

A Review on the Concept of Pottali

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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 *Yogaratanakara* 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* four

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 *Gandhakadrava* 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, *Putra*, *Pota*, *Potta*, *Pottam* & *Pottali*, which means to adhere, to support, and to concise.

Putra – *Putra* word means adhesion (*Sanshlesha*)

Pota – *Pota* means adhesions or to give support

Pottali – The word *Pottali* is derived from ‘*Putra*’, which means ‘to minimize’, or ‘concise’.

Vernacular Names:

English:	Packet, Bundle
Hindi:	<i>Pottali</i>
Marathi:	Pishavi, Purachundee
Sanskrit:	<i>Pottali</i> , <i>Pottalika</i> .

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.⁷The 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.⁸In Classics, though there is no direct reference regarding *Pottali*, but “*Kambalika*” which is used for anti-ulcer remedy resembles with the appearance of *Pottali*.⁹

For *Swedana Samskara*:

Parada tied with a cloth made into *Pottali* and subjected to *Swedana* in *Dola Yantra* with prescribed liquid media for *Samskara*.¹⁰

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:¹¹

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 where ever 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 *Moorchhana*. So, in most of the *Moorchchhita 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*

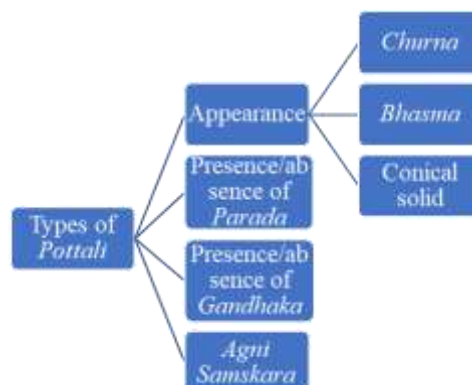


Fig. 1: Types of *Pottali*

Table 1: Type of Pottali as per appearance

Choorna form	Bhasma form	Conical solid form
<i>Hemagarbha, Hiranyagargha, Gandhkadi Pottali Rasa, Hansa Pottali Rasa</i>	<i>Hiranyagargha Mriganka Pottali Rasa Shankha Garbha Pottali Loknatha Pottali Rasa</i>	<i>Hemgarbha Pottali Rasa</i>

Table 2: Type of Pottali as per ingredients;

Parada		Gandhaka	
With Parada	Without Parada	With Gandhaka	Without Gandhaka
<i>Hemagarbha Pottali, Ratna Garbha Pottali,</i>	<i>Gandhkadi Pottali</i>	<i>Hemagarbha, Ratna Garbha</i>	<i>Vajra Pottali</i>

Table 3: Type of Pottali as per Agni Samskara;

With Agni Sanskara						Without Agni Sanskara
Putpaka			Yantrapaka			<i>Ex. Hansa Pottali Rasa Gandhkadia Pottali Rasa</i>
<i>Gajputa</i>	<i>Bhudhara Puta</i>	<i>Bhanda puta</i>	<i>Lavan Yantra</i>	<i>Valuka Yantra</i>	<i>Dola Yantra</i>	
<i>Loknath Pottali</i>	<i>Hiranyagargha, Rasa Pottali</i>	<i>Hemagarbha Vaishvanar Pottali</i>	<i>Hemagarbha, K apard Pottali</i>	<i>Hirayna Garbha Pottali</i>	<i>Hemagarbha Pottali</i>	

Table 4: Type of Pottali as per Gandhaka Paka;

Dola Yantra method	Without Dola Yantra	Swedna By Krishna followed By Sulpher bath	Gandhaka
<i>Hemagarbh Pottali (Rasamrit)</i>	<i>Hiranyagarbha Pottali-2 (Yog Ratnakar)</i>	<i>Hemagarbh Pottali-XI (R.Y.S.)</i>	<i>Hemagarbha Pottali (SBM)</i>

The method of preparation of *Pottali Kalpanas* according to various classics may be broadly classified into four basic procedures as follows:

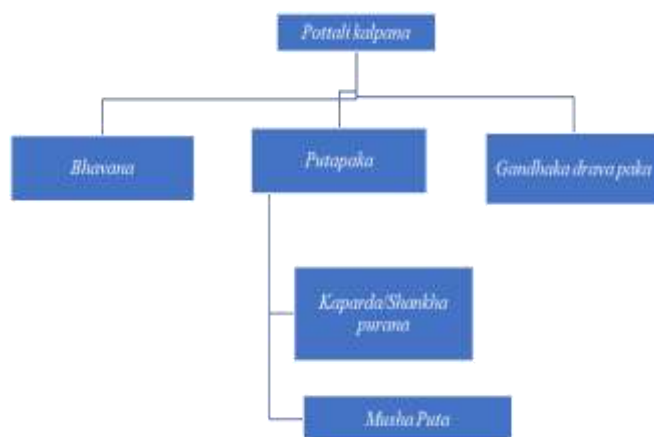


Fig. 2: Types & method of preparation of Pottali

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 Rasayanans*, i.e. only trituration without any *Agni Samskara*. Ex: *Hamsa Pottali*, *Gandhakadi Pottali Rasa*¹²

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* (*Sesbania sesban*) or *Chitraka Mula* (roots of *Plumbago zeylanica* Linn.) decoction, etc. and subjected to *Putra* 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*.¹³

Type of *Putra* varies from *Kukkuta Putra* to *Gaja Putra* and duration from 1 *Yama* (3 hr) to three days, depending on the nature of materials used as ingredients. Ex: *Rasa Pottali*.¹⁴ *Mriganka Pottali*.¹⁵

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 *Putra*. After *Putra*, *Varatika/Shankha* is powdered and stored. Ex: *Lokeshwara Pottali Rasa/ Lokanatha Rasa*, *Ratnagarbha Pottali*.¹⁶ Similarly, *Musha* prepared of *Shankhanabhi Bhasma* and *Godugdha* is also mentioned. Exmples *Shankhagarbha Pottali*.¹⁷ *Mriganka Pottali Rasa*.¹⁸

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 5: Exceptions found in the texts regarding the nomenclature of Pottali

Sr. No	Pottali	Exception in name of the Pottali	References
1	<i>Agnikumara Rasa</i>	<i>Hamsa Pottali Rasa</i>	<i>Rasaratnasamucchya</i>

			<i>Grahani 16 Adhyaya</i>
2	<i>Maha Hema Garbha Rasa</i>	<i>Hema Garbha Pottali- VII</i>	Aushadha Kriya
3	<i>Karshya Pottali (V.R)</i>	<i>Lokanatha Ras</i>	R.R.S., Y.R, R.Chandasu
4	<i>Shankhagarbha Pottali</i>	<i>Shankhanabhi Rasa</i>	B.Ni.R, R.R, R.R.S
5	<i>Shankha Pottali Rasa</i>	<i>Shankha Pottali</i>	Bha.P., R.Chi.

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 Paka¹⁹:

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 Nirayasa*, *Tulasi swarasa*, *Chitraka* are advised by some authors as per the indication in disease, Pure water is an optional.²⁰

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.²¹ another text mentions the shape as “*Pugakara*” the *Pottali* should look like *Puga Phala* (fruit of *Areca catechu* nut) in shape and size.²² “*Karsya Manasca Vartika*” means *Pottali* should be in the shape of *Varti* and approximately weighing of one *Karsha* (12grams).²³

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*²⁴ 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)²⁵, Earthen pot²⁶ for the same and China clay are also used.²⁷

Cloth:

Most of the authors opine usage of 1 to 4 folds of silk cloth to cover the *Pottali*.²⁸ White colored cloth is preferred.²⁹

Table 6: Specifications for cloth mentioned in classical textbooks

Type of cloth	Reference text
Thick cloth	Rasayan Samgraha
Thin cloth	Rasayan Samgraha
Rough cloth	Yogaratanakar

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.³⁰ Vasudev Mulashankar Dvivedi 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*,³¹ *Yamaka*, *Chiram*³² *Dwighatika*³³ 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).³⁴,³⁵

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*, *Kakarashataka 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 *Yogaratanakara* 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 Vignanam*).

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 Kalpna* 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 *Rajyakshma* 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.

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