

Pharmaceutico-Analytical Study Of Rajat Sindoor: A Conceptual Framework And Empirical Exploration.

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Submitted: 15-02-2023

Accepted: 25-02-2023

ABSTRACT:

Kupipakwa rasayana is a unique and largely evolved pharmaceutical medication of the four murchita parada yogas. Rajat Sindura is sagandha (with sulphur), sagni (processing with heat), kantastha (near the neck of the bottle) murchita parada yoga, which has mercury (parada)^[1], sulphur^[2] (gandhaka) and Silver^[3] (Rajat) as constituents. It's indicated in skin complaint to ameliorate complexion, it laggardly down the aging process and provides good physical strength, medhya, rasayana and hridya, it cures burning sensation in the body due to vitiated pitta dosa, it help in perfecting memory power and body radiance, it is useful in trusna and severe shosa. It's one among the stylish rejuvenators, dose of 25 mg. (1/ 4th to 1 ratti). Preface of Rasashastra has opened new borders for Ayurvedic pharmacology and pharmacotherapeutics. Kupipakwa Kalpana (drug prepared in glass bottle) is one among important medicine introductory styles. Though this system is complex and total, it has an important part in the field of treatment in this Nuclear period. Validity of this branch of wisdom completely depends on the successful completion of the practical aspects.

The present study was executed to establish a point for this unique expression which can be used further for medicine standardization. Objective Preparation of Rajat Sindoor as per classical reference. Accoutrements and styles The Kajjali (fine black lustreless greasepaint) of Rajat Sindoor in Kacha Kupi (glass bottle) was reused with Kramagni tapa (graded heat pattern) in Electrical muffle furnace for 36 hrs.

Observation & Results-Melting of Kajjali (Black lustreless unpredictable emulsion) was observed at around 260 °C. Maximum temperature needed for

product was 650 °C. Final yield of 104 gm was observed in medication of Rajat Sindoor.

Conclusion - Rajat Sindoor is Sagandha, Bahirdhuma, Kantastha Kupipakwa Rasayana^[6](Sublimated emulsion formed in glass bottle). It can be prepared in 36 hours following classical guidelines.

Keywords- Rajat Sindoor, Kupipakwa Rasayana, Parada, Gandhaka, Rajat.

I. INTRODUCTION

In Present study, Rajat sindoor was prepared as per reference of Rasarajsundara.

Parad, Gandhaka, Rajat was carried from authorised dealer. While Rasona, Nimbu were collected from original request. Pharamaceutical manufacturing of Rajat sindoor was carried out at Dept of Rasashastra & Bhaishajyakalpana, Shri ayurved mahavidyalaya, Nagpur.

II. MATERIAL & METHODS

Sodhan of Parad -

100gm 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-

100gm 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.

Sodhan of Rajat -

Ashudha Rajata Patras were taken and kept on gas flame with the help of iron tongs and heated till it became red hot. When Rajata Patras became red hot, they were quenched in 500 ml of Tila Taila which was already kept in S'S" vessel. After self-cooling, Rajata Patras were taken out of the vessel and same process was repeated for 6 more times. The process of heating and quenching was repeated with Takra, Gomutra, Kanji and

Kulattha kwatha in sequential order. Every time fresh and same amount of Shodhana Dravya was taken. Time for red hot stage, weight of Rajata Patra, color and volume of each media was recorded with each step of procedure. After completion of process, Samanya Shodhita Rajata was washed with water and stored in a container.

Vishesh Sodhan of Rajat

INGREDIENTS

1. Samanya Shodhita Rajata – 100 gm
2. Nimbu Swarasa – 3.5 l
3. Luke warm water – Q.S.

EQUIPMENTS

Long Handled Iron Ladle, Stainless Steel Vessels, Iron rod, Weighing Machine, L.P.G. Stove, Spatula Rajata took approx. 15 sec to turn into red hot.

Hissing sound was observed on quenching in Nimbu Swarasa.

Rajata became dull white in color and completely lusterless.

Brittleness of Rajata Patra was increased and its particle size was reduced.

Ingredients of Rajat sindoora with their Ratios

Sr No.	Ingredients	English name	Proportion
1.	Suddha Parad ^[1]	Mercury	2
2.	Suddha Gandhaka ^[2]	Sulphur	2
3.	Suddha Rajat ^[3]	Silver	1

Preparation of Rajat Sindoora

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

Purva karma (preliminary procedures)

Kajjali (fine blacklustreless powder) was prepared by adding Rajat Patra (Silver) 1part, Parada (mercury) and Gandhaka (sulphur) 2- 2 parts. Initially Rajat Pisti ^[11]was made then Gandhaka (sulphur) was added, this mixture was triturated till Nischandra Kajjali^[12]. This was filled inside a Kachakupi (glass bottle) covered with 7 layers of Kapad mitti (mud smeared cloth).

Pradhana Karma^[4] (main procedure)

The Kajjali (fine black lustreless grease paint) filled in Kacha Kupi (glass bottle) kept in the Electrical muffle furnace. Temp (graded heat pattern) was maintained according to classical reference. For the 1-13 hours Mruduagni (mild

heat) was given i.e. temperature maintained between 100°C – 250°C. Next 15 hours heat was gradationally raised to Madhyamagni(moderate heat) stage i.e. 250°C-450°C. Tivragni (severe heat) was given for 6 hours i.e., temperature maintained between 450°C-650 °C and over. By this time Sindoora Siddha Lakshana (completion features) were observed, corking was done again heat was given for 7 hours for complete sublimation of product. Latterly the outfit was allowed for tone-cooling^[10].

Kupipakwa rasayan are considered to be hard to prepare for its preparation of Kajjali & heating pattern are most important factors to obtain desired outcome & to increase efficacy of the product without any untoward effects. Kramagni means heating temperature gradation should be followed during process of any kupipakwa rasayan as mentioned in classical texts. It means temperature pattern should be increasing order but

intermediate heating process. It was divided into three stages.

Mruduagni- Melting stage of kajjali

Madhyamgni- Boiling stage of kajjali

Tirvagni- immense heat to ensure yield of final product.

Paschat karma (post procedure)

After complete cooling Kupa (glass bottle) was removed. The bottle was broken into 2 equal halves and Sindoor collected at neck region was removed and stored .

Observations during preparation of Kajjali:

- Firstly Suddha Rajat^[7] was mixed with Suddha Parad trituration was done forcefully.
- Pishti formed of Suddha Rajat & Suddha Parad, slightly blackish colour of Pishti with shiny appearance & trituration continued.
- Colour of pishti changes to dark black colour.
- Suddha Gandhak was weighed , powdered & mixed well with pishti & trituration done slight brown colour kajjali formed.^[8]
- Trituration was continued till kajjali turned to black, smooth ,fine texture.^[12]
- Vata ankur swarsa bhavana was given to kajjali.

Equipments- Weighing balance, VEMF, iron rod, cotton cloth, Kanchkupa,torch.

Circumference specifications of kacha kupi :

Bottle	Before kapadmiti	After 7 layers of kapadmiti
Height	28 cm	28.5cm
Mouth	9 cm	15cm
Neck	14cm	18cm
Bottom	24.5cm	27cm
Weight	410gm	540gm

Organoleptic characteristics of Raw materials & Kajjali:

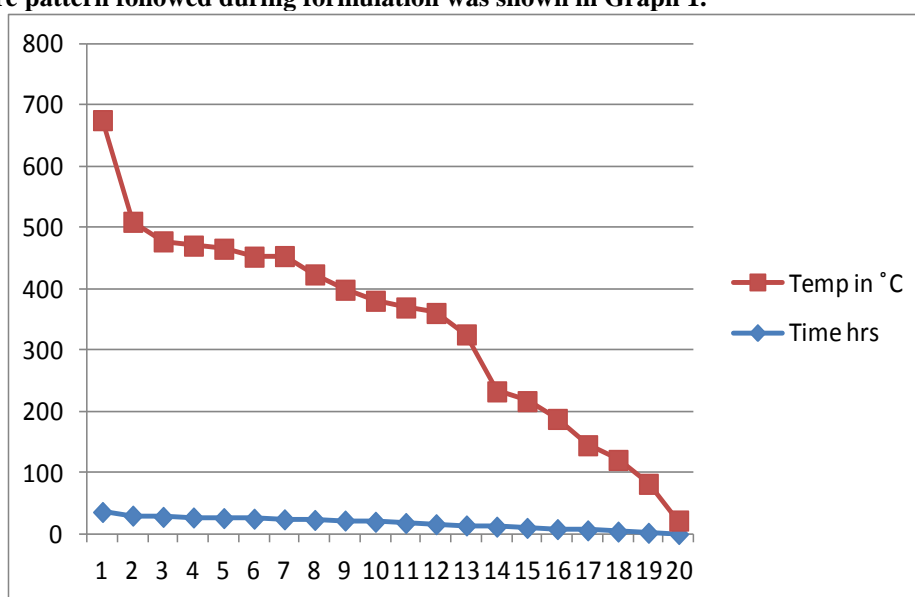
Ingredients	Colour	Odour	Touch
Suddha Parad	Silvery	Characteristic	Smooth
Suddha Gandhaka	light yellow	Characteristic	Slight rough
Suddha Rajat	white	Characteristic	Smooth

Table 1. Observations during different stages of Rajat Sindoor preparation

Time in hrs	Temp In °C	Observation
0	22	Kupa started.
1	50	No fumes inside kupa, bottom of Kupa can be seen clearly with torch.
2	80	Slight white fumes were seen inside kupa
4	117	Thick dense whitish fumes inside the kupa.
6	139	The fumes became dense, can't see the bottom of kupa with torch.
7	149	Still dense whitish fumes found inside Kupa.
8	180	Slight yellow fumes observed.
10	207	After Tapta shalaka sanchalan Blue flame seen.
11	221	Sheeta shalaka was inserted, Kajjali was slight sticky.Dense yellow fumes.
15	312	Dense yellow fumes observed. Bottom of kupa not visible.

17	345	Kajjali melting ++
18	352	Dense Gandhaka fumes found. Bottom cannot be seen with torch.
20	361	White yellow fumes
22	377	Density of yellow fumes reduced gradually.
23	401	Sheeta shalaka inserted – Kajjali started boiling, Kajjali melted completely.
24	430	Hot shalaka was inserted to clear the block. Bluish flames after tapta shalaka Whitish fumes observed with Sulphur. smell.
25	428	Hot shalaka was inserted 8 more times to clear the block. Bluish flame of ½ feet height at the mouth of kupi was present. Block was cleared off.
26	440	Yellowish fumes reduced. Deposition seen at Neck.
27	444	Hot shalaka was inserted 7 times. Bluish yellow flame of ½ ft height at the neck of kupi observed. Dancing of Mercury was observed.
28	450	Hot shalaka was inserted 3 more times to clear the block. Flame was 1 inch height out of Kupi.
29	450	Copper coin test was done. It was positive, i.e copper coin was kept over mouth of the bottle, the surface of the coin turned into greyish white in colour. No flames observed. Corking was done with the help of multani mitti.
30	480	Tivragni was started.
35	640	Heating continued till the duration of Tivragni.
36	650	EMF was Switched off. Kupi left for Swangasheeta

Temperature pattern followed during formulation was shown in Graph 1.



Temperature pattern for Rajat sindoora

Rajatsindoora pharmaceutical Preparation images



Rajat



Kajjali preparation



Kupibharan



Corking was done



Kupi after swangashita



Kupibhedan



Kanthastha



Rajatsindoora



Rajat residue

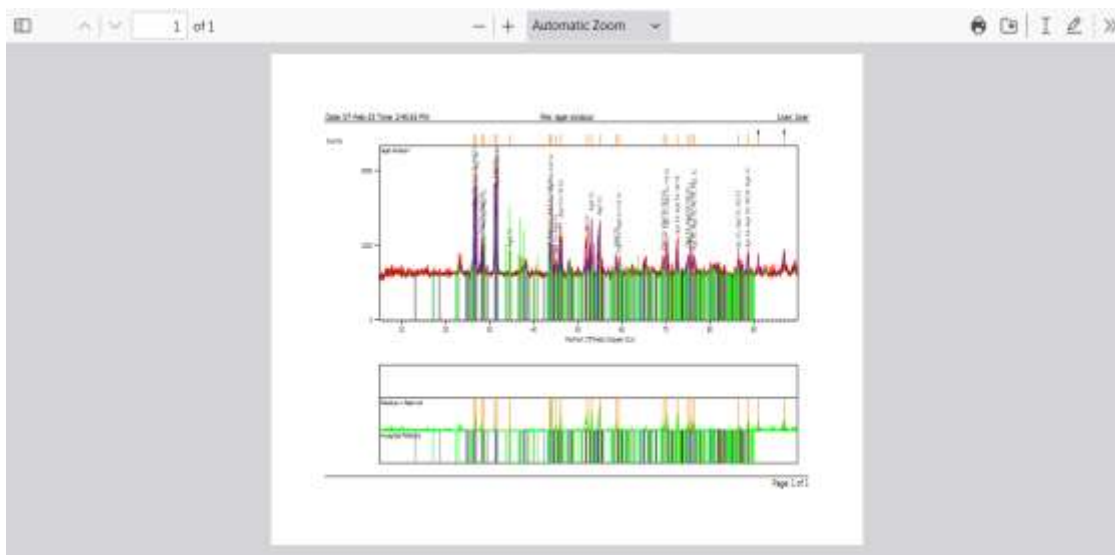
Table 2. Showing result of preparation of Rajat Sindoora

Rajat kajjali	200gms
Rajat sindoor	104gms
Rajat sindoor residue	53gms
Loss	43gms
Yield	21.5%
Colour	Vermilion
Time taken	36hrs

XRD analysis of Rajatsindoora

Main composition-Hg₁S₁

Mineral Name - Cinnabar



III. CONCLUSION:

The Present study was aimed at providing a guidelines to simplify procedure & standard temperature maintainence in preparation of Rajat Sindoora . The study gives a defined sequence of process involved formation of Rajat Sindoora, by which researcher can perform the drug preparation scientifically to obtained expected output. There by we can say Rajatsindoora has been standardised in terms of time & temp for 200gm kajjali.

Mrudu - Room temp to 200 °C.

Madhyam - 200 - 450 °C

Tivra - 450 - 650 °C

Total Yeild - 104 gm

Acknowledgement:

I acknowledge Shri Ayurved Mahavidyalya , Nagpur & personnels of department who helped me in preparing Rajatsindoora . I also acknowledge my guide Dr.Vinod Ramteke & HOD Dr.Raman Belge sir who always guided me in my carrier.

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