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## RESEARCH ON PHARMACEUTICAL STUDY OF TAMRAGARBHA POTTALI

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### ABSTRACT

Rasaoushadhis containing metals, minerals blended with plant materials in vivid dosage forms are used in Ayurveda therapeutics since ages. Pottali Kalpana is one among the moorchana of Parada and is said to be very potent compared to other Kalpanas. Different methods of preparation of Pottali Kalpana is found in our classics, in which Bali Dravaka method is considered to be ideal. The Balidravaka method is very complex and distinctive process that needs pharmaceutical skills and practical exposure and experience to get properly processed product with desired therapeutic properties. Very few studies are conducted in this area and hence less seen in clinical practise also. Hence this area needs to be explored by developing standard operating procedure of pottali by adopting Gandhaka Dravaka method.

Tamragarbha Pottali is one such pottali formulation being possessed in Gandhaka Drava with Parada, Tamra Bhasma, Swarna Bhasma and Gandhaka as ingredients as per the reference of Rasayogasagar. It has got wide range of medical applications in different diseases such as Gulma, Kamala, Shwasa, kasa etc.

**Keywords:** Bali Dravaka Method, Kajjali, Pottali, Tamragarbha Pottali

### INTRODUCTION

Rasashastra is an important branch of Ayurveda developed during medieval period. Rasoushasdhies forms an integral part of the Ayurveda therapeutics and are

familiar for their quick action in small dose, palatability, better therapeutic efficacy and Rasayana properties. Rasoushadhies includes four kinds of Rasakalpas that are described under the concept of Parada Moorchana. They are Kharaliya Rasayana Parpati Rasayana, Kupipakwa Rasayana and Pottali Rasayana. The term pottali means to minimize, to concise and to make compact. It can be defined as to collect scattered materials in to compact and comprehensive size. The different methods of preparations of pottali kalpana are :

- Bali Dravaka Method ( i.e in melted sulphur bath)
- Putapaka Method (Kaparda Poorana) and
- Bhavana Method.

This article compasses about method of preparation of Tamragarbha Pottali as per the guidelines of Rasayogasagara and its observations during Paka. Tamragarbha Pottali is a Sagandha Sagni Moorhana of Parada prepared by adopting Bali dravaka method. It is indicated in Shwasa, Kaasa, Jvara, Shula, Vardhakya, Shosha and Yakrut Pleehagata Vikaras.

### MATERIAL AND METHODS

The reference of Tamragarbha Pottali from RasayogaSagara is adopted for preparation and its observations are recorded. A slight variation is made wherein instead of Swarna tanu tantu (thread) Swarna Bhasma is taken for the preparation of Tamragarbha Pottali.

### INGREDIENTS

Table 1: Ingredients of Tamragarbha pottali

S. No.	DRUGS	Proportion	
1	Tamra Bhasma	10 Karsha	150gm
2	Kajjali	1 Karsha	15gm
3	Shodhita Gandhaka	1 Tanka	5gm
4	Swarna Bhasma	6 Rattika	1gm

**Equipment:** Khalva Yantra, Dola Yantra, Shalaka, Pyrometer,

**Heating Source:** Gas Stove (Indirect heat)

**Container:** Loha patra, Mrittika patra

**Cloth:** Silk cloth

### METHOD

Tamragarbha Pottali prepared in below mentioned stages

POORVA KARMA

PRADHANA KARMA

PASCHAT KARMA

### POORVA KARMA

- Identification and collection of Raw materials
- Shodhana of Raw materials
- Hingulotha Parada
- Tamra Bhasma Nirmana
- Preparation of kajjali
- Preparation of Prematerial
- Preparation of Valuka yantra
- Preparation of Pottali

### HINGULOTHA PARADA

Parada extracted from Hingula is taken for the preparation of Tamragarbha Pottali. Raw Hingula was assessed on classical parameters and also tested for percentage of Mercury and Sulphur Present in taken sample of Hingula. Parada Nishkasana procedure conducted following the the reference of Rasatarangini , 58% yield achieved.

#### **PREPARATION OF KAJJALI**

Hingula Nishkasita Parada samanya shodhana conducted in Lashuna and Saindhava Lavana for 3 days. Though Hingulotha Parada is said to be equally potent as Ashtasamskarita Parada. Its shodhana was planned keeping in view more the number of samskaras adopted for Parada more will be its efficacy (Adhikasya Adhikaha).

Gandhaka samanya shodhana in Godugdha and Goghrita by Dhalana method and Vishsha Shodhana by Swedana in Bhringaraj Swarasa was conducted.

Kajjali was prepared by mardana of equal quantity of Shodhita Parada and Shodhita Gandhaka till siddi lakshanas such as nischandrata, rekhapurnata are appeared.

#### **PREPARATION OF TAMRABHASMA**

Samanya shodhana of Tamra carried out by Nirvapa mehod in Taila, Takra, Gomutra, Aranala, Kulatha Kwatha for seven times in each media.<sup>10</sup>

Vishsha shodhana of Tamra carried out in Nirgundi by Nirvapa method.

Shodhitha Tamra smeared with paste of Nimbu Swarasa and Samaguna Kajjali (Parada and Gandhaka) and dried. Later enclosed in Sharava samputa and subjected to 4 putas. Am Tamra bhasma was subjected to various classical parameters of Bhasma pareeksha along with Amla dadhi pareeksha which is specific for Tamra bhasma, all found positive after 4th Puta.

#### **AMRITIKARANA OF TAMRA BHASMA**

Half part of shuddha Gandhaka is added to Tamra Bhasma and triturated well with Nimbu rasa for 3 hours. This is to be made into bolus and placed in suranakanda scooped in the middle to accommodate the bolus and wrapped with Gopichandana clay smeared cloth and dried then subjected to Gajaputa and collected after self-cooling.

**Swarna Bhasma** was purchased from a reputed Pharmaceutical company with the analytical test reports that states the sample to be standard.

Prematerial prepared by trituration of samaguna Kajjali, Tamra Bhasma, Swarna Bhasma, till homogeneous mixture was obtained and then bhavana given with Kumari Swarasa for 7 times. Then made into shape of shikhirakara and dried in shade to avoid cracks. Such pottali each weighing about 32 gms were prepared.

## PRADHANA KARMA

The dried shikharahara *pottali* taken and tied in a four layered silk cloth, which is spread with *Shodhita Gandhaka* in each layer, and tied to *Loha shalaka* properly. Then it is immersed in a vessel containing *druta Gandhaka*. Then vessel was kept at the centre of *Valuka yantra*. *Mandagni* was given throughout the procedure. Pyrometer was placed in *Valuka near to the vessel* to

assess the temperature. The observations and results were noted systematically. After attainment of *Pottali siddhi lakshanas suh as Vyoma varna of pottali, Metallic sound when tapped on pottali, Tamra Garbha pottali* was taken out of *Gandhaka paka*, allowed for *Swangasheeta*, adhered *Gandhaka* was scraped and stored in a container. The highest temperature reached is  $238^{\circ}\text{C}$  in 6.5 hours of *paka kala*.

Table 2: Observations of *Tamra Garbha pottali Paka*

Duration	Temperature ( $^{\circ}\text{C}$ )	Observations
0 to 2hour	25 - $110^{\circ}\text{C}$	<i>Gandhaka</i> melted completely in 1.5 hrs and attained bright yellow colour. <i>Pottali</i> was immersed in molten Sulphur
1-2 hour	110 - $182^{\circ}\text{C}$	
2- 3hour	180 - $215^{\circ}\text{C}$	Superficially a layer of scum observed, colour of Sulphur turned to dark brown colour
3-4 hour	215 - $230^{\circ}\text{C}$	Colour of sulphur was dark brown with red tinge, mild fumes of sulphur noticed
4-5 hour	215 - $230^{\circ}\text{C}$	Viscosity of <i>Gandhaka</i> increased
5-6 hour	$230^{\circ}\text{C}$	<i>Gandhaka</i> fumes reduced.
After 6 hours 35 minutes	$238^{\circ}\text{C}$	Observed for presence of <i>Vyoma varna</i> of <i>Gandhaka</i> , metallic sound of <i>Pottali</i> . <i>Pottali</i> taken out of vessel

## DISCUSSION

Bali dravaka method *Pottali* are ideal formulations which are molded in a compact way for easy administration and fast drug delivery. The compactness in the *pottali* may be due to the formation of double bond. The boiling of *pottali* in sulphur may help in enhancing the covalence between the ingredients making it hard. The method of boiling within melted Sulphur was introduced by Acharya Yashodhara in the context of *vajra pottali* during 13th century. *Siddha bhashaja Manimala* has also adopted the same technique for this formulation. Afterwards

we get many references of *Pottali kalpana* by Bali dravaka method.

The duration of *paka*, appearance of *siddhi lakshanas* varies from drug used and form in which they are used in the preparation of *Pottali*. In *pottali Kalpana* the *dravyas* in different forms such as *shodhita Rasadravya*, *bhasma*, *sindhura*, *Pishti* along with particular organic contents (Herbs) can be potentiated together with a formation of specific bonding to express high therapeutic efficacy in a very minute dose ( quantity obtained by *Avartana* of *potalli* on scratch stone). In majority of *Pottali Preparation Kajjali* is used as base

ingredient and are designated as Sagandha Pottali Rasayanas.

Total Duration of Paka appearance of siddhi lakshanas in the present study is 6 hours 35 minutes and maximum temperature reached is 238<sup>0</sup>C.

Throughout the process mandagni is maintained and Pottali was completely immersed into the liquid media and pottali did not come in contact with base of the vessel .Only mild fumes noticed during the procedure and increase in viscosity of Gandhaka noticed. Colour changes in the Gandhaka in different stages of procedure is prominent. Impure Sulphur is taken as liquid media as it exhibits different allotropic forms at different temperature with colour change. The melting point of Gandhaka is 110-115<sup>0</sup>C when it will be bright yellow in colour and when the temperature reaches 200<sup>0</sup>C it gradually changes to red colour. When Gandhaka is boiled continuously around 200 -220<sup>0</sup>C it reacts with atmospheric air and looks like vyoma varna which exists for very short period and then changes to red colour.

### CONCLUSION

Pottali kalpana is one of the special pharmaceutical technique which was invented for compactness of ingredients in process of preparation of formulations. Tamragarbha Pottali is a sagandha sagni parada moorhana beneficial in Yakrut,

Plethagata rogas and in arbuda. The product obtained is supposed to be a complex of Copper Mercury- Sulphur. Very countable research works are conducted on pottali Kalpana in partiular on Tamragarbha pottali. In present study Swarna dhatupishti with Parada is not prepared, instead Swarna Bhasma is utilised. This might be one of the reasons for reduced Paka Kala.

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