



PHARMACEUTICAL STUDY OF *HEMGARBHA POTTALI RASA*

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ABSTRACT

The *Pottali rasayana* is a unique preparation in *Ayurveda* as it is very compact in structure and quick acting due to its high potency. *Hemgarbha pottali rasa* is a medicine which is known as emergency medicine of *Ras shastra* because of its efficacy and its quick effect in condition like *Sannipataj awastha*. It is prepared with the combination of *Shudha parada*, *Shudha gandhaka*, *Shudha tamra bhasma* and *Shudha swarna*. Preparation method of this *Hemgarbh pottali ras* is unique in the way that it is prepared in molten sulphur which increases its efficacy many folds. In spite of availability of vast theoretical description in *Ayurvedic* texts regarding *Pottali rasayana*, very less research work is carried out on *Hemgarbh pottali rasa*, so it is mostly out of practice in *Ayurvedic* community. *Hemgarbh pottali rasa* is a very potent medicine which should be made popular by *Ayurvedic* practitioners. In the present article various methods of preparation of *Hemgarbh pottali rasa* has been described and most common method of preparation which is molten sulphur method is discussed in detail.

KEYWORDS: *Hemgarbha Pottali Rasa*, *Sannipataj Awastha*, *Parada*, *Gandhaka*, *Tamra*, *Swarna*.

INTRODUCTION

In *Rasashastra* the mercury is used as medicine with the combination of sulphur and without sulphur. The combination of mercury with sulphur is mainly divided in four categories viz. *Kharaliya Rasayan*, *Parpati Rasayan*, *Kupi pakva Rasayan* & *Pottali Rasayan*. Out of these four preparations *Kharaliya*, *Parpati* and *Kupi pakva* are very popular and well accepted among *Ayurvedic* physicians. But the last one i.e. *Pottali rasayan* which is very potent because of the unique method of preparation and the way of administration, is still awaiting to gain its previous glory.

As per the nomenclature, the drug which is prepared by giving compactness to the scattered materials by special method of preparation is termed as *Pottali*.^[1] During ancient era, the physician have to carry the medicine with them and there were every chances of breakage and destruction of medicine during transportation, so because of these factors the *Pottali kalpana* came into existence,^[2] as it was safe to carry, easy to administer, and no chances of destruction due to

its hard and solid form. It is administered by rubbing it on a hard surface or stone applied with 1-2 drop of *Ghrita* or honey and then taken orally. The medicinal properties of *Pottali* were enhanced by the process of formation and it was an additional achievement. It was a medicine which gives quick response even in emergency situations.^[3] If *Pottali rasayan* is researched keeping in mind its antimicrobial effect could be proved a milestone in the history of *Ayurvedic* antibiotics. Among the description of *Pottali* in *Ayurvedic* texts, the most described *Pottali* is *Hemgarbh pottali Rasa* because of its efficacy. Lots of references are available in *Rasashastra* for its preparation.^[4,5,6,7,8,9] There are various types of *Hemgarbh pottali rasa* on the basis of different method of preparation, contents, and the physical properties. As per the different texts, in some cases no *Paka* is required, in other different types of *Putas* are used, and according to some *Acharyas*, *Pottali* is immersed in a container having liquid form of *Gandhaka*. Here we are discussing the most accepted method of *Pottali* preparation i.e.

with the help of *Gandhak drava* with *Dola Yantra* method.^[10]

MATERIAL & METHOD

In the preparation of *Hemgarbha pottali*, the main constituents are - *Shuddha Parad*, which is a potent antiaging agent (*Jara*), and makes a man strong like *Vajra* and it is said to be a remedy for all diseases^[11]. Another main constituent is *Gandhak* which is strong *Vishaghn*, *Jantughn* (antimicrobial), *Krimighn* (wormicidal), and *Deepan-pachana*. Because of its synergistic action with *Parad*, it also potentiates the medicinal and other properties of *Parad*. So the *Gandhak* is written as *Sutendraviryaprad* and *Sutajit* in *Ayurveda*.^[12]

The next constituent of *Hemgarbha pottali* is *Swarn* (gold), which is a well known *Rasayana*, *Ojovridhkar*, *Brihana*, *Balya*, *Medhya* and *Tridoshaghn*.^[13] In *Hemgarbh pottali rasa*, *Tamra* is also used which is useful in *Swas-kasa*, *Krimi roga*, and *Pandu roga* (anaemia).^[14] It is also a good medicine for Liver diseases and a well known cardiac stimulant. So by the combination of all i.e. purified mercury, sulphur, gold and copper

Bhashma, *Hemgarbha pottali rasa* is prepared which is very potent medicine in many aspects. The method of preparation can be divided in following steps:

1. *Parada Shodhan*
2. *Gandhak shodhan*
3. Preparation of *Kanji*
4. Preparation of *Kullatha Kwath*
5. *Samanya shodhana* of *Tamra*
6. *Vishesh Shodhana* of *Tamra*
7. *Kajjali* Preparation
8. *Tamra Marana*
9. *Amritikarana* of *Tamra Bhasma*
10. Preparation of *Hemgarbha pottali rasa*

1. *Parada Shodhan* ^[15]

Parada was made purified with the help of *Kshar traya*. The *Asuddha Parada* and *Pan Swarasa* and *Ardraka Swarasa*, *Yava Kshara*, *Sajji Kshara* and *Tankan kshara* all were mixed and levigated for 36 hours.

- Then the mixture was washed with warm water till only *Parada* was remained.
- There after *Parada* was collected from this paste by washing with hot water and *Nimbu swarasa*.

Table 1: Observations during *Parada Shodhana*

<i>Ashudha Parada Taken</i>	<i>Shudha Parada obtained</i>	<i>Time Taken</i>	<i>Total Time of mardana</i>	<i>Weight Loss</i>	<i>% Loss</i>
2000gms	1960 gms	15 days	36 hours	40gm	2%

2. *Gandhak shodhan* ^[16]

Fine powder of *Ashudha Gandhaka* was prepared with the help of mortar and pestle. Then 3Lt of boiled *Godugd* (cow milk) and *Goghrit* were mixed in mud pot of larger circumference, then tied a Sieve cloth over the neck of mud pot and make a boundary of *Multani mitti*, so that the hot plate/burning coals does not touch the Sieve cloth, when placed over the circumference. Now approx 800gm of *Ashudha Gandhaka churna* was spread

over the Sieve cloth and placed the hot plate over the *Aal-vaal*. By the passing of time *Ashudha Gandhaka* starts melting by temperature of hot plate/burning coals and started to fall in the mixture of *Godugd* and *Goghrit*. When all *Ashudha Gandhaka* fall in *Dugd*, then open the Sieve cloth and take out all melted *Gandhaka* from milk and washed it with hot water. By this process the *Gandhaka* get purified in a single attempt.

Table 2: Observations during *Gandhaka shodhana*

<i>Ashudha Gandhaka Taken</i>	<i>Yield of Shudha Gandhaka</i>	<i>Time taken</i>	<i>Total loss</i>	<i>% loss</i>
3.5 kg	3.25 kg	3 days	50gms	7.5%

3. Preparation of *Kanji* ^[17]

1.5 kg. of rice was washed twice or thrice with water. Three liter of water was added to it and cooked on *Mandagni*. When rice was properly cooked, further 6 liter of lukewarm water (cooled after boiling) was added to it and macerated on cooling. A porcelain jar was fumigated with fumes

of *Vaca*, *Guggula* and *Kapura*. Cooked and macerated rice along with water was kept in porcelain jar and covered with lid smeared with *Multani mitti* and was allowed to ferment. When fermentation process was completed the prepared *Kanji* was filtered and stored.

Table 3: Organoleptic characters of Kanji

Color	pH	Taste	Consistency	Smell
Milky white	3.5	Acidic	Liquid	Acidic

4. Preparation of Kullatha Kwath ^[18]

Kulattha seeds were soaked overnight in water enough to dip them completely. Next day

morning remaining water was added to the soaked seeds and *Kwatha* prepared by reducing water to 1/4th.

Table 4: Organoleptic characters of Kulattha kwatha

Final Kwatha qty	Color	pH	Taste	Smell
4 liters	Reddish Brown	5	Astringent	Specific to itself

5-Samanya shodhana of Tamra ^[19]

Ashudha Tamra was taken in the iron pan heated till red hot and quenched in each of the 5

liquid media for 7 times. Each time the liquid media was changed.

Table 5: Observations during Tamra Samanya Shodhana

Quantity of Tamra Before Shodhana	Quantity of Tamra after Shodhana	Time taken	Total loss	% Loss
580gms	485gms	31 days	95gms	16.5%

6-Vishesh Shodhana of Tamra ^[20]

Samanya Shodhita Tamra was tightly bound in a cloth and suspended on a rod in *Dola Yantra* into the *Gomutra* kept inside the vessel, the

whole apparatus kept on heating plate, *Swedana* of the *Samanya Shodhita Tamra* was done in *Dola Yantra* for 6 hours. Then *Shodhita Tamra* was taken out and dried in shade.

Table 6: Observations during Tamra Vishesh Shodhana

Tamra before vishesh Shodhana	Tamra after Vishesh Shodhana	Time Taken	Total Loss	% Loss
485gms	480gms	7 hours	5gms	1%

7. Kajjali Preparation ^[21]

Parada was put into *Khalva Yantra* and *Mardana* was done by slowly adding *Gandhaka* to it. *Mardana* continued till particle of *Parada* were disappeared and it was observed by adding a drop of water on palm with prepared *Kajjali* and mixed

by rubbing, and make dry. Now see the palm in natural day light, if particle of *Parada* are not shining, *Kajjali* is prepared. It should be soft in touch and smooth. *Kajjali* prepared has the properties of *Rekhapurnata*, *Anjana Sannibham* and *Nischandratva*.

Table 7: Observations during Kajjali Preparation

Total material taken	Total Kajjali prepared	Time taken	Total Loss	% Loss
500gms	480gms	4 days	20 gms	4%

8. Tamra Marana ^[22]

Shuddha Tamra and *Kajjali* were put into the *Khalva Yantra* and after *mardana* with *Nimbu Swaras*, *Chakrikas* (pellets) were made. Dried *Chakrikas* were put into *Sarava* with another *Sarava* covered over it and *Kapadmitti* was done in three layers. *Sarava Samputa* thus prepared was dried in shade and subjected to classical *Putra*.

Changes were done accordingly as per the requirement for preparation of *Bhasma*. In *Gajputa*, *Upala* were filed 2/3rd then *Sarava Samputa* kept and remaining 1/3rd covered with *Upala*. This procedure was repeated 15 times and during this period the repetition of *Putas* leads to great loss of taken material.

Table 8: Observations during Tamra Marana

Tamra taken at 1 st Putra	Tamra bhasma prepared after 15 th putra	Time Taken	Total loss	% Loss
240gms	75gms	233 Days	165gms	69

9. Amritikarana of Tamra Bhasma ^[23]

Prepared *Tamra bhasma* was taken in a *kharal* and mixed with half part of *Shudha Gandhaka* and the *Mardana* was started. When the *Gandhaka* was mixed with the *Tamra bhasma*

properly, the *Panchamrit* equal to the quantity of *Tamra bhasma* was added and *Mardana* was done for three days When all the contents mixed with the *Tamra bhasma*, the pellet were made and left to dry. After this *Kapadmitti* was done and after proper drying the *Gajputa* was given.

Table 9: Observations during Amritikarana

<i>Tamra Bhasma</i> before <i>Amritikarana</i>	<i>Tamra Bhasma</i> after <i>Amritikarana</i>	Time taken	Total Loss	% Loss
75gms	70gms	12 days	5gms	6.75

Method of preparation of Hemgarbha Pottali Rasa^[24] Fig-1

Mixing of ingredients

Very first 12gm *Shudha parada* was taken in a *Kharal* and mixed with 4gm *Shudha Gandhaka*, and *Mardana* was started, for preparation of *Kajjali*. When all features of *Kajjali* were present (i.e. when the mixture became smooth, fine, black, lusterless), the *Mardana* was stopped. Then 12 gm *Tamra bhasma* was mixed and afterward *Swarna Varka* were added according to weight.

One *Swarna Varka* was weighed 0.0653gm with butter paper

0.0632gm is the weight of butter paper

i.e. weight of *Swarna Varka* without butter paper

$$= 0.0653\text{gm} - 0.0632\text{gm}$$

$$= 0.021\text{gm}$$

$$= 21\text{mg approx}$$

i.e. the no. of *Swarna Varka* in 500mg =

$$= 500\text{mg}/21\text{mg} = 23.8 \text{ Swarna Varka}$$

So approximate No. of *Swarna Varka* in 1/2gm or 500mg

$$= 24 \text{ Swarna Varka.}$$

To add 2gm of *Swarna Varka* in the mixture the no. of *Swarna varka* = $24 \times 4 = 96$ So now it is clear that to add 2gm of *Swarna*, we have to add 96 *Swarna Varka*. So one by one *Swarna varka* were started to mix.

Apakwa stage of Pottali

In the above mixture, *Dhatuara patra swaras* was added for *Mardan* daily for 3 hours a day for regular seven days. After 7 days the paste became soft easily rolling into pill form and without sticking to the fingers, now with the help of honey the paste was modulated into a shape of *Shikharakara* ^[25]/*Pugphalakriti* i.e. cone shape having flat bottom and tapering upwards.

Pottali paka with Gandhak drava

The *Apakwa Pottali* was placed in *Gandhaka* powder over a silk cloth and the *Pottali* was tied which was hanged in porcelain glass beaker having liquefied *Gandhaka*. The whole setup was kept on a hotplate with low flame. The temperature was recorded every 30 minute to keep *Gandhaka* in liquid form.

Table 10: Showing the temperature pattern recorded and the color of molten Gandhaka during Pottali paka

Time	Temperature of molten sulphur	Color of molten sulphur
11.00 am	92 ^o c	Yellow
11.30 am	99 ^o c	Yellow
12.00 pm	110 ^o c	Yellow
12.30 pm	120 ^o c	Yellow
1.00 pm	123 ^o c	Light orange
1.30 pm	126 ^o c	Light orange
2.00 pm	124 ^o c	Light orange
2.30 pm	125 ^o c	Light orange
3.00 pm	128 ^o c	Light orange
3.30 pm	126 ^o c	Dark orange
4.00 pm	127 ^o c	Dark orange
4.30 pm	125 ^o c	Dark orange
5.00 pm	128 ^o c	Dark orange
5.30 pm	130 ^o c	Dark orange
6.00 pm	129 ^o c	Orange red
6.30 pm	128 ^o c	Orange red
7.00 pm	130 ^o c	Orange red
8.00 pm	129 ^o c	Orange red

Next day when the temperature of *Pottali* reached on room temp., the outer coverings of *Pottali* were removed and the *Pottali* was taken out, on the outer surface some *Gandhaka* was adhered which was scraped with the help of knife.

DISCUSSION

There are mainly four methods of *Pottali* preparation found in texts like *Bhavna* method, *Putpaka* method, *Varatikapurana* method and *Gandhakadrav* method. In all four methods final product differs in shape, consistency etc. but they all are included in *Pottali kalpana*. Maximum number of references found in classics belongs to *Putpaka* method but even than *Gandhaka drava* method is more popular because of its increased efficacy, compact shape and easy method of administration to provide quick absorption of medicine. Overall the *Pottali* is proved to be very costly due to its ingredients like gold etc. Here the use of *Varka*^[26-27] (thin flakes) or *Swarna Tantu* of purified gold is mentioned in text to give compactness to the *Pottali*. Purity of Gold is certified by the fact that if Gold is not pure *Swarna varka* cannot be prepared. In the preparation of *Pottali*, temperature plays an important role as proper temperature modifies *Kajjali* to *Pota bandha* which change the Guru property to *Laghu* property.^[28] Temperature pattern should be indirect and uniform for longer duration, in this way the *Pottali* get processed gradually and this type of heat pattern helps in enhancing pharmacological properties too. The role of optimum heat could be understand by the fact that if the heat is excess or direct, the *Pottali* will start melting as the *Pottali* kept for *Paka* also have *Gandhaka* as an ingredient in it. *Pottali paka* could be estimated by the main features of *Paka lakshans* as *Vyom varna* of *Gandhaka*, burning of silk cloth and classical sound on tapping to mud pot. Silk cloth used during preparation because it prevents adhesion of *Gandhaka* with *Pottali*, and it also makes passing of bubbles during *Paka* process due to its porous nature.

CONCLUSION

The *Pottali rasayana* is a unique pharmaceutical preparation to achieve the better therapeutic efficacy by its special method of preparation which potentiate and stabilize the bonding between its ingredients. *Hemgarbh Pottali Rasa* could be used in different diseases by changing the vehicle according to the disease. Many *Vatis*/tablets can be made into *Pottali* by the general method of *Pottali* preparation. e.g, *Sutashekhara Rasa*, the fine powder of its ingredients are mixed with *Ardraka Swarasa* and

made into a conical shaped tablet, then dried in shadow. Then placed over silk cloth in between powders of *Gandhaka* and the silk cloth along with *Gutika* should be tied into a *Pottali* for *Paka*. As this features of *Pottali rasayana* will improve the effect, palatability as well as quick action of many *Rasaushadh* which are more applicable in daily practices. *Hemgarbh Pottali Rasa* could be proved as an alternative medicine in place of modern antibiotics as this medicine is also effective against multi drug resistant (MDR) bacterial strains.

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Fig. 1-DIFFERENT STAGES OF HEMGARBH POTTALI PREPARATION



Kajjali Nirman



Adding Swarna Varka



Addition of Tamra Bhasma



Apakwa Hemgarbh



Pottali keeping in Shudha Gandhka



Tied in a silk cloth



Paka in Gandaka Drava



Opening pottali after Paka Pakwa



Hemgarbh Pottali Rasa