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## A PHARMACEUTICAL STUDY OF NAGA BHASMA

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Rasashastra.JSS Ayurveda Medical College, Mysore, Rajiv Gandhi University of Health Sciences,  
Karnataka, Bangalore, India.**ABSTRACT:**

*Naga, a dhatu described since Vedic period is used in Rasashastra for both Dhatuvada and Dehavada, is grouped under putiloha which has a high therapeutic utility in the treatment of madhumeha and other diseases which are difficult to cure. In spite of wide therapeutic applicability, preparation and usage of Naga bhasma has become a subject of skepticism owing to its alleged toxicity. It is mentioned that bhasma prepared using Parada is Shreshta, using Kashtoushadhi is madhyama and using Ariloha is durgunaprada. To understand the rationality of this concept, the present work has been planned. Aim is to prepare Naga bhasma with three different media, to carry out the qualitative, quantitative analysis and compare Naga bhasma prepared with three different media on Pharmaceutical parameters. Naga bhasma prepared by using Kashtoushadhi (Arkamula) did not pass all the bhasma pareekshas. Naga bhasma prepared by using Parada took 1 puta, as mentioned in classics, passed all the bhasma pareekshas and could be used therapeutically after toxicity studies. Naga bhasma prepared by using Ariloha (Manahshila) took 22 putas ( 3 putas-classically) and passed all the bhasma pareekshas. Pharmaceutically, with Parada as a medium, Naga bhasma can be easily prepared compared to other media. Jarana after amalgamation is necessary*

## INTRODUCTION

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'Ayurveda' the science of life has been framed upon 'Trisutras' viz *Hetu, Linga* and *Aushadha*. Among these *Aushadha* is responsible for the alleviation of diseases as well as for maintenance and promotion of health. The branch *RASASHASTRA* contributes to aid the physician to utilize the *Aushadhas* in various forms to cure the disease. Many important *Ayurvedic* formulations like *Garbhapala rasa, Suchikabharana rasa, Ekangaveera rasa, Mahavatavidhwamsana rasa* etc contains *Naga bhasma* as an ingredient. In spite of wide therapeutic applicability, preparation and usage of *Naga bhasma* has become a subject of skepticism owing to its alleged toxicity.

**AIMS AND OBJECTIVES**

- To carry out the *shodhana* of *Naga, Parada, Gandhaka & Manahshila*.

- To prepare *Naga bhasma* with three different media.
- To carry out the qualitative, quantitative analysis and compare *Naga bhasma* prepared with three different media on Pharmaceutical parameters.

**Materials and methods:****Preparation of *Nirgundi mula kwatha*<sup>1</sup>****Ingredients :***Nirgundi moola churna* : 1 Part ( 1 Kg)

Water :16 Parts (16 litres)

Apparatus: Gas Stove, Stainless steel vessel, Spatula

**Procedure:** 1 Kg *Yavakuta churna* of *Nirgundi moola* was taken in a stainless steel vessel. 16 litres of water was added and boiled till 1/4<sup>th</sup> quantity remains. It was filtered and stored.

**Observations:**

- During preparation of *Kwatha*, frothing was observed in the initial stages.
- Kwatha* was brown in colour .

**Precautions :**

- *Kwatha* was prepared over *madhyamagni*.
- Continuous stirring was done throughout the procedure.

***Naga shodhana***<sup>2</sup>

**Ingredients :**

*Ashuddha Naga* :300 g

*Nirgundi Rasa*: 450 ml x 7 times

**Apparatus :** Iron ladle, Spatula, *Pithara yantra*, Gas stove

**Procedure :** *Ashuddha Naga* was taken in an iron ladle, melted and poured in *Nirgundi rasa* through *pitara yantra*. Later washed with hot water and dried. Same Procedure was repeated for 7 times.

**Table 1: Observations of *Naga shodhana***

<i>Dhalana</i>	Form of <i>Naga</i>	Weight of <i>Naga</i>
1	Cluster form	290 g
2	Cluster form	285 g
3	Cluster form + granule form	283 g
4	Nail form + granule form	280 g
5	Nail form + granule form	278 g
6	Nail form + granule form	276 g
7	Nail form + granule form	275 g

- Average time taken to melt *Naga* - 6 min
- During heating process, a pungent smell of *Naga* was observed.
- *Blackish coating of Naga* - 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> *Dhalana*.
- *Naga* became more silvery white in colour after 4<sup>th</sup> *Dhalana*.
- Mild explosive sound was heard during quenching.
- Colour of *Nirgundi kwatha* became blackish brown .
- Sufficient quantity of *Nirgundi rasa* was taken to immerse *Naga* completely.
- After each *Dhalana*, fresh *Nirgundi rasa* was taken.
- *Naga* was washed with hot water and dried completely.

**Precautions:**

**Results:**

Quantity of *Naga* taken for *Shodhana* : 300 g

Quantity obtained after *Shodhana* :  
276 g

Amount of Loss : 24 g

**Parada shodhana<sup>3</sup>**

**Ingredients:**

*Ashuddha Parada* : 200 g

*Haridra Churna* : 200 g

*Kumari Swarasa* : Quantity Sufficient

**Apparatus** : *Khalva yantra*,  
Spatula, Mud pots,  
Kora cloth, Wet cloth,  
Brush, Gas stove.

*Mardana* of *Parada*: Two hundred g of *ashuddha Parada* and *haridra choorna* were taken in a *khalva yantra* and triturated for 6 hours. When *Parada* was completely homogenized with *haridra churna*, sufficient quantity of *kumari swarasa* was added and triturated for 12 hours till it became homogenous paste.

The obtained paste was made into *chakrikas* of *kupeelu* size and dried. Thus prepared *chakrikas* were placed in a mud pot and closed with the other pot, facing the mouths. Three layers of *Sandhi bandhana* was done using multani smeared cloth and kept for drying.

**Urdhwapatana:** Next day, these pots were placed over the stove and subjected to *urdhwapatana* in *kramagni*. A wet cloth was placed on the upper pot and frequently replaced with the other. The total duration of heat was given for 6 hours i.e. 2 hours of *Mridvagni*, 2½ hours of *Madhyamagni* and 1½ hours of *Teevragni*. After the process, the pots were left for *Swanga sheetha*.

**Collection of Parada :** Next day, *Sandhi bandhana* was removed and carefully *Parada* was collected which was settled at the inner surfaces of the pots and sieved through the double folded cloth and stored.

**Table 2 . Observations of Parada shodhana**

Duration	Observations
After 6 hours	Colour of <i>Haridra churna</i> turned dark green colour. Mercury disintegrated into tiny globules.
After 12 hours	<i>Parada</i> was properly mixed with <i>haridra churna</i> and <i>kumari swarasa</i> and it was dark green colour, tiny mercury globules were observed.
After 18 hours	A homogenous mixture of <i>Parada</i> , <i>haridra</i> and <i>kumari swarasa</i> were observed.

**Precautions :**

- Initially *haridra choorna* was added little by little.



- Care was taken while triturating to avoid spilling of *Parada*.
- Uniform pots were taken and filled with water to check the pores.
- Wet clothes were changed regularly during *patana karma*.

### Results :

Quantity of *Parada* taken for *Shodhana*  
: 200 g

Quantity obtained after *Shodhana* : 180 g

Amount of Loss : 20 g

*Gandhaka shodhana* <sup>4</sup>

### Ingredients :

*Ashuddha Gandhaka* : 250 gm

*Godugdha* : 2 liters x 3 : 6 liters

*Gogrita* : 250 g x 3 : 750g

**Apparatus** : Iron pan, Vessel, Heating apparatus, Kora cloth, Scissors, Thread.

A clean vessel was filled with milk and a khora cloth was tied to the mouth of the vessel. Powdered *Gandhaka* with equal quantity of *ghrita* was taken in an iron pan. When *Gandhaka* was totally melted, it was poured into the vessel containing *godugdha* through the Kora cloth. A solid mass with some granular part of *Gandhaka*

was taken out of the vessel, discarding the milk. The obtained *Gandhaka* was washed with hot water and dried. The same procedure was repeated 3 times, fresh *ksheera* and *ghrita* was taken every time.

### Observations:

- Average time taken to melt *Gandhaka* was 10 minutes
- *Gandhaka* when melted with ghee, was reddish in colour.
- *Gandhaka* collected was in the form of solid and flat disc like mass.
- Surface of the milk turned to yellow colour after *Gandhaka* poured into it.
- Typical smell of *Gandhaka* was smelt throughout the process.
- Crystalline dark yellow *Gandhaka* turned into dull yellow after *shodhana*.
- The physical impurities adhered to the cloth.

### Precautions:

- Vessel taken was wide mouthed to aid proper contact of *Gandhaka* with milk.
- Cloth was tied neither too tight nor too loose.
- *Mridvagni* was given to melt *Gandhaka*.

**Results:**

Quantity of *Gandhaka* taken for *Shodhana*

: 250 g

Quantity obtained after *Shodhana* : 240 g

Amount of loss : 10 g

***Manahshila Shodhana*** <sup>5</sup>

**Ingredients:**

*Ashuddha Manahshila* : 500 g

*Ardraka Swarasa* : 300 ml

**Apparatus :** *Khalva Yantra*, Spoon,

Measuring jar

**Procedure:** A clean *Khalva* was taken and

*ashuddha Manahshila* was pounded well.

*Ardraka swarasa* was freshly prepared to use as *bhavana dravya*. Sufficient quantity of *Ardraka swarasa* was added to immerse *Manahshila* completely. *Bhavana* was done till the movement of the pestle was difficult. After complete drying, again sufficient amount of *Ardraka swarasa* was added for second *bhavana*. This was repeated so that 7 *bhavanas* were given in total to complete the process of *Manahshila shodhana*.

**Table 3. Quantity of *Ardraka swarasa* taken for *bhavana* of *Manahshila***

No. of <i>Bhavana</i>	Duration of <i>bhavana</i>	Quantity of <i>Ardraka swarasa</i>
1 <sup>st</sup>	4 hrs	130 ml
2 <sup>nd</sup>	3 ½ hrs	85 ml
3 <sup>rd</sup>	3 ½ hrs	70 ml
4 <sup>th</sup>	3 hrs	60 ml
5 <sup>th</sup>	2 ½ hrs	45 ml
6 <sup>th</sup>	2 hrs	40 ml
7 <sup>th</sup>	2 hrs	30 ml

**Observations:**

- *Manahshila* particles became finer after every *bhavana*.
- The amount of *Ardraka swarasa* was more in first *bhavana* but later the amount reduced.

- After *bhavana*, *Shuddha Manahshila* was dull orange in colour and more fine powder.

**Precautions:**

- *Khalva* taken was shallow to facilitate easy *bhavana* and drying also.
- Fresh *Ardraka swarasa* was used for each *Bhavana*.
- *Ardraka swarasa* was taken as per requirement else will take longer period for drying.
- *Manahshila* was collected carefully.

**Results:**

Quantity of *Manahshila* taken for *Shodhana* : 500 g

Quantity obtained after *Shodhana* : 525 g

Amount of gain : 25 g

**Marana of Naga – Kashtoushadhi as a medium**<sup>6</sup>

**Ingredients:**

*Shuddha Naga* - 100 g

*Arka Moola*

**Apparatus:** Iron Pan, Gas Stove, Vessels, *Loha darvi*

**Procedure** : *Shodhita Naga* was melted in an iron pan. After melting, *gharshana* (rubbing) was done using *Arkamoola* until the molten *Naga* gets completely disintegrated. Powder was collected to the centre, covered by *sharava* and subjected to *Teevragni* for 2 hours.

**Observations:**

- *Naga* took 5 minutes to melt completely.
- After 1½ hour - Black colour changed to dark green colour.
- After 3½ hours - Colour changed from dark green to dull green.
- After 6 hours - Colour changed from green to light yellow.
- After 9 hours 45 minutes - Colour changed from yellow to bright orange.
- At this stage, molten *Naga* disintegrated completely.
- After 2 hours of intense heat, colour turned to

Yellow - Periphery

Orange - Centre

**Results:**

Quantity of *Shodhita Naga* taken: 100g

Quantity of *Naga Bhasma* obtained: 80g

Amount of Loss: 20g

**Marana of Naga - Parada as a medium**<sup>7</sup>

**Ingredients :**

*Shuddha Naga* - 100 g



*Shuddha Parada* - 100 g  
*Shuddha Gandhaka* - 200 g  
*Nimburasa* - Quantity Sufficient

**Apparatus:** *Khalva yantra, Loha patra, Loha darvi, Gas stove, Vessels.*

**Procedure :** *Shuddha Naga* was heated in an iron ladle. After melting, it was poured in *shuddha Parada* which was placed in *khalva yantra*. Immediately trituration was carried out till the formation of *Nagaspisti*. Then it was washed with *nimburasa* and dried. Then *shuddha Gandhaka* was added to it and triturated with water. *Chakrikas* were prepared and left for

drying. After drying, *chakrikas* were placed in *sharava*, covered by another *sharava*. *Sandhibandhana* was done and subjected to *laghu puta* (100 *Vanopalas*). Next day, the material was collected ground with water, *chakrikas* were made and subjected to *puta*. This procedure was repeated for 5 times.

3<sup>rd</sup> *Puta* - 100 *Vanopalas* were used

4<sup>th</sup> *Puta* - 70 *Vanopalas* were used

5<sup>th</sup> *Puta* - 50 *Vanopalas* were used

Table 4 . Observations

<i>Puta No.</i>	<i>Weight of Bhasma</i>	<i>Colour of Bhasma</i>	<i>Chakrika Consistency</i>
1	95 g	Black	Soft
2	90 g	Greyish Black	Hard
3	90 g	Greyish Black	Hard
4	85 g	Greyish Black	Hard
5	80 g	Greyish Black	Hard

**Marana of Naga - Parada as a medium**

Reference : *Anubhuta*

**Ingredients**

*Shuddha Naga* : 50 g  
*Shuddha Parada* : 50 g  
*Shuddha Gandhaka* : 100 g  
*Kumari Swarasa* : Quantity sufficient

*Ashwattha twak Churna* : 12.5 g

**Apparatus:** Iron pan, *Loha darvi*, Weighing machine, Vessels.

**Procedure:** *Jarana - Shuddha Naga* was heated in an iron ladle. After melting, *Shuddha Parada* was added to it and immediately the mixture was poured to *khalva* and trituration was done till the formation of *Nagapisti*. This mixture was placed in an iron pan and melted. After

melting, *Ashwattha twak churna* was added and triturated with iron ladle. After *Ashwattha twak churna* was burnt, same amount of *Ashwattha churna* was added again and the procedure was repeated till *Naga* gets converted to powder form. The powder was collected in centre, covered with sharava and subjected to *Teevragni* till red hot stage (2 hours) and left for *Swanga sheeta*.

*Putapaka*: *Shuddha Gandhaka* was added to it and triturated with *kumari swarasa*, *chakrikas* were made, subjected to *puta* of 50 *Vanopalas*.

#### Observations:

- *Naga* took around 5 minutes to melt completely
- When *Shuddha Parada* was added slight bumping was observed.
- It took few seconds for amalgamation of *Naga* with *Parada*.
- Black fumes were seen after addition of *Ashwattha twak churna*.
- After 1 hour of *Jarana*, colour turned to black.
- After 3½ hours, *Naga* completely disintegrated. Colour was greenish black.
- After 2 hours of *Teevragni*, colour of *choorna* was black.

- *Jarita Naga* was in fine powder form.
- After 1<sup>st</sup> *puta*, *Chakrika* were soft and black in colour.

#### Precautions:

- *Parada* was added after complete melting of *Naga*.
- Care was taken during addition of *Parada* to *Naga* to avoid the physical injury.
- *Ashwattha twak churna* was added after complete melting of the amalgamated (*Parada* + *Naga*) material.

#### Results:

- Quantity of *Naga* taken for *Jarana* : 50 g
- Quantity of *Parada* taken for *Jarana* : 50 g
- Quantity obtained after *Jarana* : 47 g
- Quantity obtained after *Puta* : 42 g

#### *Marana of Naga - Ariloha as a medium* <sup>8</sup>

Ingredients: *Shuddha Naga* : 50 g

*Ashwattha Twak Churna* : 50 g

*Shuddha Manahshila* : 50 g (each time)

*Nimbu Rasa* :Quantity sufficient

**Apparatus** : Iron pan, *Loha darvi*, Weighing machine, Vessels.

**Procedure** : *Shuddha Naga* – 100 g

**Jarana** : *Shuddha Naga* was heated in an iron pan. After melting, *Ashwattha twak churna* was added little by little and triturated with iron ladle. After *Ashwattha twak churna* was burnt, again *churna* was added and the procedure was repeated till *Naga* gets converted into powder form. Then the powder was collected in centre, covered with *sharava*, subjected to *teevragni* till red hot stage (2½ hours). After *Swanga sheetha*, product was washed with water. Washing was continued till the pH shows 7.

Observations:

- After adding *Ashwattha twak churna*, blackish fumes were observed which reduced gradually.
- After adding *churna*, colour of molten *Naga* turned to black colour.
- Red spots were observed in the iron pan which indicated the immediate burning of *churna*.
- After 1 hour, colour turned to green from black colour.
- After 3 hours, *Naga* disintegrated completely.

- After 1 hour of *Teevragni*, colour of *choorna* turned from green to yellow colour.
- After 2½ hours of *Teevragni*, colour turned to dull yellow.

**Precautions:**

- *Ashwattha twak churna* was added after complete melting of the *Naga*.
- Continuous stirring was done for proper *Jarana* of *Naga*.
- *Ashwattha twak churna* was added after complete burning of the previous *churna*.
- After complete conversion into powder form, it was provided *teevragni* to check the completion of *Jarana* Process.

**Results:**

Quantity of *Shodhita Naga* taken for *Jarana* : 100 g

Quantity of *bhasma (Churna)* obtained after *Jarana* : 80 g

**Putapaka :**

*Jarita Naga* : 50 g

*Shuddha Manahshila* : 50 g

**Procedure:**

*Shuddha Manahshila* was added to the *Jarita Naga* and triturated with *nimburasa* followed by preparation of *chakrikas*. After proper drying, *chakraika* were placed in a *sharava*, covered by another *sharava*, *sandhibandhana* was done and allowed for complete drying. Then it was subjected for *puta*(100 *Vanopalas*). Next day, the material was collected, 50 g of *shuddha Manahshila* was added, triturated with *Nimburasa*, *chakrikas* were prepared and subjected to *puta*. This process was repeated for 22 times.

1<sup>st</sup> *Puta* to 11 *Puta* : 50 g of *Shuddha Manahshila* was added after each *puta*.

12<sup>th</sup> *Puta* Onwards upto 20 *puta* : 5 g was reduced from 50 g of *Manahshila* every time. 2.5 g of *Manahshila* was added for 21<sup>st</sup> and 22<sup>nd</sup> *Puta*.

#### Observations:

- *Rekhapurnata* was positive from 6<sup>th</sup> *puta* onwards.
- *Varitara* and *Unnama parikshas* were passed from 16<sup>th</sup> *puta* onwards.
- *Apunarbhava* and *Niruttha parikshas* were passed in 22<sup>nd</sup> *puta*.



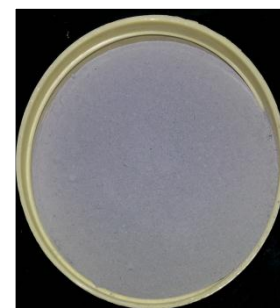
**Shodhita Naga**



**Nagabhasma – Kashtoushadhi as a Medium**



**Nagabhasma – Parada as a medium**



**Naga Bhasma – Ariloha as a Medium**





**Table 5: Quantity of *bhasma***

Media	Quantity of <i>Shuddha Naga</i> taken	Quantity of <i>Bhasma</i> obtained
<i>Kashtoushadhi</i>	100 g	80 g
<i>Parada</i>	50 g	42 g
<i>Manahshila</i>	50 g	70 g

### NAMBURI PHASED SPOT TEST

This technique is performed at JSS Ayurveda Medical College, Mysore; for quality assessment of Bhasma by standard spot.

- Materials :**
- 5N HNO<sub>3</sub>
  - 10% Pot.Iodide paper
  - Samples of *Naga bhasma*.

**Procedure:** Preparation of 10% Pot.Iodide paper : 10 g of Potassium Iodide crystals were dissolved in 100 ml of distilled water in a clean dry 200 ml beaker. After complete dissolution, the solution was taken in a clean dry glass tray and No.1 Whatman papers were dipped completely

and taken out and dried under shade in a dry glass tray. Care was taken regarding avoidance of air bubbles and spots while spreading the paper for drying.

**Preparation of Naga bhasma solutions:** 0.25 g of three samples of *Naga bhasma* were taken in three micro test tubes. 0.5 ml of 5N HNO<sub>3</sub> was added to the three samples separately drop by drop and gently heated for a minute and kept in the stand for 72 hours, shaking now and then. One or two drops of sample solution were put on 10% Potassium Iodide paper.

**Observations:** Observed the spot on Chemical Reacting paper at three different time intervals immediate, after 20 minutes and after 24 hours.



Results: A yellow coloured spot around the solid spot was observed in *Naga bhasma* prepared by using *Parada* as a medium.

Other two samples did not match with the standard spot.

**Table 6. Organoleptic tests**

Parameters	<i>Naga bhasma -1</i>	<i>Naga bhasma -2</i>	<i>Naga bhasma -3</i>
<i>Sparsha</i>	Perceptible coarse particles were present	Smooth, no perceptible coarse particles	Smooth, no perceptible coarse particles
<i>Varna</i>	<i>Sindhura</i>	Dark grey	Light grey
<i>Rasa</i>	Tasteless	Tasteless	Tasteless
<i>Gandha</i>	No specific odour	No specific odour	No specific odour

**Table 7. Classical parameters**

Parameters	<i>Naga bhasma -1</i>	<i>Naga bhasma -2 (After 1<sup>st</sup> Puta)</i>	<i>Naga bhasma -3</i>
<i>Rekhapurna</i>	+	+	+(6 <sup>th</sup> Puta)
<i>Nischandrata</i>	+	+	+(6 <sup>th</sup> Puta)
<i>Varitara</i>	-	+	+(16 <sup>th</sup> Puta)
<i>Unnama</i>	-	+	+(16 <sup>th</sup> Puta)
<i>Apunarbhava</i>	-	+	+(22 <sup>nd</sup> Puta)
<i>Niruttha</i>	-	+	+(22 <sup>nd</sup> Puta)

## DISCUSSION

*Shodhana* is the basic prerequisite procedure in the preparation of *Rasoushadhis*. The concept of *Samanya* and *Vishesha Shodhana* are mentioned in recent texts of *Rasashastra*. Whether all lohas need to be subjected for either / both of *Samanya* and *Vishesha Shodhana* is not clearly known.

***Naga Shodhana:*** Blackish coating was observed during 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> *Dhalana*. This may be due to liquid media forming a layer around *Naga*. *Naga* became more silvery white in colour after 3<sup>rd</sup> *Dhalana*

which may be because impurities of *Naga* may form a bond with the chemical constituents of the *Nirgundi moola Kwatha*. Thus they may get separated. 24 g loss of *Naga* after *shodhana* may be due to heating, washing with hot water, collection etc.

***Parada Shodhana:*** Continuous cooling of the upper pot by placing a wet cloth on it facilitates proper condensation of Mercury. During *Urdhwapatana Samskara*, *Naga* and *Vanga* remain at the lower pot as they have high boiling point compared to

Mercury. The amount of loss may be during *mardana*, *urdhwapatana*, collection.

**Jarana:** The word *Jarana* doesn't find mention in the context of *puti lohas* anywhere in the original texts. In recent texts of *Rasashastra* we find the mention of the word *Jarana* in the context of *Puti loha*.

**Jarana Dynamics:** The volatile undesirous substances which might have remained even after *shodhana* process may volatilize during *Jarana*. When the metal is converted to powder form during *Jarana*, which is almost so fine as to be called ash/*bhasma*, is heated in the open container till it becomes red hot. At this stage it doesn't undergo melting. It can be equated with roasting which brings about oxidation of the fine metallic powder.

**Naga Marana- Kashtoushadhi as a medium :** According to the reference of *Bhrat Rasaraja Sundara*, *Shodhita Naga* is rubbed with *Arka moola* until *harita varna bhasma* is obtained. Practically after 3½ hours after *gharshana* (rubbing), powder attained *harita varna*. But molten *Naga* was present. So, *Jarana* was continued till *Naga* disintegrated completely . It took around 9 hours 45 minutes for complete disintegration of *Naga*. The colour of the end product was orange. After *Jarana*

process, the product was washed with water to remove the *Kshara* content of the product. This was confirmed by reduced pH of water used for successive washing. According to modern chemistry, if lead is heated in an open air, it reacts with atmospheric oxygen and forms lead Oxide (PbO). In case of *Jarana*, *Naga* is heated in open air. So, final product is PbO. Its colour ranges from yellow (Massicot form) to reddish yellow (litharge form).

**Naga marana – Parada as a medium:**

According to the reference, only one *Puti* is mentioned. But the product obtained after 1<sup>st</sup> *puti* did not pass the *bhasma pareekshas*. So the product was subjected to succeeding *putas*. There was no mentioning of addition of any *dravya* from 2<sup>nd</sup> *puta* onwards. So, no *dravya* was added. The material obtained after 1<sup>st</sup> *puta* was triturated with water and subjected to successive *putas*. As the *chakrikas* became hard with metallic sound during successive *putas* the number of *vanopalas* were reduced from 100 to 50. Even after reducing the *vanopalas*, *chakrikas* continued to be hard. So different method of preparation was tried with the same ingredients.

**Naga marana – Ariloha as a medium:**

*Naga* should invariably be subjected to two steps *Bhasmikarana* i.e. *Jarana* and subjecting the powder which is the

outcome of *Jarana*, to incineration process. According to some *Acharyas*, *Jarana* is an intermittant procedure after *shodhana* and before *marana* which makes the metal fit for incineration process. According to *Brhat Rasaraja Sundara* reference, the product obtained after *Jarana* process itself is *bhasma*. For *Jarana* process, *ksharas* are mentioned. *Chakrikas* became hard after 11<sup>th</sup> Puta. So number of *Vanopalas* were reduced from 100-70 and 5g of *Manahshila* was reduced from 50 g of *Manahshila* every time.

*Rekhapurnata* was positive from 6<sup>th</sup> puta onwards. *Varitara* and *Unnama parikshas* were passed from 16<sup>th</sup> puta onwards. In

22<sup>nd</sup> puta, *Apunarbhava* and *Niruttha parikshas* were passed. Hence, the *bhasma* obtained from 22<sup>nd</sup> puta was considered as the final product.

**NPST :** The Namburi Phased Spot Test was carried out with an intention to find the chromatographic standards for Naga bhasma. This technique estimates qualitative standard of *Naga bhasma*. It was observed that the pattern of colour change of the sample prepared by using *Parada* as a medium was similar to standard spot. The series of changes in the colour is due to reaction between Potassium iodide paper and solution prepared out of Naga bhasma and 5N HNO<sub>3</sub>.

### CONCLUSION

Pharmaceutically, with *Parada* as a medium *Naga bhasma* can be easily prepared compared to other media. *Jarana* after amalgamation is necessary which

paves way for easy *bhasmikiranana*. Puta with 50 *Vanopalas* can be taken as *Laghuputa* for *Naga marana* which is evident from the work conducted.

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