates the solubility of Lead oxide in HCl and insoluble nature of the complex compounds formed during the *Marana* and *Bhavana*. Water-soluble ash value **1.7% w/w** was less due to presence of less quantity of water-soluble salts. pH value of *Mruddarasrungabhasma* is **6.67** suggests that is almost neutral in nature. The XRD report shows there is no Peak showing the presence of free lead. This supports the safety of *Mruddarasrunnga Bhasma*. The Zeta Potential value of *MruddarasrunngaBhasma* was found **125.2mV** which in-

dicates its higher colloidal stability. The **mean** particle size of the particles of *MruddarasrunaBhasma* obtained is **120.5nm**. The nano size of the drug is indicative of its quick absorption and faster dispersion into body resulting in better therapeutic efficacy. This analysis confirmed the presence of Lead, Oxygen, Magnesium, Chlorine, Potassium, Carbon in the *Mruddarasruna Bhasma* was obtained. Magnesium, Chlorine, Potassium, Carbon might have added during Pharmaceutical procedure (*Shodhana* and *Bhavana*).

### CONCLUSION

The paper is on the basis of the Pharmaceutical Analytical Study of *MruddarasrunaBhasma*. The main reference is taken from *Rasayogasagara*. In this work the Pharmaceutical procedure is clearly mentioned. The *Bhasma's* safety and stability was checked by Ancient as well as modern criteria. The *Bhasma* was found therapeutically applicable.

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