

COMPARATIVE PHARMACEUTICO-ANALYTICAL STUDY OF RASASINDOORA AND RAKTA PARADA BHASMA

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ABSTRACT

Parada Bhasma (Incinerated Mercury) is a very potent medicine which is described to be used solely with different *anupaana* as also as a constituent of another *kalpa* to treat various disorders including the *kashtasaadhya vyadhis*. But the exact methodology of its preparation is unknown. *Rasa Sindoor* on the other hands is a popular *kupipakwa rasayana*. Both these *kalpas* have many similarities due to which people started using *Rasa sindoor* instead of *Parad bhasma*. But there are subtle differences between the method of preparation and also in the characteristics of the final product. The present study is an attempt to highlight those differences. *Rasa sindoor* and *Rakta Parad Bhasma* both were prepared using the *kupipakwa method* to make it easier to show the similarities as well as their differences. Both these samples were subjected to XRD and XRF analysis. The XRD analysis revealed *Rasa Sindoor* as HgS and the *Rakta Parad Bhasma* as HgO. The XRF analysis revealed the concentration of Mercury and Sulphur as 80% and 20% respectively in *Rasa Sindoor* and the concentration of Mercury and Oxygen as 93% and 7% respectively in *Rakta Parad Bhasma*. Hence, there is a vast difference between *Rasa Sindoor* and *Rakta Parad Bhasma* and the former cannot be used instead of *Rakta Parad Bhasma* as its alternative.

KEYWORDS: *Rakta Parad Bhasma, Rasa Sindoor, Kupipakwa, XRD, XRF, Mercury.*

INTRODUCTION

There are 4 types (*Shwet, Peeta, Rakta, Krushna*) of *Parad Bhasma* described in the ancient classical texts.¹ There are various methods described in various *samhitas* to prepare *parad bhasma*. The various methods of preparation include *kupipakwavidhi, agnipaaka* and *putapaka* etc. *Rasasindoor* is a *sindoor kalpa* and is exclusively prepared by *kupipakwavidhi*. *Sindoor kalpa* have a very specific colour to them i.e. *sindoor like red*.² One of the types of *parad bhasma* is *Raktaparad bhasma*.

Rasasindoor is relatively easy to make and is more popularly made. Hence, people use *rasasindoor* in *kalpas* where *parad bhasma* is asked to be used. But the properties of *Rakta Parad bhasma* and *Rasa sindoor* are different. Their pharmacokinetics is different and hence to establish the difference between the two is a must. The aim of this study is to highlight and establish the difference between these two and to show that one cannot be used instead of the other.

MATERIALS AND METHODS

Materials for *Rasasindoor*- Shuddha Parad, Shuddha Gandhak, Nirgundi Swarasa

Materials for *Rakta Parada bhasma*- Shuddha Parad, Shuddha Gandhak, Nimbu Swarasa
Instruments required for both - *Valuka Yantra, Kupi, Matkapad, Mudra.*

Method of Preparation of Rasa-Sindoor³-
Shuddha Parad (100 gms) and *Shuddha Gandhak* (100 gms) were taken in same proportion in *Khalva Yantra* for preparation of *kajjali* (200 gms) which is *samagunajarit*. It was then triturated with same quantity of *Nirgundi swaras*. At the end of trituration *Kajjali* was dried and put in *Kachkupi* upto 3/4th of its capacity. Then *Kachkupi* was placed in *ValukaYantra* and *kramagni* starts with *mrudwagni* for the first 8 hrs then *madhyamagni* for the next 8 hrs and *tikshnagni* forth next 8 hrs respectively. After the initial 8 hrs fumes of sulphur start coming out of the bottle. Fumes end when there is no free sulphur remaining in molten *kajjali*. *Shalaka-sanchalan* was done throughout to prevent the neck of bottle from clogging. Corking was done after complete stoppage of fumes which is approximately 16th hour after the procedure starts. Copper coin test should be done before corking for the confirmation of mercury fumes. After corking 8 hrs of *tikashnagni* was given for the formation of

RESULT



Fig-1 Rasasindhoor

Rasasindoor (160gms) which is collected at the neck of *Kachkupi* during this time.

Method of Preparation of Rakta Parada bhasma⁴

Shuddha Parada (100gms) and *Shuddha Gandhak* (100gms) were taken in same proportion in *khalva yantra*. It was then triturated with *Nimbu swaras* until the *kajjali* (200gms) is dry again. This *kajjali* was then filled in a *kaachkupi* upto 3/4th its capacity. This *kachkupi* was then placed in the *valuka yantra* for *paaka* (by *antardhooma* method) using the *kramagni* starting with *mrudwagni* followed by *tikshnagni*. *Mrudwagni* was given for 8 hrs and then *tikshnagni* was given for 24 hrs. In this procedure however, corking was done at the start of the procedure hence making it impossible to examine the *kajjali* inside while the process is still going on. However, the idea of increasing the *agni* to *tikshnagni* is that mercury in the *kajjali* (molten by then) should turn to fumes and the sulphur is expected to burn inside the bottle using up the oxygen inside the bottle. This prevents the formation of sulphur dioxide gas thus preventing the bottle from breaking. After the end of *tikshnagni*, *Rakta Parada Bhasma* (100 gms) was collected at the bottom of the bottle which was collected once the bottle cools down by itself (*Swanga-sheeta*).



Fig-2 Rakta Parada bhasma

The XRF and XRD analysis of both the samples were done. The results have been tabulated below:

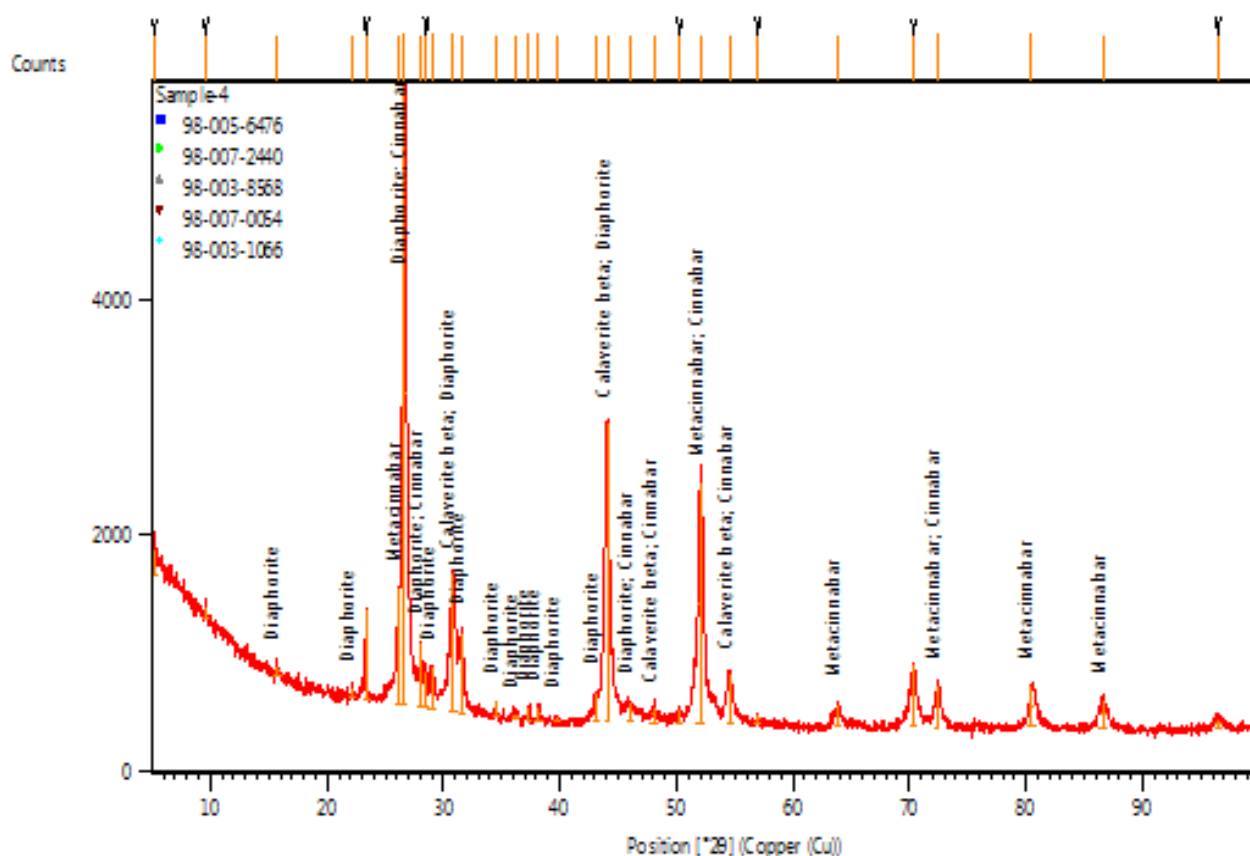
Table No. 1:

<i>Rakta Parada Bhasma</i>	<i>Rasa Sindoor</i>	Parameter
Mercuric Oxide (HgO)	Mercuric Sulphide (HgS)	XRD
Hg- 93%, O- 7%	Hg- 80%, S- 20%	XRF

Table No.2

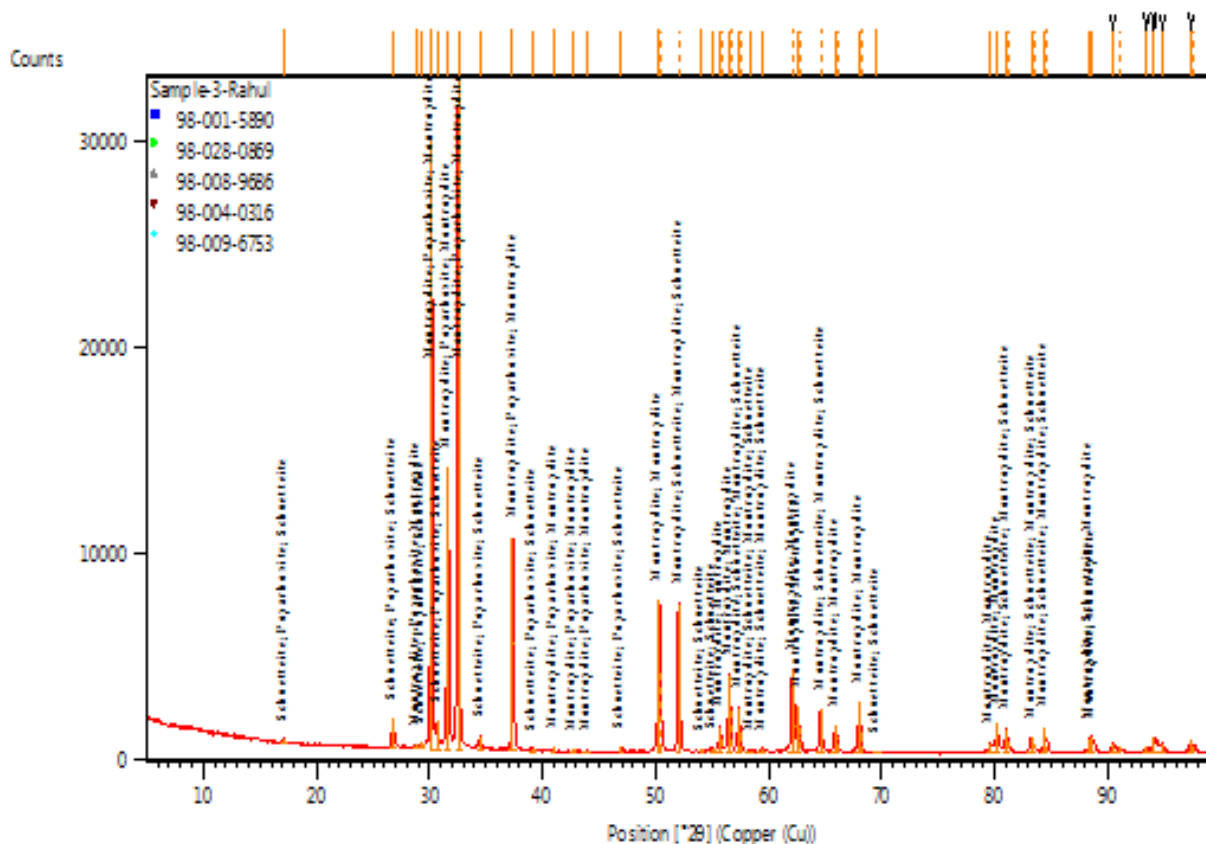
Graphs of XRD Reports

1. Rasasindhur-XRD Reports.



Chemical Formula	Compound Name	Score
Hg1 S1	Metacinnabar	40
Au1 Te2	Calaverite beta	36
Ag3 Pb2 S8 Sb3	Diaphorite	26
Hg1 S1	Cinnabar	26
Hg1 S1	Metacinnabar	31

2. Rakta Parad bhasma-XRD Reports



Chem. Formula	Compound Name	Score
Hg1 O1	Montroydite	52
Hg3 O6 S1	Schuetteite	28
Cl1 Hg3 O1	Poyarkovite	18
Hg1 O1	Montroydite	52
Hg3 O6 S1	Schuetteite	26

DISCUSSION

From the above observations, it can be said that *Rasa Sindoor* (Mercuric Sulphide) is a compound of Mercury and Sulphur, whereas *Rakta Parad Bhasma* (Mercuric Oxide) is an oxide of Mercury. The percentage of mercury in both kalpas are different. In *Rasasindoor* 80% and *Rakta parad bhasma* 93% respectively. *Rasa Sindoor* is of *sindoor* like colour i.e. Orangish red whereas *Rakta Parad Bhasma* is more Ruby red in colour. *Rasa Sindoor* is a *Moorchana*

of *Parad* while *Parad Bhasma* is *Mrita Parad*⁵. The properties of both are different for eg. *Rasa Sindoor* cures diseases and relieves from pain whereas *Rakta Parad Bhasma* is said to cure chronic diseases and has *jaranaashan* (anti-ageing) properties.⁶ This implies that *Rakta Parad Bhasma* has the ability to treat disorders which are *chirakaleena kashta saadhya* (chronic and difficult to cure ailments). *Gandhak* undergoes *jaarna* along with *Parad* in *Rasa*

Sindoor whereas it reacts with mercury breaks its bonds and converts it into its *mrita* form i.e. *bhasma* form via molecular degradation.

CONCLUSION

Thus, from the above observations and discussion it is concluded that both these *Kalpas* are different from one another not only physically but also chemically. Their therapeutic properties differ from one another as well. *Rakta Parada Bhasma* is used for *Dehavaad* (makes the *nikrushta dhatus* to *saarupa / Utkrushta dhatu*) while *Rasa Sindoor* is used to cure diseases. Hence, both of these cannot be used in the place of one another.

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