www.wcprj.com 2025 Page: 32-42

Research Article

World Current Pharmaceutical Research Journal

ISSN (O): Applied

Volume: 01
Issue: 06

EXPLORING PHARMACEUTICAL STUDY OF RAJAVARTA BHASMA

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Article Received: 28 July 2025

Article Revised: 18 August 2025

Published on: 08 September 2025

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ABSTRACT

This study explores the traditional Ayurvedic process of manufacturing Rajavarta Bhasma, a medicine derived from Rajavarta (Lapis Lazuli). The process involved step-wise purification (Shodhana) followed by incineration (Marana) under controlled conditions. Each stage was carefully observed to ensure the product attained the established characteristics of a high-quality Bhasma. The results indicate that Rajavarta Bhasma, when processed through traditional methods, yields a stable product that fulfills classical standards and demonstrates potential therapeutic value.

KEYWORDS: Rajavarta, Shodhana, Marana, Lapis Lazuli.

INTRODUCTION

Ayurveda addresses a variety of ailments by combining minerals and metals in a unique form called Bhasma. Rajavarta, commonly known as lapis lazuli, is one mineral that has been used for its therapeutic properties. However, it must be thoroughly processed before it can be used as medicine. This study focuses on the preparation of Rajavarta Bhasma utilizing traditional Ayurvedic methods such as Shodhana (impurity removal) and Marana (bhasma preparation). This is to ensure a high-quality and secure final product by using established processes and closely monitoring all changes made throughout each stage.

AIMS AND OBJECTIVES

- Identification & Collection of Authentic Rajavarta.
- Execute Rajavarta Shodhana using the selected classical technique: Swedana in a dola yantra with nimbu rasa, gomutra, and yavakshara.[1]
- Perform Rajavarta marana with one-fourth of shuddha gandhaka and bhringaraj swarasa bhavana, subjected to gaja puta.[2]

MATERIALS AND METHODS

- **Identification & Collection Of Authentic Rajavarta.**

- Identification and collection of raw materials is critical. This method assures that only high-quality materials are handled and used during processing. By following the highest standards, we can increase the overall safety and effectiveness of the finished product. Proper identification and collection methods can assist prevent contamination and ensure that only high-quality items reach users. This phase of the study focuses on identifying and collecting the drug, Rajavarta.

Rajavarta is well-known for its therapeutic properties; by focusing on its identification and collection, researchers can develop standardized processes to maximize its medicinal potential.

Rajvarta was purchased from gemstone sellers in Jaipur, Rajasthan. Samples were selected based on grahya lakshanas: "**Rajavartholparaktoruneelikaamishritaprabha | guru masrana shreshtaha**." This indicates that Rajavarta is a blue-colored gemstone with reddish tinges, heavy in nature, and smooth to the touch.[3]

Authentification: The Gemmological Institute of India, Mumbai, completed the identification, authentication, and certification processes.

RAJAVARTA SHODHANA

Equipments

Ulukhala yantra, Dola Yantra, juice extractor, knife, Spatula, cloth, gas stove, Thread, Spoon, pH paper.

Ingredients

Raw Rajavarta –500 gms

Gomutra-8 litre

Yavakshara-400gms

Nimbu Swarasa- 1 litre

Procedure

- Using a clean and dry ulukhala yantra, pound 500g of Rajavarta into a coarse powder.
- Powdered rajavarta was placed in a large cloth, and a pottali was made
- Pottali is positioned in dolayantra, in mixture of nimbu swarasa,gomutra & yavakshara media
- This arrangement made pottali to submerge up to neck in liquid media
- Boil the entire set on a gas stove with a moderate flame. Boil for three hours.
- After cooling, the bundle is untied & the Rajavarta removed.
- The Rajavarta is cleaned in warm water, dried, & stored in a clean, dry glass container.

Precautions

- The heating process was maintained uniformly throughout the procedure.
- Care was taken to keep the cloth bundle fully immersed in the liquid medium without direct contact with the base of the vessel.
- Additional liquid was added whenever evaporation reduced the volume

Observations

Table 1: Findings of Shodhana process of Rajavarta.

Time	Quantity Of Media	Temperature	Litmus Test, pH	Media
12.00PM	1.5LITRE	25^0C	Acidic,2.5	Colour of the media was brown
12.30PM	1.5LITRE	100^OC	Acidic,2.5	Boiling began
1.00PM	1.5LITRE	100^OC	Acidic,3	A cream-colored foam begins to form, smells like Gomootra and Nimbu
1.30PM	1.5LITRE	100^OC	Acidic,3.5	Colour seems to be, in between brown and dark brown.
2.00PM	1LITRE	100^OC	Acidic,4	The media became dark brown, and there was less frothing
2.30PM	1LITRE	100^OC	Acidic,4.5	began to smell strongly, and the foaming came to a total halt.
3.00PM	1LITRE	100^0C	Acidic,5	The color of the media was completely changed to dark brown.

An observation, after shodhana

- Rajavarta's weight was 500 grams prior to shodhana and it was 480 grams after shodhana.
- After shodhana, Rajavarta's shine diminished.

Above procedure has repeated for another 2 times.

Table 2: Displaying Observations During 3batches of Rajavarta Shodhana.

BATCH	Initial weight Of Rajavarta	Agni given in hrs	After shodhana Wt. of Rajavarta
1st Batch	500 gms	7 hours	495 grams
2nd Batch	495 gms	7 hours	490 grams
3rd Batch	490 gms	7 hours	480 grams

GANDHAKA SHODHANA FOR RAJAVARTA MARANA [4]

Ingredients : Gandhaka – 4.5kg
Godugdha – 42 Liters
Hot water for washing.

Equipments : Khalva Yantra, Earthen pots, Cloth, Thread, Loha Sharava, Camphor, Match box, cow dung cakes- in total = 58

Procedure

- Two liters of fresh cow's milk were poured into an earthen pot that had been smeared with ghrita.
- The mouth of the pot was covered with a single layer of white cotton cloth and securely fastened with a thread.
- Gandhaka was spread evenly across the fabric and covered with loha sharava.
- The Sharava was covered with 21 (2 kg) cow dung cakes, and camphor was used to start the fire.
- Following Swanga Sheeta, the fabric that had been tied over the pot's mouth was taken off.
- Shodhita Gandhaka granules that had been submerged in milk were separated, properly cleaned with hot water, and allowed to dry in the shade.

This process was performed twice more using fresh cow's milk.

Rajavarta Marana

Materials

- Gomutra Yavakshara Nimbu Swarasa Shodhita Rajavarta: 430 gm
- Shodhita Gandhaka: 107.5gm
- Bhringraj swarasa: Q.S

- **Equipments:** Two earthen sharavas of equal size, Pyrometer with Thermocouple, Kora cloth, Camphor, Khalva yantra, Weighing machine, Gopichandana, Match box,Thread.

Method

It was done in phases, specifically:

- Mixing Shodhita Rajavarta with Shodhita Gandhaka.
- Bhringraj Swarasa's extraction.
- Bhringraj swarasa with Bhavana.
- Chakrika preparation.
- The formation of Sharava Samputa**.**
- Being subjected to Gajaputa.

Procedure

1. Shodhita Rajavarta is mixed with additional ingredients.

- In Khalwayantra, 430 grams of Shoditha Rajavarta were kept.
- To the finely ground mixture of rajavarta and 1/4th shu gandhaka, enough bhringaraj swarasa was added & triturated for 6 hrs
- Trituration was carried out until the mass became semisolid and viscous.

2. Chakrikas preparation.

Once the proper consistency was achieved, 3–4 cm diameter, 2–2.5 mm thick, Chakrikas were made. & kept for proper drying.

3. Sharava Samputa formation.

Two earthen Sharava (saucers) measuring 82cm in circumference and 25cm in diameter were taken.

- Dried Chakrikas were arranged in earthen sharava in two layers. Samputa was formed by placing another sharava on top of it.

- The gap between two sharavas was filled with one layer of multanimitti-smeared thread and seven layers of multani mitti lepita vastra or cloth, measuring 86 cm in length and 6 cm in width. Every layer was wrapped. after drying of layer.

4. Subjecting to Gaja Puta

- Size and Shape: Gaja puta was given, pit dimensions -approximately 59cm
- Fuel: Cow dung cakes weighing 25kg and each Cow dung cakes in average measures 140 gm wt.
- About 182 cow dung cakes were used to fill 2/3rd of pit & sharava samputa placed over it
- From the side of the pit at the junction of the upper 1/3rd & lower 2/3rdof the pit near Sharava samputa, thermocouple of the pyrometer was placed horizontally.
- In Other 1/3rd of pit, 84 cowdung cakes weighing 8 kg were placed.

Mode of heating

- Cow dung cakes were ignited using camphor, which were placed on four corners of the puta.
- The pattern of temperature was noted. Following Swagasheeta, Puta was taken out and the material was gathered the following day.

Observations

- Weight after bhavana: 552 gms.
- The highest temperature recorded was 812^{0}C.
- It took 6 hours to burn cow dung cakes and 25 hours to cool completely.
- Observations after opening Sharava samputa included a mild sulfur odor, ash-colored chakrikas, and soft texture.
- The final product after the first puta weighed 430 gms.

Precautions

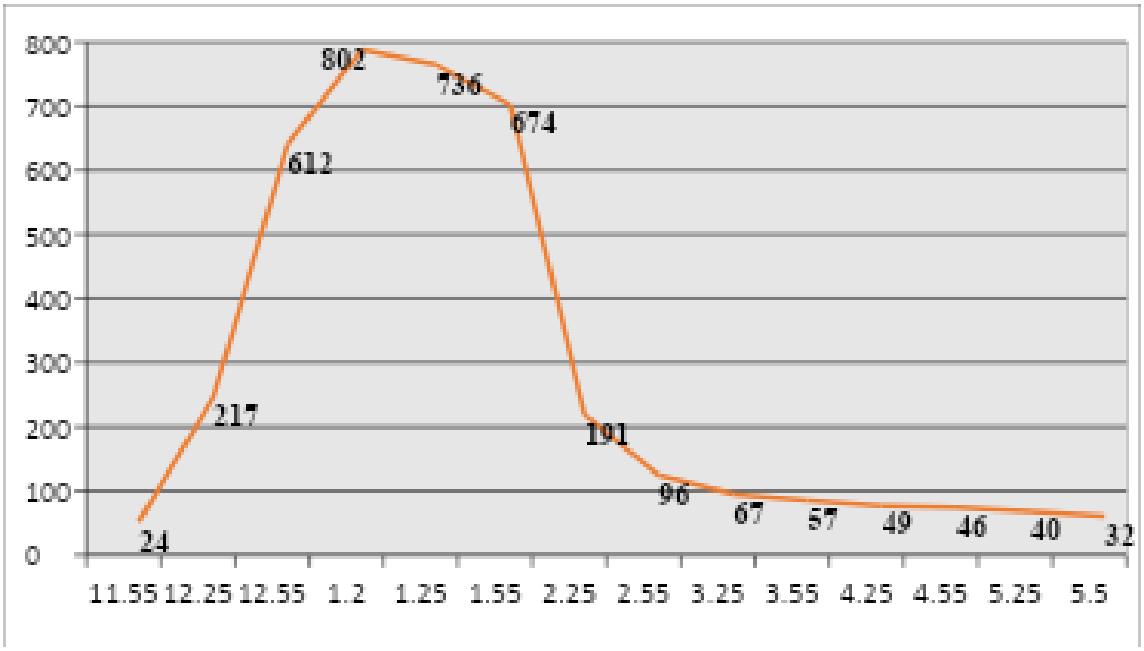
- Continuous and consistent trituration was performed.
- In Sharava, the dried chakrikas were evenly placed.
- Seven layers of mud-smeared cloth were used for the Sandhi bandhana, and each layer was wrapped once the preceding one had completely dried.
- The cowdung cakes were arranged correctly.

Table 3: Displays lakshanas of Rajavarta Bhasma after 1st puta.

Criterias	Observations
Colour	Ash
Taste	Metallic
Odour	Slight
Touch	Soft
Appearance	Powder
Rekhapurnatva	Negative
Varitara	Negative

Table 4: Temperature record during Rajavarta1st Gaja puta.

Sl.N	Time	Temp(^{0}C)	Sl.n	Time	Temp(^{0}C)	Sl.n	Time	Temp(^{0}C)	Sl.n	Time	Temp(^{0}C)
1	11-50	25	19	01-20	737	37	02-50	95	55	04-25	49
2	11-55	26	20	01-25	733	38	02-55	97	56	04-30	48
3	12-00	29	21	01-30	724	39	03-00	92	57	04-35	48
4	12-05	39	22	01-35	720	40	03-05	86	58	04-40	47
5	12-10	68	23	01-40	717	41	03-10	72	59	04-45	48
6	12-15	134	24	01-45	690	42	03-15	70	60	04-50	47
7	12-20	215	25	01-50	673	43	03-20	68	61	04-55	46
8	12-25	304	26	01-55	376	44	03-25	62	62	05-00	47
9	12-30	368	27	02-00	312	45	03-30	60	63	05-05	46
10	12-35	439	28	02-05	278	46	03-35	58	64	05-10	45
11	12-40	497	29	02-10	243	47	03-40	60	65	05-15	43
12	12-45	552	30	02-15	230	48	03-45	58	66	05-20	41
13	12-50	610	31	02-20	190	49	03-50	57	67	05-25	40
14	12-55	733	32	02-25	208	50	03-55	58	68	05-30	37
15	01-00	745	33	02-30	155	51	04-00	54	69	05-35	35
16	01-05	752	34	02-35	146	52	04-05	53	70	05-40	35
17	01-10	790	35	02-40	115	53	04-10	51	71	05-45	34
18	01-15	803	36	02-45	118	54	04-15	50	72	05-50	32



Graph 1: The graph showing the Time Vs temperature during 1st Gajaputa.

Table 5: Descriptive data of 1st puta.

Atmospheric Temperature	24 ^{0}C
Duration of Temperature Recorded	6 hours
Average Temperature	226.236
Highest Temperature	802^{0}C
Peak strike temp. stay time	15 sec
Time: base to peak Temperature	85 min
Time: peak to base	275 min
Standard deviation of Temperature	256.047
Standard error of Temperature	30.175

Note: This procedure was repeated for 7 more times to Rajavarta bhasma lakshanas

RESULTS

- **Rajavarta shodhana**

Table 6: Displaying Weight of Rajavarta before and after Shodhana:

Sl.No	Before	After	Loss
01.	500 gms	480 gms	20 gm

Total Rajavarta taken before shodhana - 500gms

Total Rajavarta after shodhana - 480gms

Total weight loss - 20gms

Weight loss in percentage during shodhana - 4%

Total quantity of Rajavarta remaining after shodhana - 96 %

Table 7: Displaying result of Physical properties of Rajavarta shodhana.

Properties	Before	After
Colour	Blue	Dull Blue
Touch	Rough And Hard	Rough And Less Hard
Odour	Odourless	Slight media odour
Lustre	Bright Blue on Cut Surface	Reduced

- **Gandhaka Shodhana**

- Weight of Gandhaka before& after shodhana : 500 gms &470 gms
- Colour of gandhaka before & after shodhana: yellow& Pale yellow

➢ **Rajavarta Marana**

Table 8: Displaying result of Weight of Rajavarta before and after Marana and loss during each Puta.

Sl. No	Puta	Weight before Marana	Weight of (1/4th) Gandhaka	Weight after Marana	Weight Loss
01.	1st	552gms	117gms	430 gms	0 gms
02.	2nd	556 gms	117gms	424 gms	6 gms
03.	3rd	536gms	104gms	422 gms	2 gms
04.	4th	534 gms	105gms	421 gms	1 gms
05.	5th	536gms	104gms	420 gms	1 gms
06	6th	525gms	105gms	420 gms	1 gms
07	7th	524 gms	104gms	418 gms	2 gms
08	8th	520 gms	104gms	417 gms	1 gms

- Rajavarta's total weight prior to Marana was 430 grams.
- Rajavarta's total weight removed for varitara, niruttha pareeksha, was 25 grams.
- After the eighth puta, Rajavarta's total weight was 417 grams.
- 14 grams was the total weight lost during the marana process.
- After marana, the total amount of Rajavarta loss was 3.35 percent.
- The percentage of Rajavarta that is left over after marana is 96.65%.
- Rajavarta's yield was 417g (96.97%).

Table 9: Displaying Results of Organoleptic, Pharmaceutical & Chemical Analysis of Rajavarta Bhasma.

Tests	Before marana	Observations during Puta							
		01	02	03	04	05	06	07	08
Colour	Ash	Ash	Ash	Ash	Ash	Ash to brown	Ash to brown	Ash to brown	Ash to brown
Taste	Metallic	Metallic	Metallic	Metallic	Metallic	Metallic	Tasteless	Tasteless	Tasteless
Appearance	fine powder	Powder	Powder	Powder	Fine Powder	Fine Powder	Fine Powder	Fine Powder	Very Fine Powder
Odour	Faint	Faint	Faint	Faint	Faint	Faint	Faint	Faint	Faint
Rekhapoornatwa	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
Varitaratwa	-ve	-ve	Partially	Partially	Partially	Partially	Partially	+ve	+ve
Nirutha	-	-	-	-	-	-	-	-	+ve

DISCUSSION

Rajavarta shodhana

All three drugs being used as shodhana media—Gomootra, Yavakshara, and Nimbu swarasa—are mildly acidic and possessed corrosive properties, which facilitated the removal of impurities while reducing the. Shodhana facilitates the easy grinding of the drug in

marana. The better grinding produces a finer pharmaceutical powder, which can contribute to increased bioeavailability and efficacy in the final product.

Gandhaka Shodhana

Gandhaka shodhana with godugdha media has three purposes: purification, detoxification, and therapeutic potentiation[5]. The process reduced toxicity, removed contaminants, and prepared sulphur for safer use. The observed changes in weight and color supported effective purification.

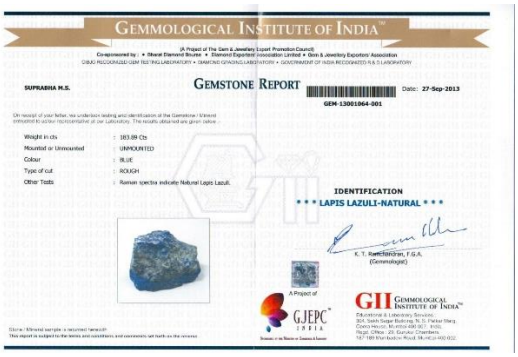
Rajavarta Marana

In traditional gajaputa, marana is performed with gandhaka and bhringaraj swarasa. This step was repeated eight times. Over time in the marana process, there are changes in the color, odor, taste, and appearance of the processing bhasma The overall weight loss during the process was minimal, indicating that the end product yield was high—more than 96%—demonstrating that the approach is efficient and reliable.

CONCLUSION

This study demonstrates that using traditional Ayurvedic processes, it is safe to convert the beneficial mineral Rajavarta into Bhasma. When done correctly, the Shodhana and Marana method produces a great product with all of the desirable characteristics of a good Bhasma. These findings lend support to the idea that, with proper application, traditional Ayurvedic procedures are still useful and can be used to generate safe and practical drugs today.

PHOTOS


GEMMOLOGICAL INSTITUTE OF INDIA

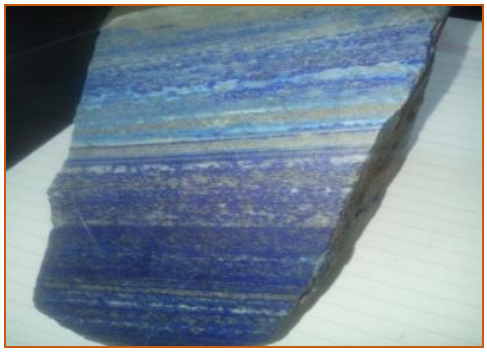
GEMSTONE REPORT

GEM-13001064-001

IDENTIFICATION

LAPIS LAZULI-NATURAL

Gemstone report



Raw Rajavarta

Rajavarta shodhana

Rajavarta after 1st puta

Rajavarta after 8th puta

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