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PHARMACEUTICAL STUDY OF *RASASINDOOR* IN ELECTRICAL MUFFLE FURNACE

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ABSTRACT

Kupipakwa rasayana is a unique & largely evolved pharmaceutical medication of the four *murchita parada yogas*. *Rasasindoora* is a *sagandha* (with sulphur), *sagni* (Processing with heat) *Kantastha* (Near of the bottle) *murchita parada yoga*, which has mercury *(Parada)*, Sulphur *(gandhaka)* constituents. It is indicated in improve immunity, improve strength in cardiac diseases, colicky abdominal pain, urinary tract related diseases and digestive problems. *kupipakwa rasayana* (drug prepared in glass bottle) is one among important medicine introductory styles. **Aim:** To study pharmaceutical preparation of *Rasasindoor* in Electric Muffle furnace. **Material & Methods:** *Parad, Gandhaka* was procured from certified seller. In present study, *Rasasindoor* was prepared as per reference of *Rasatargini*. Pharmaceutical manufacturing of *Rasasindoor* was carried out at Dept of Rasashastra & Bhaishajyakalpana, Shri ayurved Mahavidyalya, Nagpur. **Observation & Results**: Melting of *kajjali* (Black lustreless unpredictable emulsion) was observed at 400℃. Maximum temperature needed for product was 600℃. Final yeild of 69 gm was observed in medication of *Rasa sindoor*. **Conclusion:** *Rasasindoor* is *Sagandha, Bhairdhuma, Kantastha Kupipakwa Rasayana* (Sublimated emulsion formed in glass bottle). It can be prepared in 12 hrs following classical guidelines.

KEYWORDS: *Rasasindoor, Kupipakwa, Kanthastha, Mercury, Sulphur,* VEMF, *Valukayantra.*

INTRODUCTION

Kupipakwa Rasayana is most famous, unique, significant pharmaceutical preparation. *Kupipakwa* r*asayana* is consist of four words *Kupi*-glass bottle, *Pakwa*- heating, *Rasa-Parad*, *Aayana-Sthana(*Place) formulations prepared in *Kachkupi* are called as *Kupipakwa Rasayana* & also known as *Sindhurs kalpana*. As their final product is red in colour. *Sri Harisharananda* has mentioned 256 different *kupipakwa Rasayana* in *kupipakwa rasayan*. *Kupipakwa rasayana* is firstly described in *Rasaprakash Sudhakara*. According to *Rasendra chintamani*, there is specific heating pattern for *kupipakwa rasayana* named as *Kramagni paka* i.e increasing manner of heat. (*Mruduagn*i - mild heat, *Madhyamgni* - moderate heat, *Tivaragni*-high heat). for specified time. Some modifications are done in routine practice now a days. These preparations are done in specially designed device called *valukayantra*. Medicine prepared in 7 layered & smeared glass bottle, by applying heat through *valukayantra* or vertical electric muffle furnace are known as *kupipakwa rasayana.*[6]

MATERIALS AND METHODS

Pharmaceutical Preparation

Sodhan of Parad

200gm *Ashuddha Parad* was taken in *khalwayantra. Ashuddha parad* was triturated with the freshly prepared *Rasona kalka* which was mentioned above; trituration was done 6hrs daily for consequent 7 days. At the end of seventh day; mixture was turn into blackish colour & parad was completely disintegrated into fine particles. The luke warm water was added to this mixture & it was allowed to stand still for sometime to settle down the *parad*. Luke warm water was removed from *khalvyantra* without disturbing the settled *Parad. Shuddha Parad* was collected & stored in air tight glass container.

Sodhan of Gandhaka

200gm *Ashuddha Godugdha* was taken in wide mouthed, stainless steel vessel which was covered & heat on slow fire. Powedered *Ashuddha Gandhaka* was added to melted *goghrita* & continued heating was done until gandhaka got melted. Melted *gandhaka* was carefully poured into the vessel containing milk covered with cloth. Soon after pouring, the molten *Gandhaka* was filtered through the cloth & deposited at the bottom of vessel. This deposited

Gandhaka was washed with lukewarm water until adherant *Goghrita* & *Godugdha* were washed out.

Preparation of *Kajjali*

Kajjali (Fine black lustreless powder) was prepared by adding 100gm *Parada* (mercury) & 100 gm *Gandhaka* (Sulphur) was added, this mixture was triturated till *Nischandra kajjali*[4] *Vatankur swaras* **3** *bhavana* was given to *kajjali*.[6]After *bhavana kajjali* was left for drying in sunlight. Then again trituration was done.

Ingredients of *Rasa sindoora* with their ratio

Sr.No	Ingredients	English Name	Prportion	Quantity
1	*Shuddha Parada*[2]	Mercury	1	50gm
2	*Shuddha Gandhaka*[3]	Sulphur	1	50 gm

Preparation of *Rasasindoor*

The whole procedure of *Rasasindoor* was divided under 3 headings as follows:

***Purva Karma* (Preliminary procedure)**

kajjali was filled inside a *kachakup*i (glass bottle) covered with 7 layers of *kapad mitti* (mud smeared cloth).

***Pradhan Karma* (Main procedure)**

The *Kajjali* (Fine black lustreless) filled in *kachakuppi* (Glass bottle) kept in the Electrical muffle furnace. for first 4hrs *mruduagni* (mild heat) was given i.e temperature maintained between 100℃-250℃. Next 4 hrs heat was gradually raised to *madhyamagni* (moderate heat) stage i.e 250˚- 450˚C. *Tivragni* (Severe heat) was given for 4 hrs i.e temperature maintained 450℃ - 600℃. By this time *Sindoora Siddha Lakshana* (Completion feature) were observed, Corking was done again heat as given 4 hrs for complete sublimation of product. Laterly the outfit was allows for cooling.

***Paschat karma* (Post procedure)[5]**

After complete cooling *Kupi* (Glass Bottle) was removed. *Multanimiti* of *kupi* was scraped with knife. *Kupi* was cleadned by wet cotton cloth to remove *mitti*. Thread dipped in spirit was tied in midddle portion of *kupi* & ignited with fire. After proper ignition of thread few drops of water was sprinkled on thread. The *kupi* was broken into 2 equal halves & *Sindoora* collected at Neck region was removed & stored.

Equipments - Weighing balance, VEMF, Iron rod, Cotton cloth, *Kachakupi*, torch.

Circumference specifications of *kach kupi*

Bottle	**Before *Kapadmitti***	**After 7 layers of *kapadmitti***
Height	28 cm	28.5cm
Mouth	9 cm	15 cm
Neck	14 cm	18cm
Bottom	24.5 cm	27 cm
Weight	420 gm	540 gm

Organoleptic characteristics of Raw materials & *kajjali*

Ingredients	Colour	Odour	Touch
Suddha Parad	**Silvery**	**Characteristic**	**Smooth**
Suddha Gandhaka	**Light yellow**	**Characteristic**	**Slight rough**

DISSCUSION AND RESULTS

Observations recorded during the preparation in different time interval are depicted in table 1.

Time in hrs	**Temp**	**Observations**
0	29℃	*Kupi* started
1	120℃	Light white fumes started
1:30	200℃	*Tapta shalka sanchalan*, fumes increased.
2	214℃	Light yellow fumes
2:30	230℃	Yellow fumes
3	250℃	Dense yellow fumes++
3:30	280℃	After *tapta shalka sanchalan* blue flame observed
4	325˚C	*Kajjali* in semi molten state after inserting *sheeta shalaka*
4:30	350℃	Semimolten state of kajjali++, Blue flames, Dense yellow fumes
5	400℃	Blue flames ++ ,light orange colour fumes, *kajjali* totally melted
5:30	430℃	Dense yellow fumes, Flames+
6	450℃	Slight golden yellow colour compound deposited at neck of bottle
6:30	500℃	Orange gold colour substance deposition ++
7	510℃	Copper coin test positive
7:30	520℃	Greyish yellow colour compound at neck of *kupi*
8	550℃	Orange colour fumes increased
9	560℃	Fumes decreased, neck of bottle completely blocked, Corking done with *multani mitti, Tivragni* started.
12	580℃	EMF Switched off

Temperature pattern followed during formulation is shown in graph 1 Results of *Rasasindoor* is shown

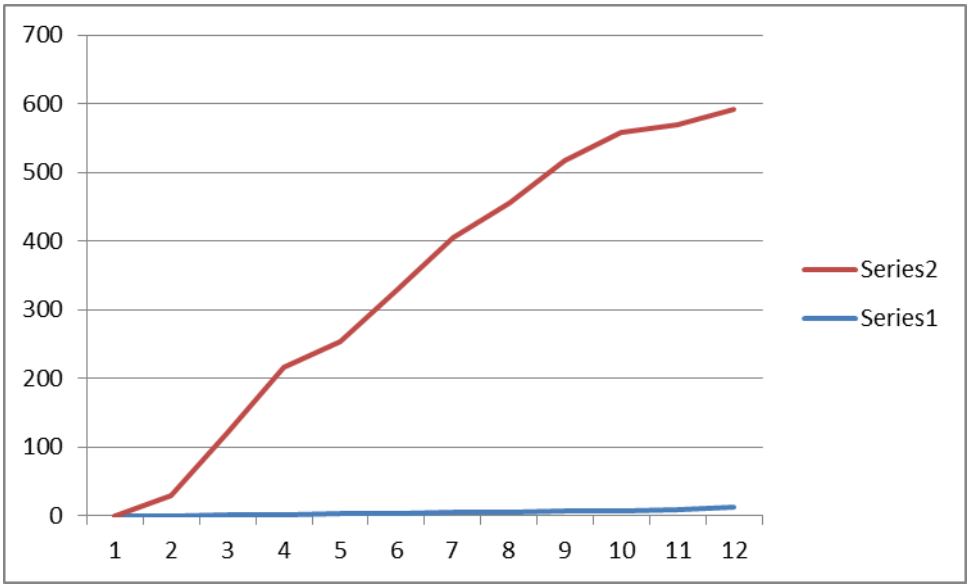

Table 2: Showing result of preparation of *Rasasindoor*.

Kajjali	100gm
Rasasindoor	69gm
***Rasasindoor* residue**	4gm
Loss	27gm
Colour	Vermilion
Time taken	12hrs

CONCLUSION

The Present study was aimed at providing a guidelines to simplify procedure & standard temperature maintainence in preparation of *Rasasindoor*. The study gives a defined sequence of process involved formation of *Rasasindoor*. By which researcher can perform the drug preparation scientifically to obtained expected output. There by we can say *Rasasindoor* has been standardised in terms of time & temp for 100gm *kajjali.*

Mrudu - Room temp to 200℃.

Madhyam - 200 - 450℃

Tivra - 450 - 600℃

Total Yeild: 69 gm

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