A Review on the Concept of Pottali

Dr. Priyanka Gomase¹, Dr. Prashant Bedarkar²

¹Assistant Professor, Department of Rasashastra & Bhaishajya Kalpana, Shantabai Shivshankar Arali Hospital and College, Jath Sangali, Maharashtra, India.

²Associate Professor, Department of Rasashastra & Bhaishajya Kalpana, ITRA, Jamnagar, Gujarat, India.

ABSTRACT

Introduction: Pottali word were found in classics in different contexts mainly meaning the word for bundling the various herbal drugs in a piece of cloth and to apply for sedation in various diseases. Pottali is a highly potent, concise form of medicament, which depicts maximum potency in low dosage form. The peculiarity of Pottali lies in its typical shape, form and preparatory methods. Thus, reviewing the concept of Pottali is the main objective of this article.

Material and Methods: Available literature related to Pottali were searched from available printed form of various text books, journals, web-based search engines source were referred for updated research data.

Results: The present article gives a review on concept of different preparatory procedures, types mentioned in various classical textbooks, dosage, and mode of administration and significance of Pottali Kalpana. Pottali Kalpana was invented with a vision for convenience in transportation, administration, dose fixation, preservation and enhancement of properties.

Conclusion: More researches and documentation are required to be done for analytical and clinical evaluation of Pottali Kalpanas.

Keywords: Pottali Kalpana, Pottali appearance, Pottali methods

INTRODUCTION

In Vedic literature, there were no references regarding Pottali Kalpanas but Pottali word was used for different purposes in Ayurvedic literature. Pottali word is found in classics in different contexts mainly meaning the word for bundling the various herbal drugs in a piece of cloth and to apply for sedation in various diseases. The first reference of Putapaka Vidhi of Pottali Kalpana is found in the text Rasaratnakara of 12th century A.D. The text Rasa Prakasha Sudhakara of 13th century A.D, had first mentioned the preparation of Pottali by Gandhaka Drava Paka in the context of Vajra Pottali.¹ The author of Yogaratnakara of 18th century A.D has mentioned Gandhaka Drava Paka in an iron vessel.² The texts of 18th and 19th century had repeated previously mentioned Pottali Kalpas, where in the author of Rasayana Sangraha has added five new Pottali preparations. During 20th century, texts like Bharat Bhaishajya Ratnakara, Rasayoga Sagara, Siddha Prayoga Sangraha etc, have compiled many Pottali Yogas. Rasayoga Sagara has compiled maximum number of Pottali Kalpas under the chapter ‘Pottali Rahasyam’.³

Rasa-kalpa are popular since ancient periods due to its lesser doses, synergistic effect and quicker action in combating disease pathology. Rasaushadhi are integral part of Ayurveda, and describes the use of metals and minerals for chronic disorders in various combinations, dosage forms. In Rasashastra
types of Rasakalpa are described i.e. Khalviya kalpana, Parpati kalpana, Kupipakwarasayana and Pottali kalpana. Pottali Kalpana is a consolidated form of mercurial preparation, which incorporates the Pota Bandha of Parada. Pottali is a highly potent, concise form of medicament, which depicts maximum potency in low dosage form with its synergistic effect. The peculiarity of Pottali lies in its typical shape, form and preparatory methods. There are mainly four methods of Pottali preparation found in texts like Bhavana method, Putpaka method, Varatikapurana method and Gandhakadhrava method. In all four methods final product differs in shape, consistency etc. but they all are included in Pottali Kalpana.

AIMS AND OBJECTIVES
To review on the concept of Pottali

MATERIALS AND METHODS
Information and data related to Pottali searched from available printed form literature, from various textbooks, journals, web-based search engines source and presented in systemic manner.

RESULT
Definition:
Pottali = concise; minimize; compact;
Word Pottali means to minimize, to concise and to make compact and can be defined as to collect scattered materials into compact and comprehensive size. Otherwise, the Kalpana or the processing which give compactness to scattered materials.

Nirukti: 4 The word Pottali is derived from the root words, Puta, Pota, Potta, Pottam & Pottali, which means to adhere, to support, and to concise.
Puta – Puta word means adhesion (Sanshlesha)
Pota – Pota means adhesions or to give support
Pottali – The word Pottali is derived from ‘Puta’, which means ‘to minimize’, or ‘concise’.

Vernacular Names:

<table>
<thead>
<tr>
<th>English:</th>
<th>Packet, Bundle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindi:</td>
<td>Pottali</td>
</tr>
<tr>
<td>Marathi:</td>
<td>Pishavi, Purachundee</td>
</tr>
<tr>
<td>Sanskrit:</td>
<td>Pottali, Pottalika.</td>
</tr>
</tbody>
</table>

Pottali Sankhya:
According to various Rasagranthas, approximately 40 different Pottali Kalpanas are available. However, with mild variations in the ingredients, Pottali preparations are approximately 84 in number. Kajjali is an important ingredient of these preparations. Few examples of Pottali Kalpana includes – Hemagarbha Pottali, Hiranya Garbha Pottali, Navaratna Pottali, Ratnagarbha Pottali, Mrugankapottali, Hamsa Pottali, Lokanatha Pottali, Vajra Pottali, Shankha Pottali are few frequently practiced formulations, among the Pottali group.

Use of ‘Pottali’ word for different purposes in Ayurvedic texts.
For Swedana Karma:
Anupa, Varija flesh tied in a Pottali is heated to warmth and used for fomentation in Kushtha.5 Java, Kulattha, Masha and Pulaka are tied in a cloth and Pottali is formed, and this Pottali is applied for fomentation in Sushka Arshas.6
As disinfectant (Rakshoghna)
Vacha, Kushta, Ksoumaka, Hingu, Sarshapa, Atasi, Lasuna, Kana etc., Rakshoghna drugs made into Pottali and hanged to the northern door passage of neonatal ward (Sootikagara) as disinfectant. The same drugs are advised to be tied in the neck of the newborn baby and mother. The same above-mentioned drugs are kept in “Prasevika” (bladder leather) and tied to hang in the corner of the home. Here, the Pottali is made with the leather instead of cloth. In Classics, though there is no direct reference regarding Pottali, but “Kambalika” which is used for anti-ulcer remedy resembles with the appearance of Pottali.

For Swedana Samskara:
Parada tied with a cloth made into Pottali and subjected to Swedana in Dola Yantra with prescribed liquid media for Samskara.

Necessity of Pottali kalpana:
All the inventions in each and every field of science are the solutions for the previous problems. Similarly, certain points may be taken into consideration for the origin and development of the Pottali Kalpana. They can be categorized as convenience and enhancement of properties.

Convenience:
During ancient period, transportation is genuine problem. Physicians were not readily available as per the needs of the patients. Physicians attending the patients have to carry all the medicines and necessary instruments with them. Sometimes these medicines on the way were destroyed due to breakage of containers and mixed with each other. So to prevent such inconvenience, Pottali Kalpana was introduced, where the physician keep the Pottali handy with him and is able to administer it when and wherever required immediately.

Enhancement of Properties:
There was no related explanation regarding this particular property from any of the Rasashastra classical texts. But in Rasashastra texts, sulphur has been mentioned as the reducer of the toxic effects of mercury and useful for fixation of Parada i.e, to undergo Moorshhana. So, in most of the Moorshchhita Parada Kalpana viz., Khalveeya, Parpati, Kupipakva and Pottali Kalpana, Gandhaka is added to Parada or treated with some specific procedures. It was thought that mercurials if treated with molten sulphur might become therapeutically more efficacious. This hypothesis might have given the idea for formulating Pottali Kalpana. Lastly, physicians were in need of medicines which with least dosage can give quick results without losing its potency and with less number of recipes. In a nutshell, Pottali Kalpana was invented with a vision for convenience in transportation, administration, dose fixation, preservation and enhancement of properties.

Classification of Pottali Kalpas

Fig. 1: Types of Pottali
Table 1: Type of Pottali as per appearance

<table>
<thead>
<tr>
<th>Choorna form</th>
<th>Bhasma form</th>
<th>Conical solid form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemagarbha, Hiranyagarbha, Gandhkadi Pottali Rasa, Hansa Pottali Rasa</td>
<td>Hiranyagarbha, Mriganka Pottali Rasa, Shankha Garbha Pottali, Loknatha Pottali Rasa</td>
<td>Hemagarbha Pottali Rasa</td>
</tr>
</tbody>
</table>

Table 2: Type of Pottali as per ingredients;

<table>
<thead>
<tr>
<th>Parada With Parada</th>
<th>Parada Without Parada</th>
<th>Gandhaka With Gandhaka</th>
<th>Gandhaka Without Gandhaka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemagarbha Pottali, Ratna Garbha Pottali</td>
<td>Gandhkadi Pottali</td>
<td>Hemagarbha, Ratna Garbha</td>
<td>Vajra Pottali</td>
</tr>
</tbody>
</table>

Table 3: Type of Pottali as per Agni Samskara;

<table>
<thead>
<tr>
<th>With Agni Sanskara</th>
<th>Yantrapaka</th>
<th>Without Agni Sanskara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Putpaka</td>
<td>Yantrapaka</td>
<td>Ex. Hansa Pottali Rasa</td>
</tr>
<tr>
<td>Gajputa</td>
<td>Bhandapa</td>
<td>Dola Yantra</td>
</tr>
<tr>
<td>Bhudhara Puta</td>
<td>Lavan</td>
<td>Hiranaya Garbha Pottali</td>
</tr>
<tr>
<td>Loknath Pottali</td>
<td>Valuka</td>
<td>Hemagarbha Pottali</td>
</tr>
<tr>
<td>Hiranyagarbha, Rasa Pottali</td>
<td>Dola Yantra</td>
<td>Gandhkadia Pottali Rasa</td>
</tr>
<tr>
<td>Hemagarbha Vaishvanar Pottali</td>
<td>Lavan Yantra</td>
<td></td>
</tr>
<tr>
<td>Hemagarbha, Kapard Pottali</td>
<td>Lavan Yantra</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Type of Pottali as per Gandhaka Paka;

<table>
<thead>
<tr>
<th>Dola Yantra method</th>
<th>Without Dola Yantra</th>
<th>Swedna By Krishna followed By Sulpher bath</th>
<th>Gandhaka</th>
</tr>
</thead>
</table>

The method of preparation of Pottali Kalpanas according to various classics may be broadly classified into four basic procedures as follows:
Fig. 2: Types & method of preparation of Pottali

**Bhavana method**
In this method, the ingredients are triturated with a prescribed liquid media in a Khalva Yantra and made into pills or stored in powder form. This method of preparation is similar to other Khalvi Rasayanas, i.e. only trituration without any Agni Samskara. Ex: Hamsa Pottali, Gandhakadi Pottali Rasa

**Putapaka (Musha) method**
In this method, ingredients for preparing Pottali are triturated with fresh juices of Nagavalli (Piper betle Linn), Dattura (Datura stramonium L), Kumari (Aloe vera L), Nimbu (Citrus limon (L), Nirgundi (Vitex negundo Linn.), Jayanti (Sesbanitia sesban) or Chitraka Mula (roots of Plumbago zeylanica Linn.) decoction, etc. and subjected to Puta to obtain the final product, usually in the form of Bhasma.

In Rasayoga sagara, Divya Jala has been mentioned as Bhavana Dravya to make the Pottali very hard and glossy. Siddha Sampradaya mentioned white portion of Krishna Kukkutanda, to increase the potency of the Pottali.

Type of Puta varies from Kukkuta Puta to Gaja Puta and duration from 1 Yama (3 hr) to three days, depending on the nature of materials used as ingredients. Ex: Rasa Pottali, Mriganka Pottali.

**Varatika/ Shankha Purana Method**
This is a special technique where in all the ingredients are filled into Varatika (Cowrie shell)/ Shankha (Conch shell) and closed with paste of Tankana (borax) mixed with Godugdha / Gomutra (cow’s milk/ urine) and subjected to Puta. After Puta, Varatika/Shankha is powdered and stored. Ex: Lokeshwara Pottali Rasa/ Lokanatha Rasa, Ratnagarbha Pottali. Similarly, Musha prepared of Shankhanabhi Bhasma and Godugdha is also mentioned. Examples Shankhagarbha Pottali, Mriganka Pottali Rasa.

**Gandhaka Drava Paka Method**
The Gandhaka Drava Paka is done in the medium of molten Gandhaka.

### Some exceptions found in the texts regarding the nomenclature of Pottali

As per the definition of the drug which is prepared by giving compactness to the scattered materials by special method of preparation with Gandhaka Drava Paka is termed as Pottali, still some exceptions contrary to this definition are found where the medicine is prepared following the procedure of Pottali Kalpana but Pottali nomenclature has not been attributed to them.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Pottali</th>
<th>Exception in name of the Pottali</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agnikumara Rasa</td>
<td>Hamsa Pottali Rasa</td>
<td>Rasaratnasamucchy</td>
</tr>
</tbody>
</table>
All the above pairs of Rasa Yogas resemble each other by ingredients and method of preparation but Lokanatha Rasa and Maha Hema Garbha Rasa have not been termed as Pottalis.

Pottali Paka:
During preparation of Pottali, following points are taken into consideration especially for those prepared in the medium of molten sulphur.

Ingredients
- Binding agent (Swarasa for Bhavana)
- Shape of Pottali
- Drying of Pottali
- Container
- Cloth
- Quantity of sulphur for Paka
- Preparing Pottali for sulphur bath
- Agni Pramana
- Paka Kala
- Paka Lakshana
- Paschat Karma

Ingredients:
In maximum number of Pottalis, Swarna and Parada are taken as one of the ingredients. Gold is used in two forms for therapeutic use, either in Bhasma form or in foil form. Some authors opine the use of Swarna Varka (thin flakes of gold) in the preparation of Pottali where as others prescribed gold in the form of Bhasma. In case of Parada some author opine that to take Astasamskarita Parada, some other texts advocate Parada Bhasma instead. Another group of Vaidyas accept Rasa Sindhoora as a Parada Bhasma and use of it in the preparation of Pottali.

Binding agent:
During the rubbing and mixing of the ingredients one liquid media is used to bind the materials and to give shape of the Pottali to it. Mainly Ghritha Kumari Swarasa is used for binding and trituration of Pottali, besides Isabgol, Babbula Niryasa, Tulasi swarasa, Chitraka are advised by some authors as per the indication in disease, Pure water is an optional.

As per Siddha Sampradaya egg yolk need to be used as a binding agent.

Shape of Pottali:
Pottali is prepared after proper trituration and attainment of consistency. Regarding the shape of the Pottali different opinions are encountered in Rasa shastra text. Some texts opine the shape “Shikhara-arambhika akara” means the base being wide with narrowly pointed towards the top resembling the shape of the pyramid. another text mentions the shape as “Pugakara” the Pottali should look like Puga Phala (fruit of Areca catechu nut) in shape and size. “Karsya Manasca Vartika” means Pottali should be in the shape of Varti and approximately weighing of one Karsha (12grams).
Drying of Pottali:
There exists varied opinions regarding drying of Pottali in various classical textbooks. Drying in shade and drying in sunlight are two methods of drying which have been mentioned. It has been observed in practice that drying in sunlight causes breaks in the Pottali and hence drying in shade is preferred to maintain the shape of the Pottali.

Container:
The container in which Pottali is to be boiled in the molten sulphur media should be of earthen one, and it should be smeared with ghee properly before to the Gandhaka Paka where as some other text mentioned Ayasapatra (Iron container), Earthen pot for the same and China clay are also used.

Cloth:
Most of the authors opine usage of 1 to 4 folds of silk cloth to cover the Pottali. White colored cloth is preferred.

<table>
<thead>
<tr>
<th>Type of cloth</th>
<th>Reference text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick cloth</td>
<td>Rasayan Samgraha</td>
</tr>
<tr>
<td>Thin cloth</td>
<td>Rasayan Samgraha</td>
</tr>
<tr>
<td>Rough cloth</td>
<td>Yogaratnakar</td>
</tr>
</tbody>
</table>

Various opinions on wrapping of silk cloth over Pottali
Silk cloth has been preferred by Vaidyaka chinthamani. The author of Yogaratnakara has preferred thick cloth for wrapping of Pottali without mentioning any specific material for the cloth. Thick cloth with three layers has to be made use for the same according to Vaidya Vilas. 4 folded silk cloth is mentioned for wrapping according to Rasayogsagar. Instead of the commonly practiced method of tying of Pottali using thread, the author of Rasayan sar prefers stitching of the upper portion of the cloth.

Quantity of sulphur:
Some texts prescribe the quantity of sulphur to be equal with the weight of Pottali taken where as others opine 2 to 6 times to the weight of the Pottali, Gandhaka should be taken. Vasudev Mulashankar Dwivedi has mentioned 2 inches of Gandhaka as base and 1 inch of Gandhaka after placing the Pottali.

Preparing Pottali for sulphur bath
Silk cloth is taken varies from 1 to 4 layer according to different Acharyas, each layer is to be sandwiched with powder of sulphur, some authors mention the quantity taken should be equal to the weight of the Pottali taken, and this is wrapped tightly with the thread and iron Shalaka is placed to suspend the Pottali.

Agni Pramana:
All the authors mentioned Pottali Paka by indirect heat application and in Mandagni.

Paka Kala:
Different views are mentioned in Rasa shastra text regarding the duration of Paka of Pottali. They are Yamardha, Yamaka, Chiram Dwighatika or up to the attainment of Vyomavarna of Gandhaka.

Paka Lakshana:
Some signs have been mentioned in the Rasashastra text for the determination of perfect Paka of Pottalis. They can be categorized under the following headings.

Colour: The Paka of Pottali is considered perfect or completed when the colour of the sulphur becomes Vyoma Varna (sky colour).

Table 6: Specifications for cloth mentioned in classical textbooks
Metallic sound: Metallic sound produced by the *Pottali* when banged against the container or any hard substances.

**Burning of cloth:** During the process when the cloth containing *Pottali* is burnt, that sign is considered as one of the *Paka Lakshanas* of *Pottali*.36

**Paschat Karma:**
The *Pottalis* are taken out after attaining *Paka Lakshanas* and the silk cloth is removed by cutting it with a sharp instrument. When the *Pottali* became cool it is polished with a knife to remove the superficial coating of *Gandhaka* adhered to it and kept in suitable containers for therapeutic uses.

**Mode of administration:**
*Pottali* should be rubbed over a rough surface of stone for desired number of rotations with *Madhu* or *Ghrita* as a media and whole paste is administered orally.

Rubbing the *Pottali* with *Adraka Swarasa* or *Nagavalli Swarasa*.37

**Pathya & Apathya during Pottali Sevan Kala:**38

**Pathya Aharajyana:** *Ghrita, Dadhi, Shali rice, Shaka Sevana* without adding *Hingu*.

**Apathya Aharajyana:** *Taila, Bilva, Amladravyas, Kanji, Kakarashtaka Gana Dravyas*.

**Viharajyana:** *Ratrijagarana, Strisevena, Krodha*.

**DISCUSSION**
The first reference of *Putapaka Vidhi* of *Pottali Kalpana* is found in the text Rasaratnakara of 12th century A.D.39. The text Rasa Prakasha Sudhakara of 13th century AD has first mentioned the preparation of *Pottali* by *Gandhaka Drava Paka* in the context of *Vajra Pottali*40. The author of Yogaratnakara of 18th century A.D. has mentioned *Gandhaka Drava Paka* in an iron vessel. The texts of later period, 18th and 19th century have many repetitions of previously told *Pottali Kalpas*, Rasayogasagara has mentioned maximum number of *Pottali Kalpas* under the chapter ‘*Pottali Rahasyam*’. *Pottali Kalpana* is a variety of *Murchhita Parada Yoga* in which the ingredients are made into a compact size and shape. Like any other *Rasayanas, Parada, Gandhaka* and *Swarna* are the principal ingredients of a *Pottali Kalpana* with different pharmaceutical preparations viz. *Kharaleeya Rasayana, Parpati Rasayana, Kupipakwa Rasayana* and *Pottali Rasayana*. *Pottali* is a unique in terms of its preparation; mode of administration, quick in action, less dose and easy for transportation. If mercury treated with liquid sulphur may become more therapeutically efficacious. This hypothesis might have given the idea for formulating *Pottali Kalpana* (*Pottali Vignaanam*).

*Pottali kalpana* is easy to handle, long shelf life & it has been life-saving remedy. Easy administration of drug, easy to transportation, easy to dose fixation, and preservation. *Pottali* is a *Sagni* and *Sagandha Murchhna of Parada* along with other *Dhatu*. Because of its sustained heat pattern and media used for its *Paka*, it is a unique preparation. In *Pottali* formulations sulphur bath is used to *Pottali Paka*. The author of *Rasa Chintamani* of 14th cen. AD had mentioned the *Pottali Paka* method of sulphur bath for the first time. The *Paka Kaal* is also very important in these formulations and *Paka* has been done on *Mridu Agni*. *Pottali Kalpana* has required more temperature and use sulphur in liquid media for maintain this temperature up to 250°C compare than other media. Heat can be maintained for longer duration by using sulphur. Almost all the authors have mentioned the *Paka* by indirect heat and (with *Valuka Yantra and Lavana Yantra*) on *Mandagni*. Though *Pottali Kalpa* is a concise and potent medicament in Indian system of medicines, but commercial availability of this type of medicine are negligible41.
CONCLUSION:
Pottali can be prepared by using different methods and Pottali Yogas are mainly described in Rajayaksha and Grahani chapters, each Yoga has its own dosage, method of preparation and therapeutic utility. The formulation facilitates easy carrying and low dosage form. Though many classical preparations are available in texts, only a few of them are practiced clinically. More researches and documentation are required to be done for analytical and clinical evaluation of Pottali Kalpanas.

COMPETING INTEREST
No competing interest exist.

ACKNOWLEDGEMENTS
The authors are thankful to the Director, IPGTRA, Jamnagar for providing facilities, support and to carry out the research work in the institute.

REFERENCES