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A Review on the Concept of *Puta* in *Rasa Shastra*: Classical Insights and Modern Perspectives

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ABSTRACT

Traditional methods of *Puta paka* as well as developing modern pharmaceutical technology that can transform metals and minerals into a therapeutically potent dosage form called *Bhasma* has made it possible for people to administer all useful metals and minerals. *Bhasmas* are *Rasa* preparations in which metals and minerals go through various *Samskaras* (processing) like detoxification (*Shodhana*), (*Churnikarana*) converting into powder form, incineration (*Marana*) which destroy harmful metallic properties. The *Shodhana* process eliminates impurities that could potentially lead to harmful effects. A purified substance, whether it's *Rasa-Uparasa* or *Dhatu*, undergoes maceration with certain herbs and is then subjected to heat treatment known as '*Marana*'. This process transforms *Lauha* (including all *shada Lauha dhatus*) to a microfine form for better assimilation at the cellular level, without causing any adverse side effects, and is referred to as '*Marana*'. The assessment of the degree of *paka* is called '*puta-paka*'. Among the various stages involved in the incineration of *Lauha*, the '*puta*' is extremely significant due to its ability to change *Lauha* into a state that cannot be reverted.

Key Words *Puta, Marana, Bhasma, Lauh, Shodhana*

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INTRODUCTION

Rasa dravyas can only be safely utilized after undergoing pharmaceutical processing. This processing includes methods such as *Shodhana*, *Mardana*, *Dhalana*, and *Jarana*, among others. Agni plays an important role in the making of a *Bhasma* possessing high therapeutic potency and for providing this agni of various degrees, various *Puta* methods have been described. *Puta* is basically a heating technique that indicates the

necessary level of heating (*paka*) required for transforming a specific metal or mineral into ashes during *putapaka*. In this procedure, multiple *putas* are applied as specified in the texts or until the desired fineness and *bhasma* quality are achieved. It is always important to apply measured heating to obtain the intended medicinal products, as both excessive and insufficient heating are considered undesirable. The choice of how many *putas* to apply is

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primarily determined by the characteristics of the drug involved (such as hardness, density, melting point, etc.) that undergoes *puta*. Generally, classical texts like Rasendra Sara Sangrah mention 10 to 100 putas for the purification or incineration of various *rasa dravya*. For the preparation of *Lauha bhasma*, a range of 10 to 100 putas is recommended, while for *Vajikaran karma*, it is advised to use between 10 and 500 putas, and for producing *bhasma* suitable for *Rasayana karma*, between 100 and 1000 putas is suggested. Drugs that are softer may require only a single puta. Calcium-based compounds such as *Shankha*, *shukti*, and *kaparda* usually need three putas for incineration. In contrast, metals like *Swarna* and *Tamra* may need as many as 40 putas for effective incineration. *Ayurveda Prakash* has mentioned *Gajaputa* for all types of *Lauha bhasma*¹.

AIMS & OBJECTIVES

- To provide a specific degree of temperature (neither too high nor too low).
- To convert *shodhit dravyas* into finer particle forms.
- To create an environment suitable for required chemical reactions.
- To enhance the medicine's therapeutic efficacy.
- To transform the medicine into a form that is more biologically available, compatible, and absorbable.

The application of putas imparts various properties to the bhasmas such as *dosha vinasha*, *guna prakarsha*, *niruthatva*, *dipana*, *varitaratva*, *apunarbhava*, *laghutva*, *shighra vyapti*, which are considered more effective than *jaritaparada*, *rekhapurnatwa*², etc.

MATERIALS AND METHODS

Definition of Puta:

रसादिद्रव्यपाकानां प्रमाणज्ञापनं पुटम् ।

नेष्टो न्यूनाधिकः पाकः सुपक्वं हितमौषधम् ॥

(र.र.स 10/47)⁴

Agni used for the paka of Rasa, Maharasa, Uprasa, Sadharana rasa, Dhatu, Updhatu, Ratan, Upratan is known as Puta. If less or more agni is subjected to dravya it may destroy its properties.

Puta Vidhi

The materials utilized in the Puta procedure include Sharava samputa, upala, and chakrika. The term Sharava samputa means a place where the pellets or chakrikas are placed during the incineration process. Upala is filled to produce heat in Putas. Synonyms for upalas include Pistaka, Chana, Chagana, Utpala, Upala, Girinda, Upalasthi, Karisa, and Vanopala. In smaller putas, govvara, which is a mixture of dried cow dung powder and paddy husk, may substitute for upalas. Following levigation, the materials are shaped into uniform round forms known as chakrikas or pellets. These pellets need to be dried in the shade to prevent rapid moisture loss and cracking.

Steps for Putapaka and Bhasma Formation:

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1. Collection of raw materials
2. Shodhana of raw materials to eliminate both chemical and physical impurities.
3. The Shodita material should undergo *churnikarana* to make the mixture homogenous.
4. After Churnikarana, the drug should be triturated (Bhavana) with specifically mentioned swarasa or decoction of a dravya.
5. *Chakrikas* (small, flat round pellets) are now made with the resulting paste- like mixture.
6. These chakrikas are completely dried and placed inside an earthen plate (*sharava*) and covered with another having same size and shape.
7. Seal these earthen plates together by wrapping a cotton cloth smeared in fuller's earth (*Multani mitti*), typically 7 folds should be made. This process is known as *sandhibandhan* or *sharava samputikarana*.
8. This *sharava samputa* is left to dry out.
9. Finally, the *sharava samputa* is surrounded with specified number and sizes of cow dung cakes in a pit and heated.

CLASSIFICATION OF PUTA:

According to the source of heat:

1. Agni puta: paka through fire.
2. Surya puta: paka through sun light.
3. Chandra puta: paka through moon light.

1. Chandra Puta: Chandra Puta uses the cooling effects of moonlight. This technique involves

subjecting the material to Bhavana (trituration) with a suitable liquid medium, followed by exposure to moonlight throughout the night. This procedure is repeated for a designated number of nights, typically during full moons, to maximize the lunar influence.

Eg. Pravalā Bhasma is prepared through this method. The soothing energy of the moon preserves the sensitive components of the drug and enhances its Sheetal Guna (cool potency).

2. Surya Puta: Surya Puta, also referred to as Rudra Puta or Bhanu Puta, uses solar energy as its heat source. Following proper Bhavana, the substance is exposed to direct sunlight during the daytime, often for multiple consecutive days. The gradual heating from the sun's rays permits gentle Paka.

Eg. Shilajatu Shodhana, and Bhanupaka of Loha Churna.

3. Agni Puta: Artificial source of energy.

Types explained depending upon the degree of Agni-

Table 1 According to temperature⁵

No.	Temperature	Putā
1.	High (Atitivra)	Mahaputa, Gajaputa
2.	Medium (madhyam)	Kukkutputa, Varahaputa
3.	Low (Atimanda)	Laghuputa, Kapotputa, Lavakaputa

Table 2 According to Dimensions

S R No.	Name of Puta	Dimensions		Upala	Maximum Temperature	Uses
		Classical	Metric system(cm3)			
1	Maha puta	2 hasta	91x91x91	1500	1000°C for 1 hr	Maran of Loha, Vajra,

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						Abhrak, Vaikranta, etc
2	Gaja puta	1 Rajahasta	57x57x57	1000	1000°C for 1 hr	Maran of Abhrak, Kapardik, Godanti, Kukkutandatwak, Shankha, Shukti, etc
3	Kukkuta puta	2 vitasti	46x46x46	100	1000°C for ½ hr	Maran of Swarna, Rajat, Naga, Vanga, Mukta, etc
4	Varaha puta	1 Aratni	42x42x42	500	1000°C for ½ hr	Maran of Shankha, Shukti, Varatika, Swarna makshik, etc.
5	Laghu puta	8 Upala	23x23x23	8	800°C for ½ hr	Maran of Parad
6	Bhudhara puta	-	20x20x20	-	140°C for ½ hr	Jaran and maran of Parad
7	Gomay puta	1 Vitasti (Ft)	23x23x23	Upala churna	400°C for 4 hr	Maran of Parad
8	Bhanda puta	Brihat bhanda	-	-	400°C for 8 hr	Gandhak Jarana
9	Valuka puta	Brihat bhanda	-	valuka	400°C for 6 hr	Gandhak Jarana

1. **Maha puta:** According to R.T - The total quantity of cow dung is 1500 (750 + 750), with dimensions of 2 x 2 x 2 (Rajhasta). According to Rasendra chudamani⁶, the quantity is 1500 (1000 + 500), as also noted in RRS⁷ and Rasa Prakash Sudhakar⁸. Sharangdhara mentions the use of 30 vanyopala⁹ for Tamra, Parada, Swarna, Vajra, and Trivanga Bhasma.

2. **Gaja puta:** As per RRS¹⁰ and R.T.¹¹ the total quantity of cow dung utilized is 1000 (500 + 500) along with dimensions of 1.1/4 x 1.1/4 x 1.1/4 (Rajhasta). The ground must be flat and dry.

According to Rasendra Chudamani¹² and Rasa Prakash Sudhakar¹³, the amount of cow dung taken is 1000 (700 + 300).

According to Ayurveda prakash¹⁴, we take either 30 or 20 vanyopala.

Gaja puta is mainly used in the formation of Akika, Abhraka, Rajata, Yashada, Loha, Suvarna, Vajra, Hartala, Godanti, and Trivanga bhasma.

3. **Kukkuta puta:** According to Rasendra Chudamani, it involves 100 (70+30) vanyopala with dimensions of 2 x 2 x 2 (46 cm).

The Rasa Prakash Sudhakar¹⁵ suggests using 300 (200 + 100) vanyopala.

Some authors have mentioned the use of 10 vanyopala.

Mainly used for Tuttha, Parada, Loha, and Svarna Bhasma.

4. **Varaha Puta:** Different opinions have been mentioned in classical texts about the no. of vanyopala being used in this puta. Generally, we use 150 vanyopala along with dimensions of 1x1x1 aratni i.e. distance from the elbow joint to the tip of the little finger (42cm). According to Rasa Prakash Sudhakar, 500 (400+100) vanyopala are mentioned. Used for Tamra, Abhrak, Rajata bhasmikanana.

5. **Laghu puta (Kapot puta):** It is commonly referred to as laghuputa, mriduputa, and swalpa puta. 8 vanyopala are piled on the ground surrounding the enclosed samputit dravya, as described in Rasa Prakash Sudhakar¹⁶, Rasendra Chudamani¹⁷, RRS¹⁸, and RT¹⁹. This puta is utilized for the incineration of parad.

6. **Bhudhara puta:** As per Rasendrachudamani²⁰, RRS²¹, RT²² and Rasa

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Prakash Sudhakar, a pit with a depth of 2 angula pramana should be created. Inside the pit, aushadhiyukta sharava is placed, the pit is covered with vanyopal, and then ignited. It is employed for sankhiya and parada bhasma nirmana.

7. **Govar (Lavaka puta):** According to Rasaprakashsudhakar, Rasendrachudamani, RRS²³ and RT²⁴, 64 tola vanyopala churna (cow dung powder) or 64 tola tusha is used, with a Sharava samputa positioned in between before igniting it. And Shodashi pramana (4 tola) vanyopala churna according to Kalinga Mana. It is intended for the bhasmikiranana of mridu dravya such as gandhak and parada bhasma and resembles the Lavaka bird (goraiya).

8. **Bhanda (kumbha puta):** Also known as mridu bhanda puta, kumbha puta. Tusha (husk) is placed in an earthen mud pot, filling half of it with husk, followed by the placement of the sharava samputa on top. The remaining space in the pot is again filled with husk, and the fire is ignited with the pot's mouth left open. This process is also explained by Rasendrachudamani, RRS²⁵, RT²⁶, and Bhavaprakasha; however, in their accounts, the pot's mouth is closed. No details are provided regarding the duration of the agni given.

9. **Valuka puta:** Various opinions exist among different Acharyas. According to RRS, Valuka is filled upto the neck of an earthen mud pot, with the sharava samputa placed in the center before igniting the fire. Vagbhata mentions the use of baluka only as a medium of heat. While

Rasa Prakash sudhakar mentions both baluka and vanyopala²⁷, with some texts mentioning the use of Lavana, Kshara, etc. This method is applied for Gandhak jarana in Parad.

PUTA IN MODERN DAYS

With scientific advancements, putapaka process can now be replicated using modern thermal devices such as the Muffle Furnace.

Types of Furnaces

- Blast furnace
- Steel making furnace
- Puddling furnace
- Bessemer furnace
- Electric arc furnace
- Electric induction furnace
- Open hearth furnace
- Basic oxygen furnace
- Vacuum furnace
- Muffle furnace

Definition

A Muffle Furnace is an electric heating chamber with insulation, crafted to deliver even and regulated heating at elevated temperatures. It keeps the sample isolated from direct exposure to combustion gases, ensuring a clean and contamination-free incineration process.

The chamber of the furnace is usually made from refractory materials, consisting of a heating element integrated around the muffle to ensure stable thermal conditions. It offers a uniform and controlled setting for heating within specific temperature ranges, generally between 200°C and 1200°C or even higher.

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In the context of Rasa Shastra, the muffle furnace acts as a modern equivalent to the traditional Puta, ensuring uniform thermal exposure comparable to *Gaja puta* or *Maha Puta* levels.

Components of a muffle furnace -

- **Heating Elements:** These are responsible for producing the necessary heat. They are usually constructed from materials like Kanthal (FeCrAl), Silicon carbide, Molybdenum disilicide, or Nickel-Chromium alloys that can endure high temperatures.
- **Heating Chamber or Muffle:** This is the enclosed area where samples are placed for heating. It is generally made from materials that can resist high temperatures.
- **Insulation:** This surrounds the heating chamber to reduce heat loss. It is made from refractory materials, ceramic fiber, or other heat-resistant substances.
- **Ventilation:** Certain muffle furnaces are equipped with exhaust vents or fans that eliminate fumes or manage the atmosphere within the furnace.
- **Thermocouple:** A thermocouple acts as a sensor to gauge the temperature inside the muffle and transmits this data to the temperature controller, facilitating accurate temperature regulation.
- **Outer Casing:** The outer casing of the furnace, usually made from steel or other resilient materials, safeguards the internal elements and offers a sturdy exterior.
- **Door/Access Port:** This component permits the placement and retrieval of materials

and is often insulated to help maintain the temperature.

- **Temperature Controller:** The temperature controller plays a crucial role in managing the temperature inside the furnace. It includes features like a digital display, setpoint adjustments, and various safety mechanisms to ensure accurate and safe operation.

Traditional <i>Puta</i>	Modern Muffle Furnace Equivalent
Heat generated by cow dung cakes or earthen kiln	Heat generated by electric resistance elements
Approximate temperature (400–1000°C) depending on <i>Puta</i> type	Approximate range from 100–1400°C
Uneven heat distribution; dependent on operator skill	Uniform heat distribution; digitally controlled
Temperature estimated empirically	Temperature accurately monitored via thermocouples
Manual cooling period	Programmable cooling cycles

DISCUSSION

Acharyas have outlined several techniques for creating Dhatu bhasma. The optimal temperature for the bhasmikiranana of Dhatu is approximately 1000°C, which can be easily attained using Mahaputa and Gajaputa. The characteristics of bhasma produced through puta include:

- *Churnatva* – Transforming the material into powder form by applying external heat,
- *Laghava* – Lightness,
- *Apunarbhava* – Incapable of returning to its original form,
- *Gunadhikya* – Enhancement of potency,
- *Anapsu Majjanam* – The obtained bhasma does not sink in water,

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- *Rekhapurnata* – Filling the spaces between the ridges of the finger, standardization while preserving classical principles.
- *Shighravyapti* – Spreading and occupying space very quickly,
- *Dipanam* – Stimulates the appetite.

CONCLUSION

Pūta is one of the most advanced and scientifically significant thermal processing techniques detailed in Rasa shastra. This method was primarily used by ancient Acharyas to convert metals and minerals into Bhasma. That Bhasma which contains very small size of particles is considered to be more bioavailable than its original form. Classical writings consistently indicate that as the number of Pūtas increases; the particle size of Bhasma becomes smaller, demonstrating the direct effect of controlled thermal cycles on the fineness and therapeutic effectiveness of the final product.

In modern times, scientific studies utilizing microscopic and spectroscopic techniques have confirmed that Pūta-based heating results in predictable physicochemical changes, such as a decrease in particle size, oxidation, phase changes, and improved bioavailability. While modern equipment like the Muffle Furnace offers precision, reproducibility, and standardization, it cannot fully substitute for the conceptual richness and natural heating dynamics found in the traditional Pūta method. Therefore, modern instruments should be considered as a supplementary approach, enhancing

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