

## Significance of pelletization and casserole sealing in Ayurvedic Bhasma preparation

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### ABSTRACT

Minerals and metals of remedial value and their pharmaceutical processing techniques are dealt in Ayurvedic pharmaceutical science with a view to make them adoptable, nontoxic and efficacious. Toxicity of minerals and metals are proved information pharmaceutical processing techniques convert them into such a compound form, which acts as a safe and effective therapeutic agent. Shodhana (purification), Marana (incineration/calcinations) are the main pharmaceutical procedures by which raw and crude material converted in to high potent therapeutic agent. Pelletization (Chakrika nirmana) and Casserole sealing (Sarava samputikarana) are intermediary step of incineration processes which plays a significant role to establish S.O.P.of Ayurvedic bhasma.

**Key Words** :- Metals Minerals bhavana, Shodhana, Marana, Chakrika, sarava

### INTRODUCTION

The Vedas are oldest repository of human knowledge, Ayurvedic is one of the upaveda or subsidiaries to the Veda. Therefore, all topics described in Ayurvedic are considered to be derived from the Vedas, Several Ayurvedic classic were composed thereafter samhitas like Charaka and Sushruta are the richest source of knowledge, regarding drugs and disease. Charaka has classified drugs in to three categories viz. plant, animal and mineral origin, plant origin drugs were very much popular and widely used for medicinal purpose during Samhita period. Up to Samhita period, the use of metals, minerals in therapeutics were very limited and their processing techniques are not developed. During that period, minerals and metals were converted into the fine powder form with the help of heating, quenching, grinding and filtering and used for therapeutic purpose, After development of Rasa Shastra in medieval period as an independent branch of learning , many other specialized processing techniques like Shodhana (Purification).Marana

(incineration), Amritikarana (Nectarization), Satavapatana (Extraction of metals), Samskara (specialized processing techniques specially used for mercury) etc. and some intermediate steps of above techniques like levigation (Bhavana), Pelletization (Chakrika nirmana), Casserole sealing (Sarava-samputikarana) were developed to produce Ayurvedic bhasma with higher therapeutic potential. In this article we have tried to explore significance of Pelletization and Casserole sealing in Ayurvedic bhasma preparation.

### Important pharmaceutical procedures for making bhasma

- Pre treatment : Shodhana (Purification)
- Main/Chief treatment : Marana (Incineration/ Calcination)
- Intermediate steps of Chief treatment : Bhavana (Levigation), Chakrika nirmana Pelletization Sarava-samputikarana Sealing of Casserole
- Post operative treatment : Lohitikarana, Amritikarana,

### Pharmaceutical steps of ayurvedic bhasma preparation

Mineral material (Raw drug) – Sodhana (Samanya & Vishesh) – Jarana (in case of puti lohas) – Bhavana (Wet trituration) – Chakrika nirmana (Pelletization) – Aatapa Shoshana (Drying of pelletes) – Sarava samputikarana (Sealing of Casserole) – Puta system of heating – Bhasma obtained

### Pelletization (Chakrika nirmana)

It is process in which small, round, flat pellets are prepared from triturated doughy mass of substances to facilitates uniform and homegenous heating<sup>1</sup>.

No reference of chakrika nirmana is available in any Vedas and Samhita. The word chakrika is first time observe in Rasa Ratna Samuchhaya in context of loha marana<sup>2</sup>.

In Abhraka satvapatana, Acharya Vegbhata has mentioned that the size of the Chakrika should be slightly bigger than the fruit of *Strychnos nuxvomica*<sup>3</sup>.

Size and thickness of the Chakrika plays a significant role in the preparation of bhasma. In Rasamritam it is mentioned that chakrika should never be more than 1-2 tola by weight<sup>4</sup>.

A definite thickness facilities proper transmission of heat from periphery to core of the chakrika. More thickness may cause unsymmetrical reaction process with periphery to core where as very less thickness may speed up the transmission of heat which is not required for proper paka of the bhasma.

### Objective of pelletization (chakrika nirmana)

1. To facilitates the drying process of material.
2. To adjust high amount of material is sarava (casserole).
3. To avoid loss or contamination.
4. To increase surface area of the material, that is going to be incinerated to allow maximum heat transfer during heating treatment.
5. Chakrika is a parameter for testing the amount of heat supplied to the material with the help of color intensity.

6. Chakrika plays an important role in heat transformation to each and every molecule of the material.
7. For getting desirable color of specific bhasma, heat pattern of heating system and shape of chakrika should be smooth ad homogenous. Any disturbance in the temperature rising and self cooling system causes uneven and desirable color of pellets.

### Pellets

The term 'pellet' is now applied for small sterile cylinder about 3.2 mm in diameter and 8 mm in length which are formed by compression of medicated masses<sup>5</sup>.

### Sealing of Casserole (Sarava samputikarana)

The container in which 8 pala of material (chakrika) canbe put is called sarava (Saucer or casserole)<sup>6</sup>.the sarava containing material is covered by another sarava and junction of the two is sealed by mud smear cloth or rust and jaggery or any other material is called samputa and whole apparatus is known as sarava – sampura.

### Properties of casserole (Sarava)

- it must be inert (should not react with pellets)
- it should not be so thick or thin.
- it must be heat stable.
- it should not be good conductor of heat.

### Objective of Casserole Sealing (Sarava samputa)

- To protect the material fro contamination from ash and gas produced by fuel.
- To avoid loss during patapaka (heating treatment).
- To facilitate homogeneous atmosphere for desired chemical reaction, this takes place in the presence of heat and vapour pressure.
- To provide compete oxidation of material.
- To check undesired excessive heating of the material due to its insulation properties.
- Properly sealed sarava prevents the escape of volatile material.

## DISCUSSION

Ayurveda and its medicines are serving the needs of ailing humanity since beginning of

civilization. Particularly bhasmas have good preventive, curative and rejuvenating potential. This goal can only be achieved by well and organized processing techniques. Sodhana and Marana are the two main processing techniques by which the crude and heterogeneous material converted into powerful therapeutic agent i.e. bhasma. Bhavana, chakrika nirmana, sarava samputikarana and putapaka are the intermediary steps of marana process. Each intermediary processing step has great significance for proper bhasma preparation. Standard shape, diameter and weight of chakrika are very much helpful for proper heat transformation within each and every molecule of materials during heating treatment in sarava samputa. Our ancient Acharyas are very clearly mentioned that chakrika should be the shape of Tinduka phala (*Strychnos nuxvomica*) and slightly bigger in size. Mahapatra S. et al 2007 have observed chakrika having diameter, thickness and weight 1.9cm – 2.0cm, 0.7 to 0.8cm, 15 – 17gm respectively are considered best for proper bhasma preparation<sup>7</sup>. there is a need of systematic and well – organized coordination of allied science along with adequate infrastructure and facilities to solve various problems related to the standardization of metallic bhasma. This may

facilitate the development of this discipline and lead to its global recognition.

### CONCLUSION

1. Ancient Ayurvedic scholars are very much rational and have strong scientific backgrounds in fundamental principle, which are concern with Ayurvedic bhasma preparation.
2. By virtue of shadhana and marana, the drug become non – toxic, easily digestible and absorbable, suitable for metabolic changes, assimilable by tissue cells and become therapeutic potent.
3. Appropriate shape & size of chakrika, Sarava samputikarana and required quantum of heat make the way of prepare good quality of metallic bhasmas.
4. Chakrika having diameter, thickness, and weight slightly bigger to that of tinduka phala (*Strychnos nuxvomica*) is considered best for proper heat transformation during heating treatment and to achieve desirable particle size of bhasma.

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