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Research Article

COMPARATIVE STUDY OF SAMAGANDHA RASASINDOORA (RED MERCURIC SULPHIDE) AND HINGULIYA RASASINDOORA

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ABSTRACT

Rasashastra has an unique importance in the field of Ayurveda. It basically deals with the pharmaceutics and therapeutics of drugs of mineral and metallic origin. Kupipakwa Rasayana is commonly used and most potent formulation. Rasasindoora is the drug of choice in many ailments and is commonly used by Rasavaidyas. While reviewing Rasa classics different formulations of Rasasindoora preparation is found with slight differences in ingredients, manufacturing procedures etc. In this study Rasasindoora has been prepared by following two different references of Rasatarangini one is Samagandha Rasasinoora Nirman(SGR)[1] and other is Hinguliya Rasaindoora Nirman.(HGR)[2] The preparatory procedure of both the formulations have been compared to find the differences. Moreover to assess the quality of prepared medicines both the samples were subjected to same Ayurvedic as well as Modern Parameters and results obtained were evaluated to find out disparity. The pharmaceutical procedures of Hinguliya Rasasindoora requires less time duration and manpower than Samaguna Rasasindoora. The Organoleptic characters and values of Physicochemical analysis of both samples are found almost identical.

Key words: *Kupipakwa Rasayana, Samagandha Rasasindoora, Hinguliya Rasasindoora, Ayurvedic.*

INTRODUCTION

Rasashastra mainly deals with the pharmaceutics and therapeutics of medicines prepared from parada. Many medicines developed from the rich treasury of Rasashastra have saved human being from dreadful diseases. Rasaushadhis (medicines prepared from parada) can be used irrespective of the examination of Doshas, Rogas, patients, *Desha* and *Kala*.[3]

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The characteristics such as Small drug dose, quick action, palatability, long lasting results made Rasaushadhis popular[4].Among them Kupipakva Rasayana holds its supremacy. Rasayana prepared from Parada and other compounds in glass bottle by applying heat is termed as *Kupipakva Rasayana*. *Rasasindoora,Sameerpanaga,Suvarnavanga* are commonly used *Kupipakva Rasayana*.

Rasasindoora is the drug of choice in many ailments and is commonly used by Rasavaidyas. Rasataranginikar has proposed two different formulations of Rasasindoora. One is *Hinguliya Rasasindoora[2]* and other is *Samagandha Rasasindoora.[1]* He further suggest that the method and properties of *Hinguliya Rasasindoora* are as same as *Samagandha Rasasindoora*.[5]

In Present study *Rasasindoora* has been prepared according to above mentioned references by adopting the same pharmaceutical procedures. The end products obtained were assessed by same ayurvedic parameters and modern parameters. The result obtained were compared and studied for any divergence. This study will definitely prove to be helpful in standardization of Rasasindoora and it also helps in reestablishing the importance of somewhat neglected formulation *Hinguliya Rasasindoora.*

AIM

To Compare the pharmaceutical and analytical findings of *Samagandha Rasasindoora* and *Hinguliya Rasasindoora*

OBJECTIVES

- Preparation of *Samagandha Kajjali Rasasindoora* as per selected reference of *Rasatarangini.*
- Preparation of *Hinguliya Rasasindoora* as per selected reference of *Rasatarangini.*
- Comparison physicochemical properties of *Samagandha Kajjali Rasasindoora* and *Hinguliya Rasasindoora*.
- To study the time, expenditure, manpower required during both formulations.

MATERIAL AND METHOD:

In present study, *Rasasindoora* has been prepared by *Bahirdhum Vidhi* th
The pharmaceutical study is divided into three steps-

- *Purva Karma*
- *Pradhan Karma*
- *Pashchat Karma*

***Purva Karma*:**

For Samagandha Rasasindoora

- Purification of Mercury: Garlic juice of sufficient quantity was triturated with mercury was grinded till the mixture turns completely black. The blackened garlic juice was removed and fresh garlic juice was poured to continue grinding. Same cycle was repeated for 7 days. The grinded Parada was then washed with hot water and filtered through clean white muslin cloth. Thus purified Mercury was obtained[6]
- Purification of Gandhaka**:** Gandhaka powder and Goghruta in equal quantity were taken in stainless steel container and subjected to low flame heat.As soon as gandhaka starts melted the mixture was poured in the container containing milk. Gandhaka solidified at the bottom of container forming a solid hard cake. The cake was then washed with hot water and grounded to form powder. The Same procedure is repeated for 2 more times.**[7]**
- Preparation of *Kajjali***:** Equal quantity of purified Mercury and equal quantity of purified Sulphur is triturated in *Khalwayantra* until the fine black lusterless powder is obtained.
- *Bhavana* of *Vatankura Swarasa:* Sufficient quantity of Vatankurswarasa (Juice of leaf buds of *Ficus benghalensis*) was added in the Kajjali and it was triturated until all swarasa got dried. In all, three Bhavanas were given.[8]

For *Hinguliya Rasasindoora*

- Purification of Hingula**:** Hingula is purified by triturating it with nimbu swarasa (Juice of *Citrus Acida)* for 7 times and then it was washed with water for 3 times.[9]
- Preparation of *Hingula Gandhaka* mixture for *Hinguliya Rasasindoora***:** Equal part of purified *Hingula* and *Gandhaka* triturated together in *Khalvayantra* until fine powder is obtained.[9]

***Pradhan Karma*:**

Preparation of Samagandha Rasasindoora (SGR):

Prepared *Kajjali* was taken in kachakupi. This *kachakupi* was then put in *Valukayantra* and was subjected to Kramagni (Specific Heating Pattern) i.e. Mrudu Agni (Mild heat), Madhyama Agni (Moderate heat), Tivra Agni (Intense Heat). Mrudu Agni was maintained

for 6 hours (Room temp. to 230°C. Madhyama Agni was continued till proper paka lakshanas i.e. Red hot bottom picture, Absence of white spot at copper plate and absence of sulphur like smell when cold iron rod was inserted in kupi and smelled.(230^0 Cto 450^{0}c). After applying above mentioned confirmatory tests *kachakupi* was sealed and then subjected to Tivra Agni for 6 hours.(450^{0}C to 750^{0}c). Valukayantra was allowed to cool of its own.Then kupi was broken and reddish colored product *Samagandha Rasasindoora* (SGR) was separated and stored in air tight glass container.

Preparation of Hinguliya Rasasindoora (HGR)

In this formulation kajjali prepared from purified *Hingula* and *Gandhaka* was taken. The above mentioned procedure of preparation of *Samagandha Rasasindoora* was repeated and reddish coloured *Hinguliya Rasasindoora* was obtained and stored in air tight glass container.

Pashchat Karma

After collection of both the products they were subjected for same Subjective Parameters (Ayurvedic Parameters) and Objective Parameters (Modern Parameters). The results found were summarized as follows.

OBSERVATIONS AND RESULTS

Observations and Results of Assesment of Rasasindoora

Table I *Subjective Parameters (Ayurvedic Parameters)*

Tests	SGR	HGR
Varna Pariksha	*Sindoor Varneeya*	*Sindoor Varneeya*
Gandha Pariksha	Odourless	Odourless
Sparsh Pariksha	Soft	Soft
Shabda Pariksha	Create sound on breaking	Create sound on breaking
Rasa Pariksha	Tasteless	Tasteless
Rekhapoornatva	Positive	Positive
Nishchandratva	Positive	Positive
Rekha Pariksha	Positive	Positive

SGR -*Samagandha Kajjali Rasasindoora.* **HGR**-*Hinguliya Rasasindoora.*

To assess the compositional and structural aspects of the prepared medicine, physicochemical analysis (objective parameters) of both samples were carried out. It includes –

Objective Parameters

Table- II Physicochemical Tests

Sr. No.	Tests	SGR % W/w			HGR		
		A	B	C	A	B	C
1	Total ash	0.13	0.15	0.10	0.19	0.19	0.17
2	Acid Insoluble ash	0.07	0.053	0.01	0.11	0.062	0.07
3	Acid soluble ash	0.06	0.098	0.09	0.08	0.13	0.10
4	Water insoluble ash	0.11	0.11	0.06	0.14	0.12	0.13
5	Water insoluble ash	0.02	0.04	0.04	0.05	0.07	0.04

Table-III ***Atomic Absorption Spectroscopy***

		Mercury% W/w	Gandhaka% W/w
SGR	A	82.84	13.68
	B	86.00	12.60
	C	85.29	12.74
HGR	A	83.68	13.93
	B	85.50	12.64
	C	85.17	12.63

Table- IV ***Average Values Analytical Tests***

Sr.no.	Test name	SGR	HGR
1.	Total Ash	0.1267	0.1834
2.	Acid insoluble Ash	0.0444	0.0807
3.	Acid soluble Ash	0.0827	0.0644
4.	Water insoluble Ash	0.0934	0.13
5.	Water soluble Ash	0.0334	0.0534
6.	Mercury %	84.71	84.78
7.	Gandhaka %	13.0067	13.0067

XRD: -

X-Ray Diffraction studies help to detect the physical as well as chemical structures. The high peaks indicate presence of sharp crystal structures. Both samples are mono phasic and contain Mercuric sulphide HgS (PDF # 06 – 0256, Hexagonal system). The analysis showed that peak positions of XRD studies reveal the similar physical as well as chemical structure of all samples. All samples contain < 0.1% Al, Ca, Mg Na and < 0.01% Fe, Mn, Si and < 0.001% Ag, Cu, Pb.

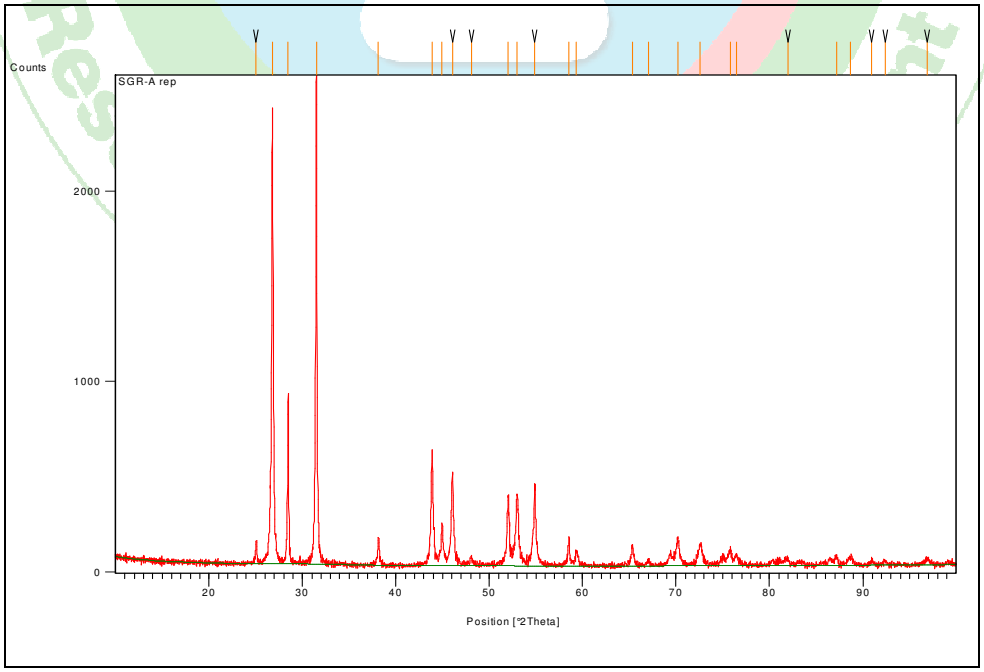

Figure 1.XRD Graph Of Samgandha Rasasindoora

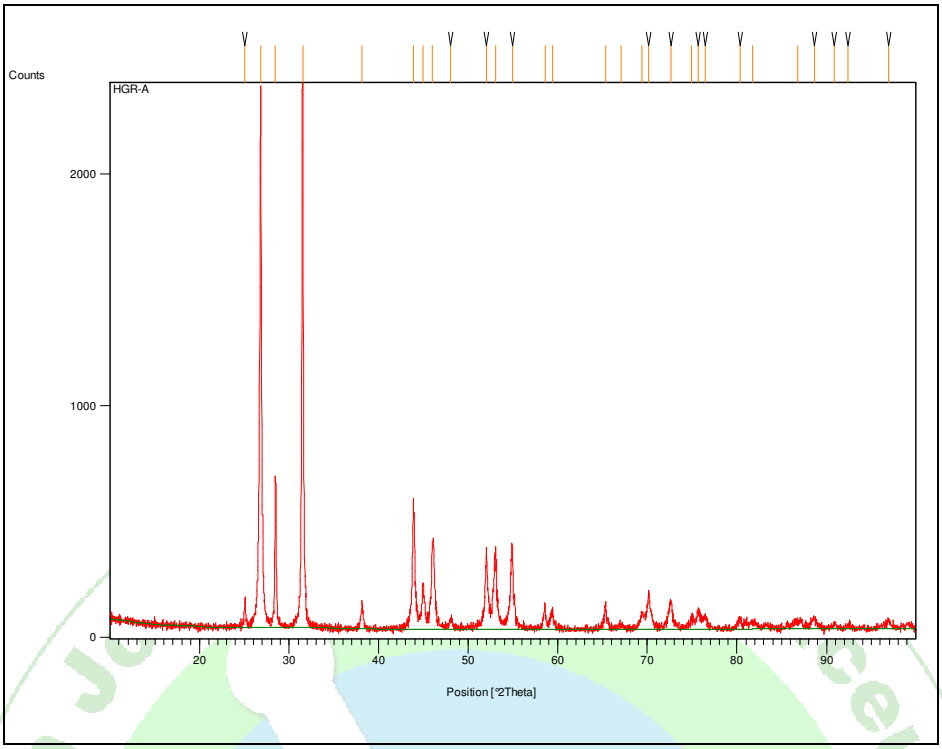

Figure 2.XRD Graph of Hinguliya Rasasindoora

DISCUSSION

The present study was aimed at comparing pharmaceutical and analytical findings of Samgandha Rasasindoora and Hinguliya Rasasindoora. The differences in pharmaceutical procedures of both formulations have been discussed as follows

***Samagandha Rasasindoora*: -**

- Purification of Mercury takes near about 7 days.
- Daily 5-6 hrs of trituration in juice of alium sativum
- While triturating one can suffer with problems like irritation of eyes, lacrimation of eyes due to juice of Alium Sativum
- In purification of mercury with juice of alium Sativum, mercury is lost during different procedures like trituration, filtration, etc.
- In this process preparation of kajjali requires 7 days continuous trituration which is more time consuming
- Moreover levigation of kajjali with juice of ficus bengalancis consumes more manpower and time duration.
- Total procedure for *Purvakarma* of *Samagandha Kajjali Rasasindoora* require more time, extra manpower.

***Hinguliya Rasasindoora*: -**

- In this method *Hingula Shodhana* is done with *Nimbu Swarasa*, which requires continuous trituration for 4 days.
- Preparation of kajjali from Hingul and Gandhak mixture requires continuous trituration for 2-3 days.
- It requires less manpower and efforts during *Purva Karma* as compare to *Purva Karma* of *Samagandha Kajjali Rasasindoora*.

In both formulations Pradhan Karma and Pashchat Karma requires almost similar time duration. The disparity of time is in *Purva Karma* as *Purva Karma* for *Hinguliya Rasasindoora* requires much less time as compared to the *Purva karma* of *Samagandha Kajjali Rasasindoora*. The differences are summarized in following table

Table – V ***Differences in Preparatory Procedure of SGR & HGR***

SGR	HGR
Time:- 20 days	Time:- 10 days
More Manpower	Less manpower
More efforts	Less efforts
Costly	Cost effective as compared to SGR

The analytical studies involving Subjective parameters and Objective parameters discussed in observation and results are almost identical of both types of *Rasasindoora* after comparing are same.

CONCLUSION

- The pharmaceutical procedures of Hinguliya Rasasindoora requires less time duration and manpower than Samaguna Rasasindoora which in turn make HGR cost effective than Samaguna Rasasindoora .
- The Organoleptic characters and values of Physicochemical analysis of both samples are found almost identical. In the time comparison, *Hinguliya Rasasindoora* requires less time for its preparation as compare to *Samagandha Rasasindoora*.
- *Hinguliya Rasasindoora* requires less efforts, less manpower, less expenditure as compared to the *Samagandha Rasasindoora*

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