

PHARMACEUTICO-ANALYTICAL STUDY OF GAGANAPARPATI

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ABSTRACT

Rasaushadhis are emerged to cure the diseases and to maintain the good health life of every individual, these are the combination of herbal, mineral and herbo-mineral components. *Parpati Kalpana* is one among the *Parada Murchita Avastha* and the *Parpati Kalpana* is a unique method of pharmaceutical part of medicine. *Parpati Rasayanas* have the high therapeutic value, potency, less toxicity and cost effective preparations. Pharmaceutics is the branch that deals with the preparation of medicines which are safe, therapeutically effective. In this method of preparation the combination of the ingredients, the amount of the *Agni* given, use of the *Kadali Patra*, type of the *Yantra* made of, *Gomaya* and the *Goghrita* plays an important role.

KEYWORDS: *Parada Shodhana, Gandhaka Shodhana, Abhraka Bhasma, Gaganaparpati*, pharmaceutical and analytical aspect.

INTRODUCTION

In *Ayurveda* system of medicine, the *Rasashastra* branch which deals with the herbal, mineral and herbo-mineral formulations with the different method of preparations like *Khalviya, Parpati, Pottali* and *Kuppipakwa Rasayana*. As *Rasaushadhi* is gaining importance in this modern era due to the low dosage form, potent in action and easily absorbed in the body due to its minute form, here the *Parpati* which has the different method of preparation based on the amount of *Agni* given during the preparation and based on the number of ingredients used.

Parpati is the kind of *Murchana* of *Parada*. It is the *Agnisthayi Murchita Avastha* of the *Parada Bandha*, as *Kajjali* is the base for the preparation of the *Parpati* by the application of the proper quantum of *Agni* it makes the preparation *Laghu* in nature.

Hence the name indicates *Parpati*-Lightness.

Parpati Rasayanas have the high therapeutic value, potency, less toxicity and cost effective preparations¹. Here the materials required for the preparation are easily available, cost effective. The *Parpati* prepared is having the longer shelf life as explained in the classics, the *Rasaushadhi* older the better in the context of the *Saviryata Avadhi*².

MATERIALS AND METHOD

To evaluate the pharmaceutico-analytical activity of *Gaganaparpati*, following materials are used:

Materials:

A) Pharmaceutical Part:

Preliminary procedure includes-

1. Parada Shodhana
2. Gandhaka Shodhana

3. Abhraka Bhasma preparation

Final procedure includes-

Preparation of *Gaganaparpati*

B) Analytical Part:

Organoleptic analysis

Physico chemical analysis

Preliminary procedure includes-

Methods:

1) **Parada Shodana**³:

Instruments: *Tula Yantra, Khalva Yantra, Darvi/ Palika Yantra.*

Procedure:

1. *Ashuddha Parada* of 240gms was taken in a clean *Khalva Yantra*

Changes during Parada Shodana-

Sl. No	Parada changes	Before Shodana	After Shodana
01.	Touch	Smooth	Smooth
02.	Colour	Silver	Silver, black
03.	Luster	Dull	Shiny

2) **Gandhaka Shodhana**⁴:

Equipment: *Tula Yantra, Khalva Yantra, Cloth, Spoon, Utensil, Pan, Source of fire, Stirrer.*

Procedure:

1. *Ashuddha Gandhaka* was taken in the *Khalva Yantra* and powdered coarsely.

2. *Godugdha* is taken in a vessel and tied with the cloth.

3. A vessel was kept on *Mandagni* and slightly heated, 500ml of *Sarshapa Taila* was added later the *Ashuddha Gandhaka* was poured and kept for melting.

Results and changes during Gandhaka Shodhana:

Quantity	Changes during Gandhaka Shodhana		
	Gandhaka	Before Shodhana	After Shodhana
Before Shodhana: 500gms	Luster	Bright	Shiny
After Shodhana : 480gms	Touch	Rough	Smooth
Loss : 20gms	Color	Dull yellow	Bright yellow
Total Shuddha Gandhaka: 480gms.			

2. *Sudha Churna* about 240 gms is added to the *Ashuddha Parada* and *Mardana* is done for 6 days, daily about 4 hrs per day totally 24hrs the *Mardana* was done. The *Parada* is filtered through the cloth

3. The same *Parada* is subjected to the *Mardana* again with the equal quantity of *Nistusha Lashuna* and *Saindhava Lavana*. *Mardana* was done about 6hrs per day for 4 days.

4. Later washed with the luke warm water and filtered through the cloth.

4. Proper stirring was done till all the *Ashuddha Gandhaka* gets melted. This liquefied *Gandhaka* was poured immediately to the vessel containing *Godugdha* through the cloth.

5. Later the *Shuddha Gandhaka* was collected at the bottom of vessel containing the *Godugdha*- one liter.

6. *Shuddha Gandhaka* was washed with the luke warm water dried, powdered and stored in a air tight container.

3)Kajjali Nirmana⁵:

Equipment: Tula Yantra, Khalva Yantra, Spoon

Procedure:

>Shuddha Parada about 150gms, Shuddha Gandhaka about 300gms was taken in the Khalva Yantra, Slowly and constant trituration was carried out

>The trituration was carried out till the Shuddha Parada and Shuddha Gandhaka gets completely mixed, attains the jet black color and till it attains the Kajjali Lakshanas.

Results of Kajjali Nirmana:

Kajjali	Quantity
Shuddha Parada + Shuddha Gandhaka	150gms+ 300gms
Total	450gms
Loss	35gms
Total Kajjali	415gms

4)Abhraka Bhasma preparation:

Shodhana: The various media used for the Shodhana of Abhraka are as follows- Abhraka flakes are burnt and dipped in anyone or all of the following media for seven time each serially- Kanji, Gomutra, Triphala Kwatha and Godugdha⁶.

Dhanyabhraka⁷: Dhanyabhraka is the method of converting the stratified Abhraka in fine granular or fine powder form with the help of Dhanya and jute bag. This procedure is adopted only for the Abhraka. It is adopted after Shodhana and before Marana.

Requirements: Shuddha Abhraka- 4 parts, Sali Dhanya (Paddy)- 1 part, Jute bag/ Gunni bag, Kanji- Q.S

Method of preparation: Mentioned quantity of Shuddha Abhraka and Sali Dhanya are mixed well, kept in the jute bag tied with the thread and made in the Pottali

form. This Pottali is immersed in the container with the Kanji for 3 days, later after 3 days the bag is taken out and rubbed/ pressed with the hands. By this method the fine particles of the Abhraka will come out from the jute bag, it is collected and dried.

Marana:

>This procedure is adopted after the Dhanyabhraka Nirmana. Marana is a procedure where the metals and minerals after Shodhana, are subjected to grinding with Swarasa, Kwatha and heating at a specified temperature for a specific period⁸.

>For the Abhraka Marana, mineral drugs used are Shuddha Gandhaka, Sarjakshara and Tankana. Maraka Gana of Abhraka mentioned are 64 drugs which are used for preparing Abhraka Bhasma⁹.

>**Procedure:** For the Dhanyabhraka, the Bhavana is given with the Maraka Gana¹⁰ Dravyas as mentioned in the classics, Chakrikas are prepared and dried. These Chakrikas are placed in the Sharava, Sandhibandhana is done. Later subjected to 24 Gajaputa till the Bhasma qualities are seen.

Amritikarna:

The word Amrita can be considered in the following ways-

Amrita- Nectar, antidote for the poison

Amritikarna is the nectar of immortality.

As the drug gains the qualities of Amrita that is nectar, this procedure is named as Amritikarna. It's a unique process done for Abhraka and Tamra.

According to Rasatarngini- The specific method, which is adopted to eliminate the remaining Doshas (blemishes) from the Bhasma of metals and minerals, is known as "Amritikarna".

Procedure: 10 parts of *Abhraka Bhasma* is taken in an iron pan, 16 parts of *Triphala Kwatha* and 8 parts of *Goghrita* mixed well and heated on a low temperature till the liquid gets evaporated. Later the container is covered with the earthen plate and allowed to cool¹¹.

Lohitikarna:

This procedure is done after *Amritikarna*. In spite of repeated *Bhasmikarna*, *Abhraka Bhasma* doesn't attain the red color but it becomes brownish black in color to overcome this and to impart the color to the *Bhasma*, the *Lohitikarna* procedure is adopted.

Procedure¹²: *Abhraka Bhasma* is grounded with the *Gangeruki*, *Badara*, *Musta*, *Vata Ksheera*, *Vatamoola Swarasa*, *Haridra Swarasa*, *Manjistha* and *Lajjalu Swarasa*, either juice or decoctions with *Manjistha Kwatha*. *Chakrikas* are prepared and dried. These *Chakrikas* are placed in the *Sharava* and *Sandhibandhan* is done. Later subjected to *Gajaputa*, same procedure is adopted for 3 times by this *Abhraka Bhasma* becomes *Nischandra*, smooth and obtains *Isthika Varna* (brick red) like color.

Final procedure includes-

Preparation of *Gaganaparpati*¹³

Equipment: *Tula Yantra*, *Khalva Yantra*, *Darvi/ Palika Yantra*, Spoon

Other requirements: *Kadali Patra*, *Ghritha*, *Gomaya*

RESULTS:

Organoleptic Character

Parameters	<i>Shodhita Gandhaka</i>	<i>Shodhita Parad</i>	<i>Gagan Parpati</i>
Colour	Creamish-yellow	Silvery white	Brown
Odour	Characteristic aromatic	Odourless	Characteristic
Taste	-	-	Tasteless
Appearance	Agglutinated fine powder	Dense liquid	Amorphous

Ingredients: *Kajjali* and *Abhraka Bhasma*

Procedure: It is divided into three parts-

1. Purva Karma:

>Collection of the required equipments like *Khalva Yantra*, *Darvi Yantra*, Spoon.

>*Kajjali* and *Abhraka Bhasma* is triturated for 12 hours (4 hours per day for 3 days) to the homogenous consistency

>Preparation of the *Gomaya* bed

>*Kadali Patra* smeared with the little quantity of *Ghritha*.

2. Pradhana Karma:

Preparation of *Gaganaparpati*-

>Small quantity of *Ghritha* is taken in *Darvi Yantra* and kept on *Mridu Agni* (115⁰c - 120⁰c)¹⁴

>The triturated *Kajjali* and *Abhraka Bhasma* is added in the *Darvi Yantra* and kept on *Mandagni*, till the material gets liquefied

>The liquefied material is transferred on the *Kadali Patra* which is smeared with *Ghritha* and kept on fresh *Gomaya* bed and immediately compressed with another set of *Kadali Patra* and *Gomaya* bed. After *Svangasheeta* a thin flake like *Papрати* is collected.

3. Paschat Karma:

The *Parpati* in the form of thin flake was collected, washed with hot water to take out excessive of *Snigdhaamsha*, wiped with the cloth, powdered and stored in the air tight container.

Physico-chemical Parameters

Parameters	<i>Shodhita Gandhaka</i>	<i>Shodhita Parad</i>	<i>Gagan Parpati</i>
Loss on drying at 105°C	0.25%	Nil	2.33%
Total ash	1.09%	98.17%	47.06%
Acid insoluble ash	0.04%	97.47%	38.21%
Water insoluble ash	0.05%	98.10%	44.24%
Alcohol soluble extractives	0.03%	0.00%	3.98%
Water soluble extractives	0.00%	0.00%	2.44%
pH (10% aqueous solution)	4.21 ± 0.10	---	7.22 ± 0.10

OBSERVATIONS AND DISCUSSION:

Parada Shodana:

->In the initial stage of trituration, *Parada* globules doesn't get mixed up with the *Sudha Churna*, as the trituration is continued it was found that gradually the *Parada* globules mixed with the *Sudha Churna*. The change in the colour of *Sudha Churna* was observed, *Churna* had become too fine and smooth in nature and was getting adhered to the pestle during the trituration.

->During the trituration of *Parada* with the *Nistusha Lashuna* and *Lavana*, first *Lavana* was finely powdered in *Khalva Yantra* than *Lashuna* and filtered *Parada* was added and slowly the trituration was done. The strong odor of the *Lashuna* was felt. In the beginning, whole of the *Lashuna* and *Lavana* combination was almost paste like due to the *Lavana* getting constant friction with the heat generated during the trituration and also because of the *Lashuna* content.

->The change in the colour was observed from yellowish to light grey and later became completely black as the trituration was continued and the dryness was seen in the *Lashuna Kalka*, it may be due to the heat generated during the trituration and also

because of the changes taking place in between the *Parada* and *Lashuna*. The *Lashuna* (Garlic) has the allicin- organo-sulphur content in it and with continues contact with the *Parada* it may undergo the oxidation and reduction process resulting in the changes. After the *Prakshalana*, the *Parada* is seen getting settled at the bottom of the container.

Gandhaka Shodhana:

->Equal quantity of *Sarshapa Taila* and *Gandhaka* were taken. Melted on *Mandagni* and poured immediately in the *Godugdha* through the cloth. Some of the physical impurities like black particles were seen on the cloth. The excess of the *Taila* was seen floating on the surfaces of the *Godugdha* and *Gandhaka* settled down in the vessel acquiring the shape of the vessel.

->The change in colour was observed in the *Gandhaka* during the melting process. The strong odor of the *Sarshapa Taila* was sensed. *Prakshalana* with the hot water to get rid of the excess of the *Taila* and to remove fat content of the *Godugdha* over the *Gandhaka*. Repeated washing of the *Gandhaka* was required as the *Sarshapa Taila* was too thick and sticky in nature.

Kajjali Nirmana:

->During the *Kajjali* preparation, the *Shodhita Gandhaka* was powdered in *Khalva Yantra* then the *Shodhita Parada* was added and *Mardana* was done slowly with due care without adding any *Drava Dravya*. Gradually the change in the colour was observed in the *Gandhaka* from greenish yellow to light grey and so on. Due to the continuous *Mardana* in *Khalva Yantra* the following changes were observed.

Gaganaparpati preparation:

>The melting of the *Kajjali* and *Abhraka Bhasma* took some extra time when compared with the *Rasa Parpati* preparation. It may be because of addition of *Abhraka Bhasma* as one among the ingredient. During the liquefaction, the excess of *Ghrta* produced too much *Mrudu* nature of *Parpati* and was not getting prepared properly.

>When liquefied material was poured on the *Ghritalipta Kadali Patra*, the change of colour was seen on the *Kadali Patra* it maybe because of the absorption of the active principles or the main essence from the *Patra* and *Gomaya*. The *Patra* also acts as the media to cool down the liquefied material and to attain the shape of the *Pappad* like thin flake form. *Kadali Patra* margins were seen on the surface of *Gaganaparpati*.

>*Patra*(Leaves)- Used as a media between the *Gomaya* and *Parpati*. mostly the *Kadali Patra* is preferred because it is easily available, broad in width and is having *Kashaya Rasa* helps in adsorption, is coolant in nature and helps in absorption of moisture. The green leaves contain the chlorophyll which acts as the natural anti-oxidant.

->*Gomaya*- when the liquefied *Parpati* is poured on the *Kadali Patra* which is kept on

the *Gomaya*, it immediately absorbs the active principles through it and enhances the therapeutic efficacy of the *Parpati*. *Gomaya* has the bile salts and bile pigments it is passed in the *Parpati*. The *Parpati* is given in the *Mandagni* and *Pittaja Vikara* here the bile pigments and bile salts acts in regulating the biliary disorders. Helps increasing the potency and solidifies easily because of its coldness.

->*Goghrta*- prevents the sticking of the ingredients to the *Darvi Yantra* and to the *Kadali Patra*. Helps in easy digestion, acts as anti- oxidant, *Sheeta Virya*.

>*Agni*- *Agni Samskara* plays an important role in the *Parpati* preparation. Throughout the *Parpati* preparation the *Mandagni* is to be maintained. Helps in the melting of the *Parpati* ingredients and in turn makes the *Parpati* light for the digestion. If the *Teevragni* is given the preparation gets spoilt, the *Parpati* prepared is called as *Khara Paka* and considered to be not useful for the therapeutic purpose and is discarded.

>*Darvi Yantra* (Vessel)- the vessel used for liquefying the *Parpati* ingredients also plays an important role and helps in increasing the efficacy of the *Parpati* by inhibiting its qualities in it. Usually the *Loha Darvi* is used. But some *Acharyas* opines the *Tamra Darvi* also.

CONCLUSION

>The *Parpati Rasayana*, is the *Agnisthayi Murchita Avastha of Parada*. Also one among the *Parada Bandha*.

>*Gaganaparpati* is prepared by adopting the general method of preparation of *Parpati Kalpana* and has achieved the *Siddhi Lakshana* of *Madhayama Paka*.

->The quantum of the heat given during the preparation of the *Parpati* plays an important role, if the amount of the heat

given becomes more then the *Parpati* attains the *Khara Paka* stage, this is discarded and considered to be of no use. So the pattern of the heat to be given is considered of prime importance.

-> Analytical parameters are found to be within normal limits of API.

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