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Review article

"Standard Operating Procedure (SOP) of *Kasakuthar Rasa*: Classical Ayurvedic Herbo-Mineral Formulation"

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ABSTRACT:
In the wake of the present surge of increased global, curiosity regarding safety and efficacy of various metallic and mineral preparations in *Rasashastra*, there is an imminent need to pay attention to the establishment of standard operating procedure (SOP). In this section of the study all the processes adapted for the preparation of *Kasakuthar Rasa* are well elaborated with explicit detail of quantity, duration, heating pattern, material & methods together with timely observed and recorded values. *Kasakuthar Rasa* was prepared in the department & all contents present were analysed in *Rasa Aushadhi* for the establishment of drug for the benefit of society and mankind.

KEY WORDS: *Kasakuthar Rasa,* Kharaliya, *Rasaushadhi*

INTRODUCTION:
The *Rasaausadhis* are the back bone of the Ayurvedic therapeutics. It is chiefly based on metals and minerals, small doses, tastelessness, quick action, effectiveness, *Rasayana* property make *Rasaausadhis* more popular and superior over the other medicines and this attract the attention of patients as well as pharmaceutical manufacturers.

Kasakuthar Rasa is a *Rasaushadhi* used for cough. Classical compendia *Bhaishajya ratnavali* describe its composition and indication under *Kasa* chikitsa section.This manuscript provides a practical SOP synthesized from classical prescriptions and contemporary analytical practice.

In *rassashastra, Rasakalpa* are mainly classified on the basis of *samskara* given:-

1) Kharaliya/khalviya
2) Parapati
3) Pottali
4) Kupipakwa

Out of these *Kasakuthar Rasa* is a *Kharliya rasayan.*

OBJECTIVES

1. To specify authenticated raw materials and classical reference for *Kasakuthar Rasa*.
2. To describe step-by-step *Shodhana* for mineral/ metal inputs.
3. To define organoleptic quality parameters.

MATERIALS AND METHODOLOGY:

MATERIALS -

A. Major Raw Drugs

i. Hingula
ii. Gandhaka
iii. Tankana
iv. Shunthi
v. Marich
vi. Pippali

B. Associated Raw Drugs

I. For *Hingul shodhana – Ardraka*
II. For *Gandhaka shodhana – Bhringraj , Goghruta*

Table No. 01. Showing list of ingredients of *Kasakuthar Rasa*[1]

Ingredient	Botanical name	Quantity
Shuddha Hingula	Cinnabar	1 part
Shuddha Gandhaka	Sulphur	1 part
Shuddha Tankana	Borax	1 part
Marich	Piper nigrum	1 part
Trikatu	-	1 part

C. Equipments

i. *Khalvayantra* for giving Bhavna

ii. Stainless steel vessels

iii. Associated Equipments like Gas stove, clothes, lohapatra, iron laddel, plates, weighing machine, knives etc were used.

METHODOLOGY:

A. Raw material identification and authentification

a) Authentification of major raw materials was done at Nikhil Analytical & Research Laboratory Sangli.
b) Analysis of major raw materials was also done at Nikhil Analytical & Research Laboratory Sangli.

B. Preparation of *Kasakuthar Rasa*

i. Preparation of *Adraka Swarasa*
ii. *Shodhana* of *Hingula*
iii. Preparation of *Bhringraj swarasa*
iv. *Shodhana* of *Gandhaka*
v. *Shodhana* of *Tankana*
vi. Preparation of *Kasakuthar Rasa*

1. Preparation of *Adraka Swarasa* [2]

अहतात् तत्क्षणाकृष्टाद् द्रव्यात्क्षुण्णात्समुद्धरेत्। वस्त्रनिष्पीडितो यः स रसः स्वरस उच्यते ॥ - शार्ङ्गधरसंहिता मध्यमखण्ड 1/2

Reference	Sharangdhar Samhita
Date of commencement	22/04/2025
Date of completion	22/04/2025
Ingredients	Raw fresh *Ardrak*

Procedure

- *Adraka swarasa* was prepared with classical reference.
- Fresh *adraka* was used for the procedure.
- *Adraka* was washed and its skin was peeled.
- It was pounded into *khalvayantra* to form *kalka*.
- After preparation of *kalka* it was squeezed by cotton cloth and *swarasa* was collected
- Fresh *adraka* was used each time.

2. Shodhana of *Hingula*[3]

सप्तकृत्वाऽऽर्द्रकद्रावैर्लकुचस्याम्बुनाऽपिवा ।
शोषितोभावयित्वाचनिर्दोषजायते ।।- *रसरत्नसमुच्चय 3/152-153*

Reference	Rasaratnasamucchaya
Date of commencement	22/04/2025
Date of completion	05/05/2025
Ingredients	*Ashuddha hingula, Ardraka swarasa*

Procedure

- 100 gm of *Ashudha Hingula* was crushed in the *Khalva yantra*
- *Adraka Swarasa* was added to the crushed *Ashudha Hingula* till it was completely wet and then trituration was carried out till the mixture was dried up.
- Thus, *Bhavana* was carried out for the crushed *Ashudha Hingula with Adraka Swarasa*.The above *Bhavana* and trituration procedures were repeated for seven days till the mixture was dried up.
- Gap of one day was kept between two bhavana so that the previous mixture of bhavana dries properly as the climate was little humid due to rains.
- After completion of seventh Bhavana, after the mixture was completely dried up, *the Shuddha Hingula* was collected and preserved as per the guidelines.

3. Preparation of *bhringraj swarasa*[4]

Reference	Sharangdhara samhita
Date of commencement	22/08/2025
Date of completion	22/08/2025
Ingredients	Fresh leaves of *bhringraj*

Procedure

- Fresh leaves *of Bhringraj* were washed with water and crushed in *the Khalva yantra.*
- This fresh paste of *Bhringraj* leaves was collected in the cotton cloth with the spoon.
- The cloth was tightly squeezed and collected the *Bhringraja Swarasa* in a vessel.
- Poured the *Bhringraja Swarasa* in the measuring cylinder and preserved as per the guidelines.

4. Shodhana of Gandhaka[5]

गन्धकोद्रावितोभृङ्गरसेक्षिप्तोविशुध्यति । - रसरत्नसमुच्चय3/24

Reference	Rasaratnasamucchaya
Date of commencement	22/08/2025
Date of completion	23/08/2025
Ingredients	*Gandhaka,Bhringraj swarasa,goghruta*

Procedure

- Poured *Bhringraja Swarasa* in a steel vessel.Crushed raw *Gandhaka* in the *Khalva yantra* into powder form.
- Put an iron vessel on the gas stove, heated it up, and then *goghruta* was added to it followed by adding *shuddha Gandhaka* powder.
- After the *ashuddha Gandhaka* powder melted completely, it was poured into the steel vessel containing *Bhringraj Swarasa* by straining it through a cloth.
- After the mixture cooled down, solidified Gandhak was taken out, washed with hot water, and dried at the room temperature.
- The above procedure was repeated for seven times.

5. Shodhana of Tankana

सुचूर्णितंटङ्कणंतुखलुपञ्चपलोन्मितम्।
समुज्ज्वलोदरेक्षुद्रकटाहेविन्यसेत्ततः ।।
चुल्लिकायांनिधायाथपचेद्द्रव्याप्रचालयन्।
सुपुष्पितंनष्टनीरंशुद्धिमायातिटङ्कणम् //
- रसतरंगिनी तरंग 13/77-78

Reference	Rasatarangini
Date of commencement	30/04/2025
Date of completion	30/04/2025
Ingredients	Ashuddha Tankana

Procedure

i. Ashuddha Tankana was taken in Khalvayantra and fine powder was made with the help of Peshanak.
ii. Then powder was taken in iron vessel and subjected to heat.
iii. Continuous stirring was done.
iv. Water started evaporating. The heat was given to the Tankana until sound disappeared.
v. Tankana lost all water portions and appeared to be lightweight than before, and appeared more in quantity.

6. Preparation of Kasakuthar Rasa

हिङ्गुलंमरिचंगन्धंसव्योषंटङ्गणंतथा।
द्विगुञ्जामार्द्रकद्रावैः सन्निपातंसुदारुणम् ।
कासंनानाविधंहन्तिशिरोरोगंसुदुः सहम् ।। - भैषज्यरत्नावली 15/51

Reference	Bhaishajyaratnavali
Date of commencement	04/09/2025
Date of completion	06/09/2025
Ingredients	Shuddha Hingula, Gandhaka, Tankana Trikatu, Marich

Procedure

I. Shuddha hingula and Shuddha gandhaka was taken into khalvayantra in equal amount and titurated for 3 hour to form fine kajjali.
II. Later Shuddha Tankana,Trikatu Churna,Marich Churna was added in equal amount and titurated for 3 hour to form homogenous mixture and stored in glass bottle.

Table No. 02: In preparation of *Ardraka swarasa*

Quantity of raw *ardrak* taken	100gm
Quantity of *swarasa* obtained	70ml
Total Time taken	30 min
Ardrak satva formation	White fine paste like *ardraka satva* deposited in the beaker

Table No. 03: In shodhana of *Hingula*

Quantity of *Ashuddha hingul*	100 gm
Quantity of *Shuddha hingul*	112 gm
Quantity of *Adraka swaras*	100 ml per *bhavana*
Time taken for *bhavana*	7-8 hours per day
Reason for weight gain	Presence of starch in *ardrak swaras*
Total duration	15 days
Change in consistency of mixture	Liquid to paste like & then into dry powder
Change in color	Lighter to darker
Change in texture	From coarse granules to fine powder

Table No. 04: In shodhana of Gandhaka

Quantity of *Ashuddha gandhaka*	150 gm
Quantity of *Shuddha gandhaka*	135 gm
Quantity of *bhringraj swaras*	400 ml each time
Time taken for melting *gandhaka*	5 – 7 min
Loss in weight	15 gm
Reason for weight loss	Physical impurities, *gandhaka* sticks to cloth in small amount
Total duration	2 days
Change in form	Melted form changed to solid after pouring in *bhringraj swarasa*
Change in color	Yellow to greenish yellow
Collection of physical impurities	Seen on the cloth used to strain the melted *gandhaka*
Changes in *bhringraj swarasa*	Becomes warm after melted *gandhaka* is poured into it Oily layer forms on the upper surface of *swaras* due to presence *of ghruta*

Table No. 05: Preparation of *Bhringraj swarasa*

Quantity of *bhringraj* taken	1kg
Quantity of *swarasa* obtained	1000ml
Total Time taken	1 hour

Table No. 06: Shodhana of *Tankana*

Quantity of *Ashuddha Tankana*	300
Quantity of *Shuddha tankana*	155
Time taken for process	45 min
Loss in weight	145
Reason for weight loss	Loss of water
Total duration	1 day
Change in form	Hard to puffy
Change in color	More bright white
Sound during process	*Char char*
Sound after completion of process	Sound stopped
Difference in volume	Pan was fully occupied

Table No. 7: Preparation of *Kajjali of Hingula & Gandhaka*

Quantity before *shodhana*	200 gm
Quantity after *shodhana*	195 gm
Time taken	3 hour
Total duration	1 day
Loss in weight	5 gm
Reason for loss in weight	Spillage during tituration
Change in form	More smooth & fine
Change in color	Light to dark red

Table No. 08: Preparation of *Kasakuthar Rasa*

Quantity before process	500 gm
Quantity after process	489 gm
Time taken for process	3 hour
Loss in weight	11
Reason for weight loss	Spillage during tituration, Fine powder sticked to *khalvayantra*
Total duration	1 day
Change in form	Coarse to fine
Change in color	Light to dark

DISCUSSION:

Hingula shodhan-

Shodhana of Hingula was done according to the reference of Rasaratnasamucchaya.Many methods for shodhana of *Hingula* are mentioned in the classics but *Adraka swarasa* was selected for *shodhana* because of its properties which supports the treatment of kasa. 100 gm of *Ashuddha Hingula* was taken and seven *bhavanas* of *Ardraka swarasa* were given in 15 days with 7-8 hours of tituration per day.Final weight of *Gandhaka* increased to 112 gm due to presence of starch in *ardraka swarasa.*

Gandhaka shodhan-

Shodhan of Gandhaka was done according to the reference of Rasaratnasamucchaya. Many methods are mentioned in classics but *bhringraj swarasa* was used as it helps in treatment of kasa. 150 gm of *Ashuddha gandhaka* was taken and 135gm was obtained and 100 gm was used. Loss of 15 gm occurred which can be due to loss of physical impurities and also some physical loss during washing process. The repeated heating, melting and sudden cooling of sulphur by pouring it into liquid media may cause loosening of the bonds between the molecules making it amorphous in nature. This loosening of the bonds may be helpful in dissolving the impurities in the media thus separating it from the sulphur, making it pure. Change in color was observed after *shodhan.*

Tankana shodhan-

Shodhan of tankana was done according to reference of Rasatarangini. *Shodhan* process included continuous subjection to heat with continuous stirring. Out of 300 gm taken there was a significant weight loss of 145 gm and 155 gm *Shuddha tankana* was obtained. This significant weight loss is due to loss of water. There was a specific sound during the process which stopped after *shodhan* was completed. Also there was significant increase in volume and white puffy final product was obtained.

Preparation of *Kasakuthar rasa*-

This procedure was carried out according to the reference from Bhaishajyaratnavali.*Shuddha gandhak*a and *Shuddha hingul* in same quantity (100 gm each) were titurated for 3 hours to form *Kajjali*.195 gm of kajjali was obtained out of which 100 gm was used for further process. To this 100 gm of *Kajjali shuddha tankana ,Trikatu churna and Marich churna* were added in 100 gm each quantity.This mixture was titurated for 3 hour.489 gm of *Kasakuthar Rasa* was finally obtained from 500 gm of initial mixture.Spillage during tituration and sticking of the fine powder to khalvayantra can be the reason for loss in weight.The final product in the form of fine powder was stored in a clean,dry glass bottle.

CONCLUSION:

Since no previous work has been done on preparation of *kasakuthar rasa*, this study can play an important role in standardizing the process of preparation of *kasakuthar Rasa*. To standardize a process, proper analysis should be done in each step. So detailed observations are noted in every step of preparation of *kasakuthar rasa* carefully. Pharmaceutical procedures adopted in this study is *shodhana.* The ultimate objective of *Shodhan* process is to increase the bioavailability of the drug & further potentiating the biological efficacy. The methods of *shodhana* of the ingredient were selected in such a way that they increase the efficacy of final product.

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