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## REVIEW ARTICLE

### A Review on *Parada marita Naga bhasma*

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#### ABSTRACT

**Introduction:** *Naga bhasma* (Incinerated Lead), despite its potent properties, doctors rarely prescribe because of the risk of toxicity. *Marana* is a process used after *Shodana* (cleansing) to get rid of the negative effects of the *Naga* (Lead) and make it more readily absorbed and assimilated by the body. The primary goal of this article is to review research on *Parada Marita Naga Bhasma*. **Material and Methods:** *Grahya Naga* from Bangalore was chosen for the study and *samanya shodana* & *vishesa shodhana* of *Naga* were carried out as per *Rasa Ratna samucchaya*. **Result:** The physicochemical analysis of *Naga* and *Naga Bhasma* was performed in accredited laboratories, establishing the standard values through analytical studies such as organoleptic characters, physical constants such as Ash value, Total ash, Water soluble ash, Moisture content, and pH. **Conclusion:** The *Marana* of *Naga* required 21 days to complete and *bhasma* was red in colour with pH of 9.8.

**Keywords:** Incinerated lead, *Naga bhasma*, *Samanaya shodhana*, *Vishesa shodhana*.

#### 1. INTRODUCTION:

Metals make up a sizable group of inorganic elements called *Dhatu* (metals) that are found in nature in a variety of forms and in combination with undesirable other elements that are not suited for human

consumption. *Rasashastra* modifies and develops certain elements in order to make them more easily assimilated by the body and to maximize their therapeutic effects. This can be accomplished using traditional techniques like *Marana* (incineration) and *Shodana* (cleansing).

*Naga* (Lead) is one among the *Pooti Loha*. The physicochemical analysis of *Naga* and *Naga Bhasma* was performed in accredited laboratories, establishing the standard values through analytical studies such as organoleptic characters, physical constants such as Ash value, Total ash, Water soluble ash, Moisture content, and pH. In this study, *Naga* with acceptable qualities was taken and subjected to *Shodana* and *Marana* procedures. Hence, review study on *Parada marita Naga bhasma* is the main aim of this article.

## 2. MATERIALS AND METHODS:

### Materials

- Due to its fulfilment of the *grahya lakshnas* and the fact that it contained 96.27% lead, *Grahya Naga* from Bangalore was chosen for the study.

### Methods

- *Samanya Shodana* of *Naga* will be carried out as per *Rasa Ratna samucchaya*.
- *Naga Bhasma -Visesha shodana* of *Naga* and preparation of *Naga Bhasma* will be carried out as per *Rasa Ratna samucchaya*.

## 3. OBSERVATION AND RESULT:

### *Samanya Shodana of Naga*

#### Materials

- *Ashoditha Naga* (Impure lead) –2 kg
- *Tila taila* (Sesame oil) –10.5 litres
- *Takra* (Buttermilk)–10.5 litres
- *Gomutra* (Cow's urine)–10.5 litres
- *Aranala* (Sour gruel)–10.5 litres
- *Kulattha kwatha* (Horse gram decoction) –10.5 litres

#### Apparatus

- Iron vessels, spoon, *kosthi* (fire place), *Peethara yantra*, Pyrometer.

#### Procedure

- *Ashoditha Naga* (impure lead) was placed in a clean iron vessel, which was then heated until the entire *Naga* melted and changed into a liquid state. Later, the molten *Naga* was poured into the *tila taila* through the *Peethara Yantra*. The same process was carried out seven times in total, with new media being used each time. *Naga* was washed in hot water, dried, and weighed after the repetition for seven times. The same process was repeated in *kulattha kwatha*, *gomutra*, *takra*, and *aranala*.

**Table 1:** Observations in *Naga* during the *Samanya Shodana*

Media	Quantity (before Shodana)	Quantity (after Shodana)	Loss / gain		Colour Changes	
			In grams	In %	Initial	Final
<i>Tila taila</i>	2000	2030	30 (gain)	1.47	Grey	Dull silver
<i>Takra</i>	2030	1980	50 (loss)	2.52	Dull silver	Dull silver
<i>Gomutra</i>	1950	1700	250 (loss)	14.70	Dull silver	Bright silver
<i>Aranala</i>	1750	1630	120 (loss)	7.36	Bright silver	Bright silver
<i>Kulatha kwatha</i>	1650	1480	170 (loss)	11.48	Bright silver	Bright silver

**Table 2:** Changes in the media during *Samanya Shodana*

Media	Initial colour	Final colour	pH	
			Initial	Final
<i>Tila taila</i>	Light brown	Dark brown		
<i>Takra</i>	White	Dull white	4.03	4.06
<i>Gomutra</i>	Yellow	Mud colour	7.54	9.24
<i>Aranala</i>	White	Dull white	3.30	5.18
<i>Kulatha kwatha</i>	Brown	Brown	6.40	6.28

## Results

- Initial quantity – 2000 grams
- Final quantity obtained – 1480 grams
- Loss of weight – 590gms (29.5%)

## *Naga Marana* as per *Rasa Ratna Samucchaya*<sup>2</sup>

### Materials

- *Visesha Shoditha Naga* (Pure Lead) –500 grams
- *Shuddha Parada* (Purified Mercury) –7 grams
- *Arjuna kshara* (ash of stem bark of *Terminalia arjuna* Roxb.) –25 grams
- *Vibhitaki kshara* (ash of fruit of *Terminalia bellerica* (Gaertn.) Roxb.) –25 grams
- *Aragwadha kshara* (ash of stem bark of *Cassia fistula* Linn.) –25 grams
- *Dadhima kshara* (ash of outer covering of fruit of *Punica granatum* Linn.) –25 grams

- *Apamarga kshara* (ash of whole plant of *Achyranthes aspera* Linn.) –25 grams

### Apparatus

- Gas stove, iron vessel, spoon, *khalwa yantra* (Mortar and pestle), pyrometer, cloth.

### Procedure

- ✓ Molten *Parada* and Molten *Naga* were ground together in a *Khalwa Yantra* (mortar and pestle) to create an amalgam of *Naga* and *Parada* (Purified Mercury). This *Naga* and *Parada* mixture was placed in a pan and heated. *Arjuna Kshara* was added to the amalgam as it melted, and the mixture was continuously stirred until it became powder. Later, the mixture was frequently stirred, and *Vibhitaki*, *Aragwadha*, *Dadhima*, and *Apamarga Kshara* were each added one at a time, separated by four days, and the heating process was completed for 21 days. The temperature was kept between 600 and 700° C throughout the heating process.

### Observation

Total time duration taken for the *Marana* (Incineration) of the *Naga* was 21 days (480 hours).

**Table 3:** Observation in *Naga Marana*

No. of days	Observation
Day 1	Molten <i>Naga</i> + <i>Arjuna kshara</i> continuous stirring. <i>Naga</i> in tiny, molten droplets. After five hours of nonstop stirring, a bright yellow powder was produced.
Day 5	After adding the <i>Vibhitaki kshara</i> , stirring was done for about 30 minutes. The powder had a dull, yellowish tint and resembled ash in color.
Day 9	After adding <i>Araghwadha kshara</i> , the mixture was stirred for about 30 minutes. The powder's color changed to a reddish-gray tint.
Day 13	It was then mixed with <i>Dadhima kshara</i> for about 30 minutes. The powder had a reddish tinge and resembled ash in color.
Day 17	It was then mixed with <i>Apamarga kshara</i> for about 30 minutes. The <i>bhasma's</i> hue resembled ash with a reddish undertone.
Day 21	The colour of the <i>bhasma</i> was red and heating was stopped.

### Results

- Initial quantity – 500 grams (*Naga*)
- Final quantity obtained – 220 grams
- Loss of weight – 280gms (56%)

### Analytical study

### Materials

*Naga* collected from - places and *Naga Bhasma* were subjected to analytical studies at SDM Centre for research and allied science -Udupi, Bangalore Test House -Bangalore and National Institute of Technology –Surathkal

and MIT, Maipal.

- Naga were collected from Bangalore.
- Naga bhasma prepared according to Rasa Ratna Samucchaya.

### Methods

The above samples were subjected to following analysis.

- *Bhasma pariksha* as told in the classics.
- Organoleptic characters.
- Physical constants such as – loss on drying, total ash, acid insoluble ash, water soluble ash and pH determination.

### *Bhasma Pariksha*

*Bhasma pariksha* was carried out in the practical hall of Dept. of Rasashastra & Bhaishajya kalpana, SDMCA, Udupi.

- ✓ *Varitara* – Between the index and the thumb fingers, a pinch of *Naga Bhasma* was taken and gently placed over the still surface of the water and were found to be floating on the surface of the water<sup>3</sup>.
- ✓ *Unama* - A rice grain was placed over the floating *bhasma*, which also floated indicating *Unama* as positive<sup>4</sup>.
- ✓ *Rekhapurna* – Taken between the thumb and the index finger, a pinch of *Naga bhasma* was rubbed between the two fingers. The *bhasma* got embedded in the creases of the finger indicating *Rekhapurnatva* as positive<sup>5</sup>.
- ✓ *Nischandratva* – Pinch of sample of *Naga bhasma* was taken and observed under direct sunlight for the presence of metallic lusture and passed this test as there was no lusture<sup>6</sup>.
- ✓ *Avami* - Pinch of *Naga bhasma* was taken and placed on the tongue. No nausea and vomiting were seen indicating *Avami* as positive<sup>7</sup>.
- ✓ *Nisvadu* – Pinch of *Naga bhasma* was taken and placed on the tongue individually. No taste was perceived indicating *Nisvadu* as positive<sup>8</sup>.
- ✓ *Dantagrekachakacha* – It was done by grinding a pinch of *Naga bhasma* between the teeth. There was no unpleasant sensation indicating a positive test result<sup>9</sup>.
- ✓ *Niruttha* – Silver and *Naga Bhasma* were both taken in equal amounts, put in separate crucibles, and heated for an hour at 450°C. The silver was collected after self-cooling, and the weight was recorded. The silver's weight did not increase, indicating that *Niruttha* as positive<sup>10</sup>.
- ✓ *Apunarbhava* – Separately, 2 grams of *Naga Bhasma* and equal amounts of *gunja* (*Abrus precatorius* Linn.), guda (jaggery), tankana (purified borax), madhu (honey), and ghrita (ghee) were taken and ground. The *chakrikas* of *Naga Bhasma* were prepared, dried, and then put through a puta at 450°C. After heating, there were no metallic specks, indicating that *Apunarbhava* as as positive<sup>11</sup>.

**Organoleptic characters:**

Organoleptic characters of *ashodita naga* and *Naga Bhasma* was carried out in the practical hall of Dept. of Rasashastra & Bhaishajya kalpana, SDMCA, Udupi.

**Table 4:** Organoleptic characters of *Ashodita Naga* and *Naga Bhasma*

Parameter	Ashodita Naga	Naga Bhasma
Appearance	Solid Mass	Powder
Colour	Dull Silver	Red
Taste	Tasteless	Tasteless
Touch	Smooth	Smooth
Odour	Odourless	Odourless

Physico-chemical analysis of *Naga Bhasma* was carried out at SDM Centre for research and allied science –Udupi.

**Table 5:** Physico-Chemical analysis of *Naga Bhasma*

Parameter	Naga bhasma
Loss on drying	0.42%
Total Ash96.27%	94.02%
Acid Insoluble Ash23.21%	24.10%
Water Soluble Ash11.28%	10.43%
pH	9.2

**4. DISSCUSSION:**

The Word '*Pooti Loha*' indicates that when it is heated or melted it emits bad smell but practically it is not seen. According to the circumstances, it may indicate a quick tarnishing to a dull greyish color when exposed to the atmosphere by forming a complex mixture of compounds. The compounds color can change. Carbonates, hydroxycarbonates, and scum that forms on the surface of molten *Naga* when heated can all be found in significant quantities in the tarnish layer.

Since *Visesha Shodana* is performed to give the drug therapeutic properties, as stated in the definition itself, it might be helpful. *Naga's Marana* was performed through amalgamation with *Parada*, which aids in metal dissociation. The formation of a bright yellow powder during heating on the first day denotes the oxidation of lead, which produces lead oxide. As the heating progressed, the color gradually changed from yellow to dull red on day 7, then to red on day 18. The *Naga Bhasma's* red color denotes the further oxidation of lead oxide to trilead tetraoxide.

Analytical *Naga* studies were bought and their *grahya lakshnas* examined and contained *grahya lakshanas*. *Varitara* and *Unnama* were positive in the *bhasma pariksha*, indicating that the *Naga Bhasma* was so light that it couldn't break the surface tension of the water and had a specific gravity lower than that of water.

*Rekhapurnatva* denotes the *Bhasma's* fineness. The lack of metallic lustre in the *Bhasma*, according to *Nischandra*, denotes the absence of metallic particles. When the *Avami* and *Nisvadu* of the *Bhasma* were placed over the tongue, neither produced any queasy feelings nor had any flavor, indicating the absence of *Naga* in the metallic form. *Dantagre kacha kacha* indicates the fineness and softness of the particles. The complete absence of metallic particles is indicated by *Niruttha* no increase in the weight of the silver. *Apunarbhava* the *Mitra Panchaka* lowers the drug's melting point. If the drug contains metallic particles in the *Bhasma*, it will return to its original state when heated with *Mitra Panchaka*. Metal did not return to its original shape, proving there are no metallic particles present.

The total ash, water soluble ash, and acid insoluble ash contents have been widely used in modern analytical parameters as one of the indices to illustrate the quality and purity of the medicine. The drug's inorganic content is related to the ash value. The three factors that determine the actual value are the inorganic material that is naturally present in the drug, the addition brought about by the processes, and any potential subsequent contaminations.

The total ash method is intended to calculate the complete amount of materials that are still present after ignition. This includes both physiological and non-physiological ash, which are by-products of the media used during the procedure and are derived from the drug itself, respectively. Acid insoluble ash is the residue that remains after igniting the remaining insoluble material and boiling the total ash with diluted hydrochloric acid. This calculates the sand's silica content. The weight difference between total ash and the residue following the treatment of total ash with water is known as water soluble ash.

## 5. CONCLUSION:

The *Marana* of *Naga* through requires 21 days to complete. Red is the color of *Naga Bhasma*. The *Naga Bhasma* had a pH of 9.8. Additional research can be done in the areas of toxicity, experimentation, and clinical studies.

## COMPETING INTEREST

No competing interest exist as declared by author.

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