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Research Article

PHARMACEUTICAL STANDARDIZATION OF *SAMAGUNA* AND *SHADAGUNA BALIJARITA RASA SINDURA*

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KEYWORDS: *Parada, Gandhaka, Kajjali, Samagunabalijarita Rasasindura, Shadagunabalijarita Rasasindura,* Pharmaceutical Standardization.

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ABSTRACT

Rasasindura prepared by using *Kupipakwa rasayana* is a unique traditional pharmaceutical preparation wherein the drug is prepared in a glass bottle called *Kupi* and the processing is done in a *Bhatti* (traditional furnace) with a gradual rise in temperature. According to classical tests the enhancement of therapeutic activities is found in *Shadgunajarita Rasasindura* when compared with *Samagunajarita Rasa Sindura*. To understand this, change in the pharmaceutical preparation of both prepared formulation have to be studied.

During the preparation, 72 hours are taken for *Samagunakajjali* and 120 hours are taken for *Shadgunakajjali* preparation and *Samaguna Rasasindura* prepared by *Kupipakwa* method took 20 hours. *Shadguna Rasasindura* was prepared by *Kupipakwa* method in 38 hours,

Samaguna balijarita Rasasindur was prepared with equal quantities of *Parada* and *Gandhaka* by *Kupipaka* method in 20 hours. *Shadguna balijarita Rasasindur* was prepared using one part of *Parada* and six parts of *Gandhaka* by *Kupipaka* method in 38 hours. Compared to *Samaguna Rasasindur* preparation, in *Shadguna Rasasindur* preparation, fuming and flaming stage lasts for longer period. Compound formation in *Shadguna Rasasindura* was delayed than *Samagun Rasasindura*. The temperature between 600°C to 650°C for *Samaguna Rasasindura* and 650°C to 800°C was required for *Shadguna Rasasindura* for preparation. Preparation of *Samaguna balijarita Rasasindur* was easier and yield was also more compared to *Shadguna balijarita Rasasindur*. From the pharmaceutical point of view, there was much difference between *Samaguna* and *Shadguna balijarita Rasasindura*. Difference was there in the ratio of ingredients, total duration of heat and quantity of yield. In case of *Samaguna balijarita Rasasindura*, duration of *Paka* was less but the yield was more and in *Shadguna balijarita Rasasindura* duration of heat was more but yield was less.

INTRODUCTION

Rasasindur [1] is a mineral preparation. It is being prepared by *Kupipakva* method. *Kajjali* prepared of *Shudha Parada* and *Shuddha Gandhaka*. *Gandhaka Jarana* plays an important role in enhancing the potency of *Parada*. It has been claimed in the text that *Parada* treated with the process of *Gandhaka Jarana,* becomes highly potentiated i.e. it acquires several pharmacological and therapeutic properties. Different textual reference also supports the above statement.

Many classical references quote that enhanced therapeutic activities is found in *Shadgunajarita Rasa Sindura*[2] when compared with *Samagunajarita Rasa Sindura*[3]. To understand this, change in the structural and chemical behaviour of both prepared formulation have to be studied. Hence this study Pharmaceutical Study of *Samaguna* and *Shadguna Balijarita Rasasindura* Sincere effort will be made to elicit the Structural changes brought about during the preparation of

formulations and interpret on its pharmacological properties. *Samaguna and Shadguna Rasasindura* will be prepared according to the guidelines of Rasa Tarangini[4] and its physico-chemical analysis will be done.

INTRODUCTION

Ayurveda can be defined as a system, which uses the inherent principles of nature, to help maintain health in a person by keeping the individual's body, mind and spirit in perfect equilibrium with nature. *Rasa Chikitsa* is the best *Chikitsa* among others due to quicker action and effective even in very small doses; because of this reason Ayurvedic physicians profusely use minerals, metals, gems and some of animals as well as vegetable products. Ayurvedic physicians are of the view that different Ayurvedic pharmaceutical processing like *Shodhana, Marana, Samskara*, *Jarana* etc. convert metallic preparations into non-toxic absorbable form and increases therapeutic efficacy.

Rasasindura is one such imperative *Kupipakwa Rasayana*, referred to be Elixir of life. It is formulated by two fundamental substances of *Rasashastra* i.e., *Shudha Parada* and *Shudha Gandhaka*. It is said to be prepared by same process but with different proportion of *Gandhaka*, and accordingly various forms of *Rasasindura* are named as *Ardhaguna, Samaguna, Dviguna, Triguna, Chaturguna, Panchaguna, Shadguna balijarita Rasasindura*, where in, therapeutic merits of *Rasasindura* and pharmaceutics of *Rasasindura* changes according to quantum of *Gandhaka*.

Gandhaka Jarana plays an important role in enhancing the potency of mercury. Different textual reference also supports the above statements. According to Ayurveda Prakash (1/114) *Shadguna Balijarita Parada* is claimed to be much more powerful and effective than *Samaguna* and *Dviguna Balijarita Parada*.[5] There might be lot of physio chemical changes in both preparations.

AIMS AND OBJECTIVES

1. To prepare *Samaguna balijarita Rasasindura* and *Shadguna balijarita Rasasindura* as per classical reference.
2. To observe pharmaceutical changes while preparing the *Samaguna balijarita Rasasindura* and *Shadguna balijarita Rasasindura.*

Pharmaceutical Study

Introduction

Pharmaceutical study means the practical experience of preparing medicines from raw drugs. Practical experience is most essential for *Vaidyaas* described by Charaka the *Karmabhyasa* (Ch.Su. 9/22) is one of the essential qualities of Vaidya. In Rasa Shastra it is described that Rasa Shastri must have the quality of *Kushala* Rasa Karmani[6] (R.R.S. 6/4). Rasa Shastra is a science which mainly deals with minerals and metals like Mercury, Arsenic, Copper, etc. and their administration as medicines. These minerals having some toxic and unwanted effects if medicines are not prepared by proper method and minute difference in procedure of preparation may cause toxic effects in patients. So preparation of mineral drugs requires more skill and only way of obtaining skill is practical experience through repeated practicals and careful observations during process make Rasa Vaidya perfect in medicine preparation. By this it is very clear that theory and practical are two essential parts of the knowledge.

The practical aspect of *Parada* (mercury) and related substances is having much more importance in comparison to their theoretical aspects in Rasa Shastra. Validity of this branch of science totally depends on the successful pharmaceutical process on the successful completion of the practical aspects. A pharmaceutical process called *Kalpana* by alchemist forms the basic principle of *Rasa Shastra* which has got its own place and importance in it. Out of such *Kalpanas Kupipakva Rasayana Kalpana* is one which is clearly defined by its name i.e. a mercurial preparation prepared by heating it in a *Kupi*. It is envisaged as one of the best *Kalpana* of *Rasa Shastra* which is supposed to be very useful in curing some uncontrolled, resistant and degenerative type of disease. It is important that crude drugs both of herbal and mineral origin should be subjected to purification process before they are used internally. Hence a detailed practical study has been carried out.

Aims and Objectives

The main aim of the present study is to prepare *Samaguna Kajjali, Shadguna Kajjali, Samaguna Balijarita Rasasindura* and *Shadguna Balijarita Rasasindura* in postgraduate Pharmacy section of Ayurveda Maha Vidyalaya Hubli.

The objective of Pharmaceutical study includes

1. Selection and *Shodhana* of Raw Materials.
2. Preparation of *Samaguna* and *Shadaguna kajjali*.
3. Preparation of *Samagunabalijarita Rasasindura* and *Shadgunabalijarita Rasasindura.*

Shodhana

The process which eliminates the blemishes is called *Shodhana*. [7]

Shodhana is a process intended for the removal of impurities in a substance by implementing prescribed methods like *Bhavana, Swedana, Dhalana* etc. with prescribed drugs. [8]

Pharmaceutical Study

The study pertaining to the science and the art of conversion of raw drugs in to potent medicament by various classical pharmaceutical processes is called as Pharmaceutical study. The purpose of this branch of medicine is to provide suitable safe effective medicine. Careful and keen observations are very essential in each and every step of this study, not in only in the preparation but also in identification of genuine raw drugs and accurate processing of the materials used. Keeping the above factors in consideration Pharmaceutical preparation of *Samaguna* and *Shadgunabalijarita Rasasindura* was done in present study.

The Pharmaceutical study encompasses following points

Identification, Procurement of genuine basic raw material and associated drugs for *Shodhana*. Proper method of processing like *Samanya Shodhana, Vishesha Shodhana*.

Materials and Methods

Collection of Raw materials: Raw drugs which were having similar *Grahya.*

Source: *Parada* was collected well accordingly to *Grahya laxana* explained in text from pharmacy AMV, Hubli.

Practical No. 1

Parada Samanya Shodhana[9]

Date of Commencement: 02/02/2013

Date of Completion: 10/02/2013

Materials

1. *Ashodhita Parada*: 500gms
2. *Shudha Churna* : 500gms
3. *Usnaodaka* : 15 ltrs
4. *Nishtusha Lahsuna*: 350gms
5. *Saindhva Lavana*: 250gms

Equipments: *Khalvayantra*, spatula, cloth, Steel spoons, blotting papers.

Procedure

1. *Ashodhita Parada* 500gm was taken in *Khalwa yanta*, then little quantity of *Sudha churna* was added slowly with continuous trituration .When all the said quantity of *Sudha churna* exhausted continued trituration process for 5 days till mass turned to black.
2. Then mixture of *Parad and Sudha churna* immersed in *Ushnodhaka*, kept for 1 hour without disturbance. Then water is decanted *Parada* was separated cautiously and washed with *Ushnodhaka* 4 to 5 times. Water was separated by using blotting papers and kept under sunlight.
3. After these prepare *Lashuna kalka* i.e., triturate above quantity of *Nishtuhsa lashuna* in *Khalwa yantra* to made it in to *Kalka*.
4. *Parada* which was treated with *Sudha churna* taken and mixed with *Lashuna kalka*; triturated well and then *Saindhva lavana* was added triturate it well till whole mass became fine paste form and became bright black in colour. Initially fine mercurial particle were observed at the end it get mixed with *Lashuna kalka*.
5. *Mardana* was done 6hrs daily.

Observation

- Mixing of *Sudha churna* with *Parada* was difficult initially then slowly started mixing.
- Colour of the mixture gradually turned towards grey and duration taken was 30 hrs.
- *Mardana* was done for 5 days.

Prakshalana

- During *Prakshalana Parada* easily separated from the *Sudhachurna*, and settled at the bottom of the *Khalwayantra*.
- Little quantity of *Parada* was also obtained at the bottom of vessel containing *Prakshalita* water on next day.
- Loss of weight after *Prakshalana* is 30 gms.

Trituration with *Lashuna kalka* and *Saindavalavana*

- Mixing of *Parada* with *Lashuna* paste and *Saindava* was easy.
- The color of mixture turned to light green after 5 hrs of trituration.
- As *Mardana* progress *Kalka* became jet black in color.

***Prakshalana* with warm water**

- When the mixture was subjected to warm water for washing process, the *Parada* got settled at the bottom of *Khalwayantra* and *Lashunakalka* was found to float as supernatant.
- Separation of *Parada* was easy compare to previous procedure.
- At the end, *Shodhita Parada* was bright silver in colour, and smooth in touch.
- Loss of weight after *Prakshalana* is 14gms.

Weight changes before and after *Shodhan*

***Parada* before *Shodhan*:** 500 gms

***Parada* after *Shodhan*:** 456 gms

Loss of *Parada*: 44 gms

Practical No.2

Parada Shodhan Urdhvapatana[10,11]

Date of Commencement: 15/02/2013

Date of Completion: 20/02/2013

Materials

1. *Sudhachurna* and *Lashuna Shoditha Parada*: 450gms.
2. *Kumari swarasa* : 150ml
3. *Haridra churna*: 100gms

Equipments: *Damaruyantra, Khalvayantra,* juicer, knife, spatula, cloth, *Multanimitti*, gas stove, coldwater, cotton cloth, Pyrometer.

1. *Sudha churna* and *Lashuna Shodhita Parada* weighing 450gms was taken in a *Khalvayantra* and 100ml of *Kumari swarasa* and *Haridrachurna* was added, mixed well and trituration was started.
2. Further 50ml of *Kumari swarasa* was added as and when needed and trituration was done continuously for 12 hrs.
3. After getting the proper consistency, smeared it in an earthen pot and another pot of same size and shape was placed over it invertedly.
4. Totally seven layers of *Sandhibandhana* done with a cloth smeared with *Multanimitti* and dried.
5. Thus made *Damaruyantra* was kept over the gas stove and *Mridagni* 100 to 150 ^{o}C was given for 3hrs, *Madhyamagni* 150 to 250^{o}C for 3hrs and *Teevragni* 250 to 350^{o}C for 2 hrs. Meanwhile the upper part of the pot was kept cool by frequent changing of cotton cloth dipped in cold water.
6. Agni was given continuously for 8 hrs. After self cooling the *Sandhibandhana* was carefully removed.
7. The two pots were separated and in the inner surface of the upper pot *Parada* was sublimated along with black soot which was scrapped and collected. And filtered through the double folded cloth until *Parada* appeared silvery shining.

Observations

1. After 15mins trituration with *Kumari swarasa* and *Haridra, Parada* mixes totally.
2. After complete cooling of *Damaruyantra* the two pots were separated, the *Parada* globules with the black soot were seen in the inner surface of upper pot.
3. In the lower pot burnt *Haridra* recovered. At the centre of the lower Pot few particles of *Parada* recovered.

Table 1: Showing Temperature Reading in different intervals of time

Time	Temperature Reading
9 am	35^{o}C
10am	75^{o}C
11 am	102^{o}C
12 pm	154^{o}C
1 pm	174^{o}C
2 pm	195^{o}C
3 pm	254^{o}C
5 pm	350^{o}c

Results

1. Weight of *Parada* before procedure: 450 gms
2. Weight of *Parada* after procedure: 360 gms
3. Loss of parade : 90 gms

Practical No: 3

Gandhaka Shodhana[12]

Date of commencement: 07/05/2013

Date of completion: 08/05/2013

Materials

1. *Ashodita Gandhaka* 300gms
2. *Godugdha* 2 liters
3. *Goghrita* 300 gms
4. Hot water for washing

Equipments: *Khalvayantra*, *Mritpatra*, Cloth, Thread, *Sharava*, Match box, Cow dung cakes –25

Method

1. 2 liters of fresh cow's milk and 300 gms *Gogrhita* was taken in earthen vessel, mouth of which was covered with a single layer of clean cotton cloth and tied properly with a thread.
2. 300gms of *Ashodhita Gandhaka* was coarse powdered *Gandhaka* was then spread over this cloth and place *Shrava* over it and *Sandhibandhana* is done, pot was kept in a pit having the sufficient depth to fit the pot up to its neck.
3. 25 cow dung cakes were spread over this *Sharava* and *Agni* was set and temperature was set up to 160°C.
4. After *Swangasheetha* the pot was removed out from the pit, cloth tied over the mouth was removed, granules of *Shodhita Gandhaka* which were immersed in the milk and *Goghrita* were separated, washed with hot water thoroughly and dried under shade.

Table 2: Showing observations during *Gandhaka Shodhana*

Date	Quantity of *Godugda* taken	Quantity of *Goghrita* taken	No. Of *Vanoplas* used	*Gandhka* taken	*Shodhita Gandhaka* obtained	Time for *Swangsheeta*
07/05/13	2 ltrs	300 gms	25	300 gms	256 gms	4 hrs

Practical No.4

Gandhaka Shodhana[13]

Date of commencement: 17/05/2013

Date of completion: 18/05/2013

Materials

1. *Ashodita Gandhaka* 500gms
2. *Godugdha* 4 liters
3. *Goghrita* 500 gms
4. Hot water for washing

Equipments: *Khalvayantra, Mritpatra*, Cloth, Thread, *Sharava*, Matchbox, Cow dung cakes –25

Method

1. 4 liters of fresh cow's milk and 500gms *Gogrhita* was taken in earthen vessel, mouth of which was covered with a single layer of clean cotton cloth and tied properly with a thread.
2. 500gms of *Ashodita Gandhaka* was coarse powdered *Gandhaka* was then spread over the cloth and place *Shrava* over it and sealing was done, pot was kept in a pit having the sufficient depth to fit the pot up to its neck.
3. 25 cow dung cakes were spread over this *Sharava* and *Agni* was set.
4. After *Swangasheetha* the pot was removed out from the pit, cloth tied over the mouth was removed, granules of *Shodhita Gandhaka* which were immersed in the milk and *Goghrita* were separated, washed with hot water thoroughly and dried under shade.

Table 3: Showing observations during *Gandhaka Shodhana*

Date	Quantity of *Godugda* taken	Quantity of *Goghrita* taken	No.of *Vanoplas* used	*Gandhka* taken	*Gandhaka* obtained	Time for *Swangsheeta*
17/05/13	4 ltrs	500 gms	25	500gms	450 gms	4 hrs

Observations

1. All the mud particles and dust which was present in *Gandhaka* was separated out over the cloth during the first procedure.
2. *Shodhita Gandhaka* was in granular form and few fully immersed in the milk. Few granules were seen floating on the milk.
3. *Shodhita Gandhaka* was of bright yellow coloured and shiny.

Precautions

1. Fresh cow's milk was used, Quantity of milk was sufficient so that *Gandhaka* granules were completely immersed in it.
2. Pit was dug sufficiently big so that the pot can be kept till its neck inside the pit.
3. *Sharava* was kept over the pot so that it was not touching the mouth of the pot/cloth.
4. After procedure *Gandhaka* was washed with hot water till the remnants of milk was removed completely and after procedure it was dried well.

Table 4: Showing weight changes during *Gandhaka Shodhana*

Weight of *Gandhaka*	Practical No. 1	Practical No. 2
Before *Shodhana*	300 gms	500 gms
After *Shodhana*	256 gms	450gms
Loss after *Shodhana*	44 gms	50 gms

Practical No.5

***Samaguna Kajjali* Preparation**[14]

Date of commencement: 08/07/2013

Date of Completion: 19/07/2013

Materials:

1. *Sudha Parada*: 120 gm.
2. *Sudhha Gandhaka*: 120 gm.

Method: *Mardana*

Equipments: *Khalva Yantra*, Spatula, Steel plate, Steel Spoon etc.

Procedure

1. *Shodita Parada* and *Shodita Gandhaka* were taken in equal quantity and triturated in *Khalva Yantra*. Gradually the white color of *Parada* and greenish yellow color of *Gandhaka* disappear and a black powder was formed.
2. Trituration was continued till the powder became jet black in color and very fine like *Kajala* and fulfilled all the criteria of *Kajjali*.
3. Average to and fro movements of *Peshani* were 20-22 times/ minute.
4. *Mardana* was done for 6hrs daily.

Observations

1. After 12 hours of trituration, the color of *Gandhaka* started transforming in to blackish yellow.

2. After 24 hours of trituration, *Parada* particles almost disappeared and the mixture turned into dark black color. But when rubbed between the fingers a small particle was seen.
3. After 48 hours of trituration, it appeared that the *Kajjali* was prepared. But when it was examined under sunlight, luster of free *Parada* particles were observed.
4. After 72 hours of trituration, the mixture completely turned into *Kajjali* and fulfilled all the criteria of *Kajjali*.
5. Thus prepared *Kajjali* was fulfilling the test of *Varitara* and *Rekhapurnatva* too.
6. The entire powder became fine, black, smooth, lusterless.

Physical examination

Table 5: Showing physical examination

Test	Appearance of *Kajjali*
Appearance	Amorphous
Colour	Jet Black
Touch	Smooth
Smell	No specific smell

Table 6: Showing different phases of *Samaguna Kajjali* during preparation

Hours	Observations
At 0 minute	*Parada* + *Gandhaka*
After 15 minutes	*Gandhaka* changed to yellowish green
After 30 minutes	Grey colour with *Parada* globules
After 45 minutes	Dark grey colour with yellow streaks
After 1 hr	Absence of *Parada* globules
After 6 hrs	Blackish colour with shiny particles
After 12 hrs	Blackish colour
After 18 hrs	Test for *Kajjali* was absent
After 24 hrs	It turned to black fine powder
After 48 hrs	Lustre of free *Parada* observed
After 72 hrs	*Varitara* and *Unama* tests were positive

Precautions

1. To prepare *Kajjali, Gandhaka* should always be taken in fine powder form.
2. Trituration should be done slowly and cautiously to check the loss of *Parada*.
3. *Khalava* should be kept covered when the process is not in progress.

Results

Weight of *Shodhita Parada*: 120gms.

Weight of *Shodhita Gandhaka*: 120gms.

Weight of *Kajjali* obtained: 205gms.

Total weight Loss: 35gms.

Cause of weight Loss

1. Spilling of mixture during trituration.
2. Sometimes particles of *Kajjali* adhere to *Khalva* which is difficult to collect.
3. Some quantity of *Kajjali* was lost during performing the confirmatory test of the product.

Practical No. 6

***Shadguna Kajjali* Preparation**[15]

Date of commencement: 02/08/2013

Date of Completion: 21/08/2013

Materials:

1. *Shodita parada*: 100 gm.
2. *Shodita Gandhaka*: 600 gm.

Method: *Mardana*

Equipments: *Khalva Yantra*, Spatula, Steel plate, Steel Spoon etc.

Procedure

1. *Shodita Parada* and *Shodita Gandhaka* are taken and triturated in iron *Khalva Yantra*.
2. Gradually the white colour of *Parada* and greenish yellow color of *Gandhaka* disappear and a black powder was formed.
3. Trituration was continued till the powder became black in colour and very fine like *Kajala* and fulfilled all the criteria of *Kajjali*.
4. *Mardana* was done for 6hrs daily.

Observations

1. As soon as trituration started, *Gandhaka* in contact with the *Parada* attained yellowish grey colour and *Parada* globules were started appearing.
2. After 5 minutes of trituration *Parada* globules were mixed with *Gandhaka*, leaving major quantity of *Parada* at the centre.
3. After 10 minutes yellow color *Gandhaka* was started changing to yellowish green. After 15 minutes of trituration mixture appeared blackish yellow colored and tailing of *Parada* was seen.
4. After 30 minutes mixture appeared super grey coloured with small shiny globules.
5. After 45 minutes mixture appeared cement coloured between which yellow streaks were seen while triturating.
6. No *Parada* was seen at the centre of *Khalva* after 1 hr of *Mardana*. Shining was present,

After 2 hours, mixture appeared blackish grey coloured.

7. After 6 hours of trituration, mixture appeared blackish coloured. Shiny particles were observed.
8. After 18 hours mixture appeared black coloured. Tests of *Kajjali* i.e., *Rekhapurnatva*, *Varitaratva* and *Slakshnatva* were absent.
9. Mixture turned completely into soft, smooth black compound after 32 hours.
10. After 48 hours, complete *Rekhapurnatva* and *Slakshnatva* were observed in the compound.
11. *Varitaratwa* and *Unama* were observed in mixture after 60 hours of *Mardana*
12. After 80 hours, *Kajjali* was taken between thumb and index finger made wet then rubbed and was exposed to sunlight, shining particles were observed.
13. Shiny *Kajjali* flakes were seen adhered at the bottom of *Khalwa Yantra*.
14. After 100 hours, few shining particles were seen.
15. For better fineness and smoothness of *Kajjali*, *Mardana* was continued upto 120 hours and no shining particles were seen.
16. Average to and fro movements of *Peshani* were 20-22 times/ minute.

Table 7: Showing different phases of *Shadguna Kajjali* during preparation

Hours	Observations
At 0 minute	*Parada* + *Gandhaka*
After 15 minutes	*Gandhaka* changed to yellowish green
After 30 minutes	Grey colour with *Parada* globules
After 45 minutes	Dark grey colour with yellow streaks
After 1 hr	Absence of *Parada* globules
After 6 hrs	Blackish colour with shiny particles
After 12 hrs	Shiny particles
After 18 hrs	Test for *Kajjali* was absent
After 24 hrs	It turned to black fine powder
After 48 hrs	Attained *Rakhapurnatva*
After 72 hrs	*Varitara* and *Unama* tests were positive
After 80hrs	Shining particles were present
After 100hrs	Few shining particles were seen
After 120hrs	*Kajjali lakshanas* achieved

Precautions

1. To prepare *Kajjali, Gandhaka* should always be taken in fine powder form.
2. Trituration should be done slowly and cautiously to check the loss of *Parada*.
3. *Khalava* should be kept covered when the process is not in progress.

Results:

1. Weight of *Shudha Parada*: 100gms.
2. Weight of *Shudha Gandhka*: 600gms.
3. Weight of *Kajjali* obtained: 540gms.
4. Total weight loss: 60gms.

Cause of weight Loss

1. Spilling of mixture during trituration.
2. Sometimes particles of *Kajjali* adhere to *Khalva* which is difficult to collect.
3. Some quantity of *Kajjali* was lost during performing the confirmatory test of the product.

Preparation of *Samaguna* and *Shadguna Balijarita Rasasindura*

The whole procedure of *Rasasindura* preparation was categorized under 3 headings

1. *Purva Karma*
2. *Pradhana Karma*
3. *Paschat Karma*

Purva Krama

1. Preparation of *Kacha Kupi*
2. Filling of *Kajjali* into *Kachakupi*
3. Placing of *Kacha Kupi* in *Valuka Yantra*

Pradhana Krama

1. Heating Schedule (*Kramagni tapa*)
2. Observation and recording of temperature
3. Sealing with cork to *Kacha Kupi* and self cooling of the apparatus

Pashchat Karma

1. Removal of *Kacha Kupi* from *Valuka Yantra*
2. Breaking of *Kach Kupi*
3. Collection of Final Product

Practical No. 7

***Samaguna Rasasindura* Preparation**[16]

Date of commencement: 06/12/2013

Date of Completion: 07/12/2013

Materials and Method:

1. *Samaguna Kajjali*
2. *Kupipakva* Method

Equipments: Prepared *Kachakupi*, Different *Shalakas*, *Bhatti*, Cork, copper coin, Torch, fuel, Pyrometer.

Procedure

Purvakarma

The following measures had been taken:

1. Collection of essential equipments and ingredients.
2. In *Purva Karma* preparation of *Kajjali* was one of the most important *Karma*.
3. So for this purpose *Shudha Parada* and *Shudha Gandhaka* were weighed accurately, mixed together in *Khalva* and trituration was started.
4. Trituration was continued till the *Kajjali* became completely *Nischandra*.
5. For confirmation of *Nischandratva* a pinch of *Kajjali* was added to a drop of water on palm and rubbed gently so as to trace out the free *Parada* particles.
6. After that *Kajjali* was cautiously filled up in the *Kachakupi* which had seven layer of *Kapada Mitti*.

Step 1

Kupi Nirmana[17]

Equipment - *Kacha Kupi*, Clean Cloth according to size of *Kachakupi, Multhanimitti* Water.

Procedure

1. A clean and dry *Kachakupi* with narrow mouth having capacity around 700ml was taken (green colour beer bottle).
2. A clean cloth was taken that was smeared with *Multhanimitti*. This mud smeared cloth was wrapped around the *Kupi* from all the sides to cover it uniformly.
3. This was kept for complete drying, the whole procedure was repeated for 7 times, each wrapping was done after complete drying of previous layer.
4. It will take maximum 4 hours for drying one layer of wrapped *Multanimitti* cloth.

Precaution

1. Wrapping was performed without any fold in the layer of cloth and air gaps.
2. Stony particle in the *Multanimitti* was removed before applying to the cloth.
3. Tight packing was done especially over bottom.

Observation

1. Initially for drying each layer time period was less compare to successive layer.
2. It will take maximum 4 hours for drying one layer of wrapped *Multanimitti* cloth.
3. *Kupi* went on becoming thicker and thicker.

STEP 2

Kupipoorna[18]

Materials: Prepared *Kupi*, funnel, weighing Machine, *Samaguna kajjali* 120 gms.

Procedure

1. A clean funnel was placed over the mouth of the *Kachakupi*, mixture was slowly added into the *Kachakupi* through the funnel.
2. Mouth of the funnel was cleared using the spatula while filling the mixture.
3. Mouth of the *Kupi* was temporary covered by using cork.

Observation

Usage of funnel facilitates easy filling of the mixture in to the *Kupi* without spillage.

Precautions

1. *Kajjali* was again triturated for half an hour before filling into the *Kupi*.
2. Inner aspect of the *Kupi* was cleaned and dried properly with a clean cloth tied over a stick.
3. Care was taken to spread the *Kajjali* uniformly inside the *Kupi*.

Step 3

Kupisthapana[19]

Materials: *Valukayantara*, sand, sieve, *Abrakapatra*, bottle filled with *Samaguna Kajjali*.

Procedure

1. A big, thick cast iron vessel with small hole at the centre of the base was taken and placed over *Bhatti*. Over the hole *Abhraka patra* was placed enough cover it thoroughly. Four *Angulas* of *Valuka* was filled initially at the bottom of iron vessel.

2. The *Kajjali yukta kupi* was then placed on it at the center of iron vessel.
3. Later *Valuka* was filled in the vessel which covered around the neck of *Kupi*.
4. After proper placing of the *Kupi* the cork was removed from the mouth of *Kupi*.

Pradhana Karma

1. Heat was started from room temperature and was gradually increased.
2. The temperature was recorded after interval of every one hour.
3. When the temperature reached around 250°C the compound was tested with cold *Shalaka*. The compound was found to be liquid, confirming this *Agni* was increased.
4. When the temperature reached around 350°C to 400°C, fumes of *Gandhaka* started evolving.
5. During the course of heating the red hot *Shalaka* (iron rod) was repeatedly inserted into the mouth of *Kachakupi* to clear accumulated *Gandhaka* at the neck of the bottle to prevent blocking.
6. With the rise in temperature the fumes increased and finally it was replaced by flame, which gradually decreased in size.
7. After the disappearance of blue flame, the bottom of *Kachakupi* becomes red hot. *Tivra agni* was started at this stage and was maintained up to 600 to 650°C
8. The mouth of *Kachakupi* was corked and sealed.
9. After sealing sand around the neck of *Kupi* was removed.
10. Then it is allowed for self cooling.

Paschata Karma

Following measures were taken up in this regard.

1. Regarding removal of *Kupi* and *Kapadmitti*.
2. Breaking of *Kupi* and drug collection.
3. Examination of the drug.

- After *Swangshitatha*, *Kupi* was removed from the *Bhatti*. The layer of *Kapadamitti* which was blackened was removed by scrapping out with the help of knife and the external surface of the *Kupi* was cleaned.
- A string soaked in kerosene was tied 1 inch below the level of compound on the external surface of *Kupi* and set to fire. When the string was burnt, *Kupi* was wrapped by a wet cloth near the neck region.
- The *Kupi* was broken exactly at the level of string.
- The bottle was broken and the sublimate deposited at the neck of *Kachakupi* was collected and weighed.

Observations

1. When heating was started the room temperature was 32°C.
2. After 8 ½ hours of heating, slight yellowish white fumes started to emerge out from the mouth of *Kachakupi* and melting of *Kajjali* take place the temperature at this stage was 354°C.
3. After 9 hours dark yellow fumes increased and the temperature recorded at that time was 401°C.
4. At 8 pm fumes disappeared and blue flame started to come out at the neck of *Kachakupi* and the temperature recorded at that time was 450°C.
5. After 13 hours blue flame gradually increased in size and the temperature recorded at that time was 540°C.
6. After 15 hours later flame was disappeared and the temperature recorded at that time was 580°C. At that time boiling stage of *Kajjali* (Honey comb like appearance) was visible at the bottom of *Kupi* with the help of a torch.
7. The bottom of the *Kachakupi* also became red hot. *Shita Shalaka* and copper coin test showed presence of *Parada* particles and this is the point at which the closing the mouth of *Kachakupi* with cork was done immediate. The temperature recorded at that time was 650°C.
8. Temperature was increased to 700°C after *Kachakupi* sealed with cork and heating was continued for further.

Table 8: Showing Temperature recorded along with observation

Time in hour	Temperature setting	Specific Observation
9 am	32°C	*Kupisthapana*
10am	106°C	*Kajjali* was dried
11am	150°C	Sand start heating
12.45pm	177°C	*Kajjali* was dried
1pm	204°C	Few fumes

2pm	258°C	Dense white fumes appeared
3pm	260°C	*Kajjali* starts melting
4pm	270°C	Dense white fumes appeared
5pm	309°C	Melting of *Kajjali* along with yellowish white fumes started
5.30pm	354°C	Dark yellow coloured fumes Increased
6pm	401°C	*Kajjali* liquefied and Fumes Increased
7pm	427°C	Fumes gradually decreased
8pm	450°C	Fumes disappeared and flame Started
9pm	504°C	Flame increased
10pm	540°C	Flame increased about 5-6 inches
12am	580°C	Flame disappeared and boiling stage of *Kajjali* (Honey comb like appearance) visible in *Kupi* with the help of torch.
3am	650°C	Bottom of *Kupi* was found red hot. *Shita Shalaka* test and copper coin tests showed presence of *Parada* particles. Then cork was applied *Kupi* immediately.
5am	700°C	Temperature was increased after sealing the *Kupi* for 1 hour.

Precautions

1. *Kajjali* was again triturated for ½ hour before filling of into *Kupi*.
2. The *Kupi* was kept exactly in the center of *Valukayantra* so that homogenous temperature would be obtained.
3. All the precautions were taken while sealing the mouth of *Kupi*, as the surrounding of the mouth of *Kupi* was very hot.
4. *Kupi* was removed from *Bhatti* and broken carefully.
5. Eyes and nose were protected by wearing glass and mask throughout the practical.

STEP 4

Kupibhedana

Materials

Knife, Thread, Kerosene, Matchbox, *Kupi* containing *Kajjali*, clean container.

Procedure

The bottle was carefully removed from the *Valuka yantra*. The outer layer of the bottle was scrapped carefully with the help of a knife to remove the *Gopi chandana* coating. kerosene dipped thread was tied around the bottle and was set to fire. When the thread burned, it was wrapped with the wet cloth then bottle broke into two halves. *Rasasindura* was obtained as a whole block just by tapping the bottle.

Observations

1. After taking out the *Kupi* from *Valuka Yantra*, the upper portion was black in colour.
2. After complete removal of layers the bottle was cleared then shiny and dark colour sublimated product was observed.
3. There was a thick collection of medicine in the neck region, where as the lower contained grey coloured residue.
4. Block of *Samaguna balijarita Rasa Sindura* was shiny greyish red coloured.

Precautions

1. The bottle was separated into two halves only after the breaking noise and no force was applied to separate the bottle.
2. The upper part of bottle should tap carefully so that bottle should not crack.
3. Total weight of *Samaguna Rasasindura* obtained: 70gms.
4. Total weight of residue obtained: 6gms
5. The *Samaguna balijarita Rasa Sindura* was weighed powdered in porcelain mortar and procured in airtight container.

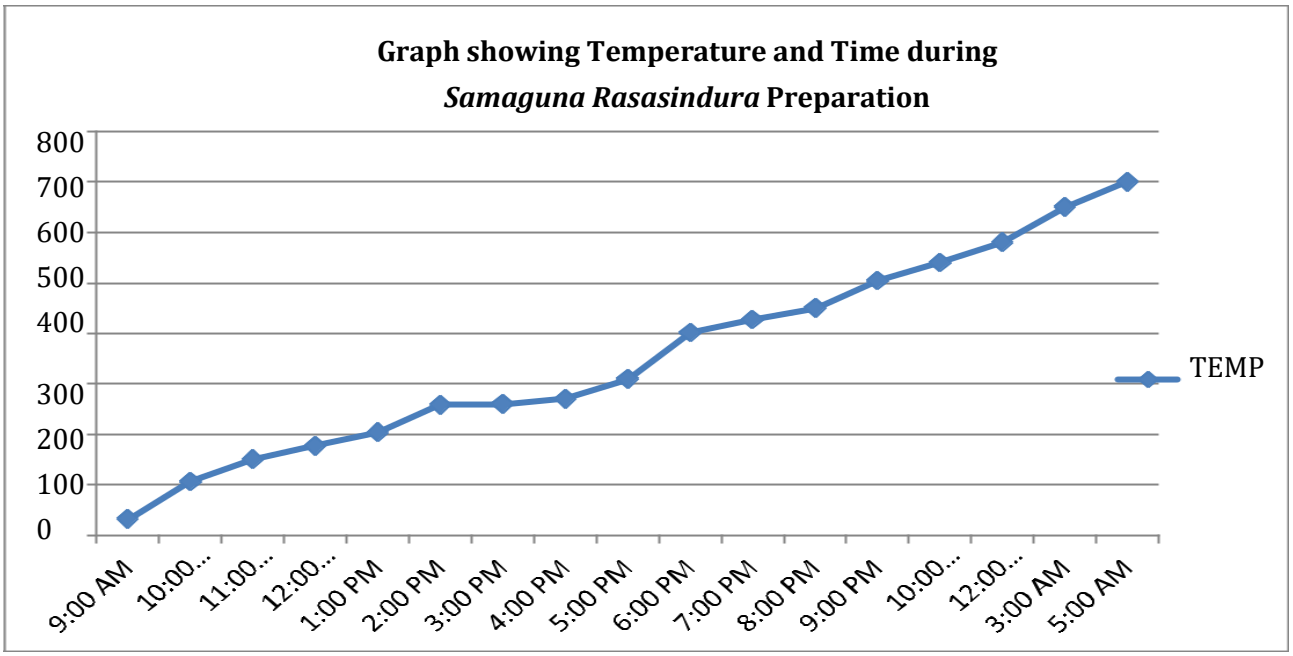
Results

Time taken for preparation:20 hrs.

Weight of *Kajjali* taken: 120 gms

Weight of *Samaguna Rasasindura* obtained: 70gms.

Weight of residue obtained: 6gms



Practical No. 8

Name of the Practical: *Shadguna Rasasindura* Preparation[20]

Date of Completion: 22/12/2013

Materials: *Shadgunakajjali*

Method: *Kupipakva* Method

Equipments: Prepared *Kachakupi*, Different *Shalakas*, *Bhatti*, Cork, Copper coin, Torch, fuel, Pyrometer.

Purvakarma

The following measures had been taken:

1. Collection of essential equipments and ingredients.
2. In *Purva Karma* preparation of *Kajjali* was one of the most important *Karma*.
3. So for this purpose *Shudha Parada* and *Shuddha Gandhaka* were weighed accurately, mixed together in *Khalva* and trituration was started.
4. Trituration was continued till the *Kajjali* became completely *Nischandra*.
5. For confirmation of *Nischandratva* a pinch of *Kajjali* was added to a drop of water on palm and rubbed gently so as to trace out the free *Parada* particles.
6. After that *Kajjali* was cautiously filled up in the *Kachakupi* which had seven layer of *Kapada Mitti*.

Step 1

Kupinirman[21]

Equipment - *Kacha Kupi*, Clean Cloth according to size of *Kachakupi*, *Multhanimitti*, water.

Procedure

1. A clean and dry *Kachakupi* with narrow mouth having capacity around 700ml was taken (green colour beer bottle).
2. A clean cloth was taken that was smeared with *Multhanimitti*. This mud smeared cloth was wrapped around the *Kupi* from all the sides to cover it uniformly.
3. This was kept for complete drying, the whole procedure was repeated for 7 times, each wrapping was done after complete drying of previous layer.
4. It will take maximum 4 hours for drying one layer of wrapped *Multanimitti* cloth.

Precautions

1. Wrapping was performed without any fold in the layer of cloth and air gaps.
2. Stony particle in the *Multanimitti* was removed before applying to the cloth.
3. Tight packing was done especially over bottom.

Observation

1. Initially for drying each layer time period was less compare to successive layer.
2. It will take maximum 4 hours for drying one layer of wrapped *Multanimitti* cloth.
3. *Kupi* went on becoming thicker and thicker.

Step 2

Kupi Poorna[22]

Materials: Prepared *Kupi*, funnel, weighing Machine, *Shadguna kajjali* 200 gms.

Procedure

1. A clean funnel was placed over the mouth of the *Kachakupi*, mixture was slowly added into the two *Kachakupi* through the funnel.
2. Mouth of the funnel was cleared using the spatula while filling the mixture.
3. Mouth of the *Kupi* was temporary covered by using cork.
4. Each *Kupi* is filled with 100gms.

Observation

1. Usage of funnel facilitates easy filling of the mixture in to the *Kupi* without spillage.
2. *Kajjali* was again triturated for half an hour before filling the *Kupi*.
3. Inner aspect of the *Kupi* was cleaned and dried properly with a clean cloth tied over a stick.
4. Care was taken to spread the *Kajjali* uniformly inside the *Kupi*.

Step 3

Kupi Sthapana[23]

Materials: *Valuka yantra*, sand, sieve, *Abhraka patra*, bottle filled with *Shadguna balija riata kajjali*.

Procedure

1. A thick iron cast vessel was taken and placed over *Bhatti*. Four *Angulas* of *Valuka* was filled initially at the bottom of iron vessel.
2. The *Kupi* was then placed on it at the center of iron vessel.
3. Later more *Valuka* was filled around the *Kupi* till the mouth portion of the *Kupi*.
4. After proper placing of the *Kupi* the cork was removed from the mouth of *Kupi*.

Pradhana karma

The specific observations during *Pradhanakarma* were as follows:

Observation

1. Some variation was observed in the temperature range, time and flame in comparison to *Samaguna Rasasindura*.
2. When heating was stared the room temperature was 32°C.
3. After 6 hours of heating, slight yellowish white fumes started to emerge out from the mouth of *Kachakupi*, the temperature at this stage was 200°C.
4. After 12 hours of heating, dense yellow fumes started to come out and the temperature recorded at that time was 350°C.
5. After 18 hours blue flame started to come out at the neck of *Kachakupi* and the temperature recorded at that time around 500°C.
6. After 30 hours greyish discolorisation of copper coin test observed.
7. To confirm the state of material *Sheeteshalaka* inserted, light fumes emerged out and product adhered to *Shalaka* is non sticky. The temperature recorded at that time was 700°C.
8. At that time boiling stage of *Kajjali* (Honey comb like appearance) was visible at the bottom of *Kupi* with the help of a torch.
9. After 36 hours the bottom of the *Kachakupi* also became red hot. *Shita Shalaka* and copper coin test showed presence of *Parada* particles and this is the point at which applying the cork to *Kachakupi* was done immediate. The temperature recorded at that time was 750°C.
10. Temperature was increased to 800°C after applying the cork *Kachakupi* and heating was continued for further 1 hour and stop inserting fuel in *Bhatti*.

Some specific observation that differs from *Samaguna Rasasindura*.

1. Compared to *Samaguna Rasasinduraa*, fuming stage in *Shadguna Rasasinduraa* was obtained earlier.
2. Compared to *Samaguna Rasasinduraa* preparation, in *Shadguna Rasasinduraa* preparation, Fuming and flaming stage lasts for longer period. Compound formation in *Shadguna Rasasindura* was delayed than *Samagun Rasasindura*.
3. The temperature between 650-800°C was required for *Shadguna Rasasindura* for preparation.

Table 9: Showing temperature recorded along with observation

Time	Temperature	Specific observation
12pm	32°C	*Kupisthapana*
1pm	100°C	*Kajjali* was totally dried
2pm	110°C	Sand start heating
3pm	123°C	*Kajjali* was totally dried
4pm	127°C	*Kajjali* starts heating
5pm	135°C	Heat increased

6pm	200°C	Fumes observed
7pm	219°C	Few fumes
8pm	234°C	White fumes
9pm	246°C	White fumes continues
10pm	250°C	Yellow fumes
11pm	312°C	Dense fumes
12am	350°C	Dense yellow fumes continues
1am	367°C	Profused fumes
2am	380°C	Profused fumes
3am	400°C	Material can be seen through torch, liquification started
4am	432°C	Melting observed
5am	476°C	Yellow flames
6am	500°C	Blue Flames increases
7am	510°C	Thick semisolid product adhered to *Sheetashalaka*
8am	534°C	Smell of sulphur
9am	565°C	Profused flames
10am	590°C	*Sheetashlaka* inserted
11am	612°C	Flame decreases
12pm	630°C	Movement of the molten *Kajjali* was Appreciated through torch
1pm	639°C	Dark reddish shining boiling Material seen through torch light
2pm	650°C	Dense yellow fumes persisting
3pm	660°C	Insertion of hot *Shalaka* continued. Blue flame appeared at the mouth of the *Kupi* and dancing of *Parada* was observed after taking out the *Shalaka*
4pm	678°C	After inserting hot *Shalaka* 10 inch height flame emerged
5pm	690°C	Extinction of blue flame. Dense sulphur fumes still persist
6pm	700°C	Grayish discoloration of copper coin. *Sheetashalaka* inserted, light fumes emerged out of it. Product adhered to it was non sticky
7pm	712°C	Flame disappeared, only visible on inserting hot *Shalaka*
8pm	720°C	--
9pm	734°C	--
11pm	740°C	Flame disappeared and boiling stage of *Kajjali* (Honey comb like appearance) visible in *Kupi* with the help of torch.
12 am	750°C	Bottom of *Kupi* was found red hot. *Shita Shalaka* test and copper coin tests showed presence of *Parada* particles. Then cork was applied *Kupi* immediately.
1 am	780°C	Temperature increased and left for 1 hr and Leave for *Swangsheeta*.

Precautions

1. *Kajjali* was again triturated for ½ hour before filling of into *Kupi*.
2. The *Kupi* was kept exactly in the center of *Valukayantra* so that homogenous temperature would be obtained.
3. Precautions were taken while *Kupi* mouth closed with cork, because the surrounding of the mouth of *Kupi* was very hot.
4. *Kupi* was removed from furnace and broken carefully.

5. Eyes and nose were protected by wearing glass and mask throughout the practical.

STEP 4

Kupi Bhedana

Materials: Knife, Thread, Kerosene, Matchbox, Kupi containing *Shadaguna kajjali*, clean container.

Procedure

The bottle was carefully removed from the *Valuka yantra*. The outer layer of the bottle was scrapped carefully with the help of a knife to remove the *Gopi chandana* coating and then the kupi was wiped with wet cloth. kerosene dipped thread was tied around the bottle, and was set to fire. When the thread burnt, it was wrapped with wet cloth then broke the bottle in two halves. *Rasasindura* was obtained as a whole block just by tapping the bottle.

Observations

1. After taking out the *Kupi* from *Valuka Yantra*, the upper portion was black in colour.
2. After complete removal of layers the bottle was cleared then shiny and dark colour sublimated product was observed.
3. There was a thick collection of *Rasasindura* in the neck region, where as the lower portion contained grey coloured residue.
4. Block of *Shadguna balijarita Rasasindura* was shiny greyish red coloured.

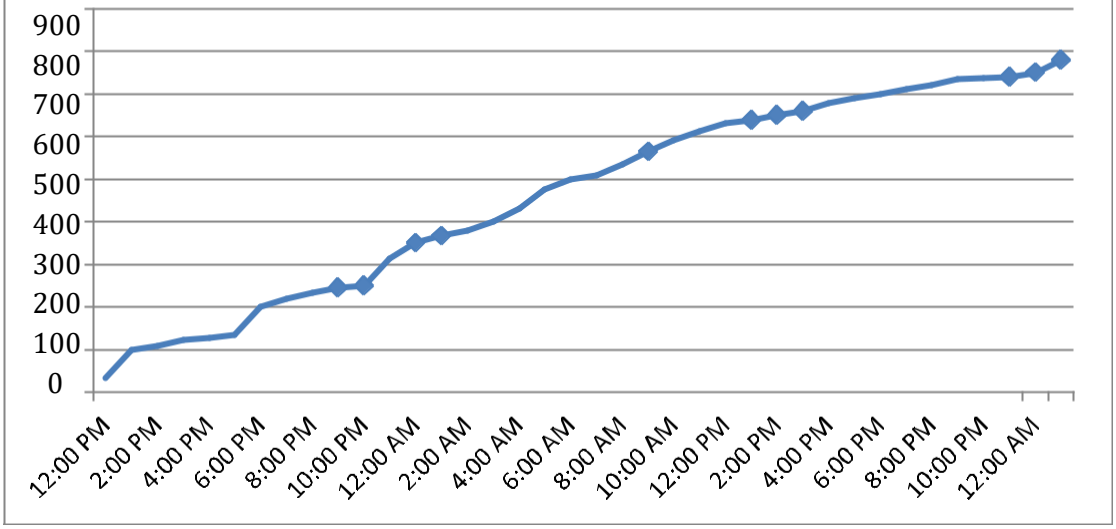
Precautions

1. The bottle was separated into two halves only after the breaking noise and no force was applied to separate the bottle.
2. The upper part of bottle should tap carefully so that bottle should not crack.
3. The *Shadguna balijarita Rasa Sindura* was weighed and powdered in porclien mortar and procured in airtight container.

Results

1. Time taken for preparation: 38 hrs.
2. Weight of *Kajjali* taken: 200gms.
3. Weight of *Shadguna Rasasindura* obtained: 95gms.
4. Weight of residue obtained: 11gms.

Graph Showing Time and Temperature During *Shadguna Rasasindura* Preparation



DISCUSSION

Discussion on *Parad Shodhana*

Parada Shodhan was done in three different steps. In first step as per reference R.T 5/36-37 *Samanya Shodhan* was done with *Sudha Churna* and after extracting back *Parad* it was subjected to *Mardana* with *Nishtusha lashuna* and *Saindhwa lavana*.[24] Due to presence of *Ksariya Dravyas* having highly alkaline properties in *Sudha* (Lime powder) it may absorb alkaline soluble impurities along with trace elements present in *Parada*. During trituration of *Parada* along with *Lavana* and *Nistushalasuna* some watery and oily secretions are seen in them mixture. *Lavana* having *Tikshna, Agneya, Lekhnya* properties, dissociates the molecules of *Parada* and absorbs watery and oily soluble impurities and their by purifies *Parada*. As *Parada* processed was not from *Hingula* hence it was subjected to *Patana* to make it free from *Yougika doshas*. The *Patita Parad* is considered to be devoid of *Naga*, *Vanga dosha* and is an ideal way to remove adulterants from *Parad*.

Discussion on *Gandhaka Shodhana*

Gandhaka Shodhana was carried out by using milk as *Shodhana* media. Other medias like *Bringaraja*, *Nimbu, Ardrakas swarasa, Palandu swarasa* and *Karanjataila*, are also mentioned. These can be used depending upon the disease conditions. But *Godugdha* is said to be best media because it's *Sheetaguna, Madhurarasa, Sheeta veerya* combat with the *Ushnaguna, Katu rasa, Ushna veerya* of *Gandhaka*, making it bio-compatible.

In this temperature reach upto 160^{0}C, but the *Gandhaka* melts at 115.26^{0}C.

When *Gandhaka* melts it passes through the pores of cloth and falls in milk. In this process rhombic form of sulfur might have converted to monoclinic sulfur, because monoclinic sulfur is formed when rhombic sulfur solidifies at the melting point.

In this procedure physical impurities like sand, mud are removed by filtration and chemical impurities like Arsenic are removed by adsorbing over to colloidal fatty globules of milk.

Discussion on preparation of *Kajjali*

1. *Samaguna Kajjali* was prepared in 72 hrs where as *Shadguna Kajjali* was prepared in 120 hrs.
2. There was more loss (60 gm) in *Shaguna Kajjali* as compared to *Samaguna Kajjali* (35 gm), because volume of *Shadguna Kajjali* was more compared to *Samaguna Kajjali*.
3. The color of *Samaguna Kajjali* was dark black while the color of *Shadgna Kajjali* was dull black. This indicates more amount of sulfur was in free state in *Shadguna Kajjali* compared to *Samaguna Kajjali*.

Preparation of *Kupi*

1. Green coloured bottle was selected as it can resist heat and ultraviolet radiation transmittance which prevents inside material from untoward effects.
2. Seven coating of mud smeared cloth was done as it prevents breakage of bottle. If proper coating was done then product does not leak out even though bottle melts at high temperature.
3. Only ¼th part of *Kupi* is to be filled with *Kajjali* as by large quantities there may be overflow of boiling *Kajjali* from the *Kupi*.

Preparation of *Valukayantra*

1. Two *Abhraka Pathras* of the size of 4-5 cm with thickness of 0.5cm were placed over the central hole of *Valuka Yantra* which acts as heat resistant and helps steady rise of temperature, over this sand was spread upto 2 finger thickness. Pyrometer was placed in such a way that its tip should be at the level of bottom of the bottle. Remaining portion of *Valukayantra* was filled with the sand.
2. Maintaining continuous steady rise in temperature is bit difficult in classical *Bhatti*, where in woods are used as fuel. In such cases *Valuka* plays important role in maintaining steady rise of temperature around the *Kupi*, so that *Kupi* remains unaffected by the fluctuation of temperature.

Theories behind *Kupipakwa Rasayanas*

Trituration of elemental mercury and elemental sulfur forms black mercuric sulphide. Whereas reaction between mercury vapor (which is mono atomic in nature) and sulfur evaporate at higher temperature yields red mercuric sulphide. Viscosity of sulfur and even thermal expansion of mercury plays the key role in preparation of *Kupipakwarasayanas*. In *Kupipakwarasayanas* mercury does not vaporize even at temperatures more than its boiling point. This is due to high viscosity of the sulfur, as highly viscous sulfur contains long entangled polymeric chains with more than 500,000 to 800,000 sulfur atoms per chain.

Time duration mentioned as per texts for the preparation of *Samaguna balijarita Rasasindhoora* is 20 hours, but exact duration is not mentioned for *Shadguna balijarita Rasasindhoora* but told to continue till complete *Gandhakajarana* takes place. It is also mentioned that 6 hrs, 12 hrs, 24 hrs are required for preparation of *Ardhaguna, Samaguna, Dwigunabalijarita Rasasindhura* respectively. On this background we planned to prepare *Shadguna balijarita Rasasindhura* in 38 hrs. Even though it was a comparative study, these two preparations were carried out for different time durations, so that impact of long period temperature on end product can be ruled out.

CONCLUSION

1. Preparation of *Samagunabalijarita Rasasindur* was easier and yield was also more compared to *Shadgunabalijarita Rasasindur*.
2. From the pharmaceutical point of view, there was much difference between *Samaguna* and *Shadgunabalijarita Rasasindur*. Difference was there in the ratio of ingredients, total duration of heat and quantity of yield. In case of *Samagunabalijarita Rasasindur*, duration of *Paka* was less but the yield was more. In case of *Shadgunabalijarita Rasasindur* duration of heat was more but yield was less.

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Photographs

Pharmaceutical Preparation of *Samaguna* and *Shadaguna Balijarita Rasa Sindura*

Fig 1: ***Parad***

Fig 2: ***Sudhachuran***

Fig 3: ***Parad Shodhan***

Fig 4 : ***Haridra***

Fig 5: ***Urdhwapatanayantra***

Fig 6: ***Kumariswarasa***

Fig 7: ***Gandhak***

Fig 8: ***Shodit Gandhak***

Fig 9: ***Kupi***

Fig 10: Cork

Fig 11: ***Paradshodhan***

Fig 13: ***Valuka Yantra***

Fig 14: Yellow Fumes

Fig 15: Yellow Flame

Fig 16: Melting of *Kajjali*

Fig 17: Blue Flame

Fig 18: *Suryaudayal*

Fig 19: Copper Test

Fig 20: Corked *Kupi*

Fig 21: *Bhatti*

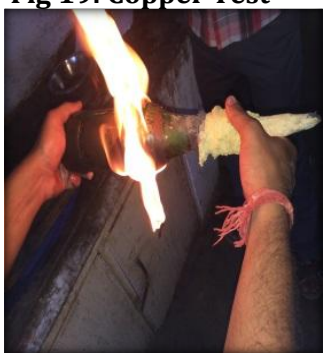

Fig 22: Breaking of *Kupi*

Fig 23: *Samaguna* RS

Fig 24: Flakes of RS

Fig 25: *Shadguna* RS

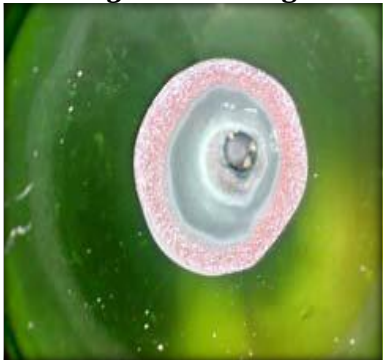

Fig 26: *Rasa sindur* at neck

Fig 27: Residue at bottom