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Pharmaceutico-Analytical Study of Talakeshwara Rasa: A Classical Kupipakwa Rasayana

Dr. Sumant Dayanand Gunaga[1], Dr. Ravi. R. Chavan[2], Dr. Lalitha[3]
[1]*Final Year PG Scholar, Department of Post Graduate Studies in Rasashastra & Bhaishajya Kalpana, TGAMC, Ballari, RGUHS Karnataka*
[2]*Professor & HOD, Department of Post Graduate Studies in Rasashastra & Bhaishajya Kalpana, TGAMC, Ballari, RGUHS Karnataka*
[3]*Assistant Professor, Department of Post Graduate Studies in Rasashastra & Bhaishajya Kalpana, TGAMC, Ballari, RGUHS Karnataka*

Abstract: ***Rasashastra is the Ayurvedic science that primarily deals with Mercury and its pharmaceutical processing, Talakeśhwara Rasa is a classical Sagni–Sagandha Bahirdhooma Kupipakwa Rasayana described in Rasa Yoga Sagara, indicated mainly in chronic skin disorders like Kushta. The formulation comprises Shuddha Parada and Shuddha Gandhaka in the form of Dwiguna Kajjali, to which Shuddha Haratala and Shuddha Navasadara are added and triturated. The mixture is subjected to Bhavana with Bakuchi Kashaya and Arka Ksheera, followed by Kupipaka under controlled graded heating. Pharmaceutical evaluation showed attainment of classical Siddhi Lakshanas during Kajjali preparation and Kupipaka. Analytical studies were carried out on Kajjali, Bhavita Kajjali, and both Kupipakwa products Kantastha and Talastha Talakeśhwara Rasa. Physicochemical analysis revealed alkaline pH, low moisture content, and minimal ash values in Kajjali, Bhavita Kajjali, and Kantastha product, while the Talastha fraction showed comparatively higher ash and moisture content. XRD analysis confirmed transformation of β-HgS in Kajjali to thermodynamically stable α-HgS in Kantastha Talakeśhwara Rasa. SEM-EDS demonstrated the presence of Hg, S, and As. Particle size analysis showed sub-micron range particles, and FTIR confirmed retention of the inorganic framework with incorporation of functional groups due to Bhavana. NPST exhibited characteristic phased color changes confirming formulation identity.***
Overall the pharmaceutical and analytical evaluation establishes Talakeśhwara Rasa as a stable, standardized mineral-based Kupipakwa Rasayana. The study validates classical Rasashastra principles through modern analytical parameters and provides a scientific basis for its therapeutic use in Kushta.
Keywords: TalakeshwaraRasa[1],KupipakwaRasayana,Parada,Gandhaka,Haratala,Navasadara,Bakuchi,Arka, Kustha, Ayurveda medicine.

I. INTRODUCTION

The quality of pharmaceutical products depends not only on careful manufacturing practices but also on the correct identification and appropriate processing of raw materials. Ancient Ayurvedic Āchāryas have systematically described various purificatory, detoxificatory, and incineration procedures to render metals and minerals therapeutically safe and efficacious. These processes result in significant physico-chemical transformations, which enhance the bioavailability and therapeutic potential of herbal and mineral drugs.
Talakeśhwara Rasa[1] is a distinctive mineral-based *Kupipākva Rasāyana* described in *Rasayoga Sāgara*. It consists of *Śuddha Pārada, Śuddha Gandhaka*, *Śuddha Hāratāla*, and *Śuddha Navasādara*, processed with *Bākucī Kaṣāya and Arka Kṣīra* as *Bhāvanā dravyas*. The formulation is indicated for the management of various types of *Kuṣṭha.*

II. AIMS AND OBJECTIVES

A. *Aim*

Pharmaceutico-Analytical Study Of *Talakeshwara Rasa – Kupipakwa Rasayana*

B. *Objective*

1) To compile classical references about *Talakeshwara Rasa.*
2) Preparation of Talakeshwara Rasa as per classical reference with due importance to SOP.
3) To carryout Physico-chemical analysis of Kajjali,Bhavita Kajjali,Talakeshwara Rasa.

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C. Formulation Review

Talakeshwara Rasa[1] is a *sagni sagandha bahirdhooma kantastha kupipakwa rasayana* mentioned in *Rasa Yoga Sagara.*

शुद्धतालस्य भागैकं भागैकं शुद्धपारदम् । शुद्धगन्धकभागौ द्वौ तालांशं नवसादरम्।1।
दिनैकं मर्दितं खल्वे सोमराजीरसेन तु। अर्कदुग्धेन सम्मर्द्य कूपिकायां विनिःक्षिपेत् ।।
बालुकापूरिते यन्त्रे अध ऊर्ध्वं विपाचयेत् । यामद्वादश केनैव मन्दमध्यहठाग्निना ।।
स्वाङ्गशीतं समुद्धृत्य रसोऽयं तालकेश्वरः । सर्वकुष्ठं निहन्त्याशु गलत्कुष्ठ निकृन्तनः ।।

Sl. No	Name of the ingredients	Quantity
01.	*Shuddha Parada*	1 part
02.	*Shuddha Gandhaka*	2 parts
03.	*Shuddha Haratala*	1 part
04.	*Shuddha Navasadara*	1 part
05.	*Bakuchi Kashaya*	Q.S for Bhavana
06.	*Arka Ksheera*	Q.S for Bhavana

D. Other References Of Talakeshwara Rasa Explained In Classics

Samputa Method[2]

SLNo.	Ingredients	Bhavana Dravyas
1	Haratala,Parada,Khatika Churna	Arkaksheera,Snuhiksheera,Goksheera,Bakuchi Kashaya,Triphala Kashaya,Dhattura Swarasa,Punarnava Kashaya etc.
2	Haratala,Parada,Gandhaka, Tamra,Loha	Bakuchi,Manjishta,Katuki
3	Haratala,Parada,Gandhaka, Trikatu,Nimba,Tankana	Shiva Swarasa
4	Haratala,Bhallataka	Arkaksheera
5	Haratala,Apamarga Kshara	Chakramarda,Sharapunkha
6	Haratala,Parada,Tamra, Loha,Swarna,Manashila	Arkaksheera,Snuhiksheera,Dhattura
7	Haratala,Parada,Gandhaka, Loha,Swarna,Manashila	Jambeera Swarasa
8	Haratala,Parada,Gandhaka, Loha,Swarna Makshika	Arkaksheera
9	Haratala,Parada	Karavellaka Swarasa
10	Haratala,Parada,Abhraka satwa,Swarna	Bhringaraja Swarasa
11	Haratala,Teja Patra	Avi Dugdha
12	Haratala,Parada,Gandhaka, Manashila	Arkaksheera
13	Haratala,Shukti	Kumari Swarasa
14	Haratala,Parada	Karavellaka Swarasa
15	Haratala,Parada,Gandhaka	Karavellaka Swarasa
16	Haratala,Manashila,Tuttha	Snuhiksheera
17	Haratala,Ashwattha Kshara, Apamarga Kshara	No Bhavana Dravyas
18	Haratala,Navasadara, Karpura,Tankana,Malla	Punarnava Kashaya
19	Haratala	Kanji,Gomutra,Snuhi Ksheera,Sharapunkha
20	Haratala,Abhraka,Chitraka	Swarna Ksheeri,Gokshura Kashaya

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Kharaliya Method[3]

Sl No	Ingredients	*Bhavana Dravya*
1	*Haratala,Tankana,Javitri*	*Haritaki Kashaya Bhavana*
2	*Haratala,Swarna Gairika*	*Sharapunkha Swarasa*
3	*Haratala,Kajjali*	*Gomutra,Manakanda*
4	*Haratala,Kajjali*	*Punarnava,Haridra,Kumari*
5	*Haratala*	*Triphala,Shobhanjana,Chagadugdha*
6	*Haratala,Kajjali*	*Kumari,Triphala,Chitraka,Vidanga, Bakuchi Kashaya*
7	*Haratala,Rajata,Tamra*	-
8	*Parada,Haratala Bhasma*	*Bhang Swarasa*
9	*Haratala,Rasasindoora,Nagabhasma*	*Jambeera,Kumari,Bhringaraja,Surana*
10	*Haratala,Rasasindoora,Abhraka Satwa,Swarna*	*Bhringaraja Swarasa*
11	*Haratala,Kajjali,Haridra Churna*	*Dhattura Beeja Rasa*
12	*Haratala,Kajjali,Loha Bhasma,Abhraka Bhasma,Vanga Bhasma*	*Madhu*
13	*Haratala,Dhatri,Tankana*	*Dhatri Swarasa*

Kupipakwa Method[4]

Sl No	*Ingredients*	*Duration of Paka*
1	*Parada,Haratala,Tankana,Mriddarashringa*	*4 Prahara*
2	*Parada,Haratala,Tankana,Vanga,Dhanyabhraka, Malla,Jayapala,Snuhi,Arka*	*40 hours*
3	*Parada,Haratala,Gandhaka,Manashila,Dhattura Bhavana*	*3 Days*
4	*Parada,Haratala,Tankana Dwaya,Mriddarashringa*	*12 Prahara*
5	*Parada,Haratala, Tankana,Vanga,Dhanyabhraka,*	*40 hours*
6	*Parada,Haratala, Gandhaka,Manashila*	*12 hours*
7	*Parada,Haratala Satwa, Arka Dugdha*	*12 hours*
8	*Haratala, Gandhaka,Tamra Bhasma,Punarnava*	-
9	*Haratala, Snuhi,Arka,Kushmanda,Bakuchi ,Bhallataka Taila*	-
10	*Haratala,Gandhaka,Tamra Bhasma,Bakuchi*	-
11	*Rasamanikya,Parada,Bakuchi Kashaya*	*36 hours*
12	*Haratala,Tankana,Kumari,Ikshu,Nimbu,Kushmanda*	*48 hours*

III. METHODOLOGY

1) Raw drugs which were having similar *Grahya lakshanas* as mentioned in the Rasa classical texts, were collected from the market.
2) Extraction of Parada from Hingula by subjecting it to Urdwapatana vidhi[5].
3) Parada was done shodhana with Haridra churna and did mardana for 24 hours then filtered through four folded cloth.
4) Shodhana of Gandhaka was carried out in Godugdha by subjecting it to kurma puta by Bhoodhara yantra method[6].
5) Shodhana of Haratala was carried out in Kushmanda Swarasa by subjecting it to swedana for 1 yama[7].
6) Shodhana of Navasadara was carried out by mixing it with 3 times water,filtering and heating till all liquid portion evaporates[8].

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7) 150gms of Shuddha Parada and 300gms of Shuddha Gandhaka were taken in a Khalva Yantra and triturated together to prepare Kajjali.
8) To the prepared Kajjali, 150gm of Shuddha Haratala and Shuddha Navasadara were added sequentially and triturated till a uniform and homogeneous mixture was obtained.
9) The homogenized Kajjali was subsequently subjected to Bhavana with Bakuchi Kashaya[9] and Arka Ksheera[10], each for one day.
10) The Bhavita Kajjali was filled in a Kachakupi and subjected to Kramagni Kupipaka for 50 hours.
11) After Swanga Sheeta, Kupibhedana was performed and the final product was collected.
12) Kajjali,Bhavita Kajjali and both fragments of Talakeshwara Rasa were sent to Analytical study.

IV. RESULTS

Pharmaceutico-Analytical study results are described under 2 headings.

A. Pharmaceutical Results

Showing results of *Hingula Mardana with Nimbu swarasa-*

Initial weight of Hingula	Weight of Hingula after Mardana	Gain	Yield in %
280gms	305gms	25gms	108.93%

Showing results of *Hingulottha Parada-*

Wt of Mardita *Hingula* taken for U*rdhwapatana*	Wt of *Parada* obtained	Yield %
305gm	220gm	72.13%

Showing results of *Hingulottha Parada Shodhana-*

Wt of *Hingulottha Parada* taken	Wt of Shoditha *Parada*	Loss	Yield %
220gm	210gm	10gm	95.45%

Showing results of *Gandhaka Shodhana with Godugdha-*

Wt of *Gandhaka* taken	Wt of Shoditha *Gandhaka* obtained	Loss	Yield %
500 gm	434.5 gm	65.5gm	78%
434.5gm	411.5gm	20gm	
411.5gm	390gm	21.5gm	

Showing results from preparation of *Kajjali* -

Wt of Shuddha *Parada*	Wt of Shuddha *Gandhaka*	Wt of *Kajjali* obtained	Loss	Yield %
150gm	300gm	430gm	20gm	95.55%

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Showing results of *Haratala Shodhana-*

Wt of *Haratala* taken	Wt of *Shodhita Haratala* obtained	Loss	Yield %
500 gm	495 gm	5 gm	99%

Showing results of *Navasadara Shodhana-*

Wt of *Navasadara* taken	Wt of *Shodhita Navasadara* obtained	Loss	Yield %
200 gm	190 gm	10 gm	95%

Showing results of *Addition of Shuddha Haratala to Kajjali-*

Wt of *Kajjali taken*	Wt of Shuddha Haratala taken	Weight After Mardana	Loss	Yield %
430 gm	150 gm	580gm	-	100%

Showing results of *Addition of Shuddha Navasadara to Shuddha Haratala Mardita Kajjali-*

Wt of Shuddha Haratala Mardita *Kajjali taken*	Wt of Shuddha Navasadra taken	Weight After Mardana	Loss	Yield %
580 gm	150 gm	730gm	-	100%

Showing results from Bakuchi Kashaya *Bhavana* to Shuddha Navasadara Mardita Kajjali -

Quantity of Shuddha Navasadara Mardita Kajjali taken	Quantity of Bakuchi Kashaya	Quantity obtained After Bhavana	Gain	Yield %
730gm	200ml	750gm	20gm	102.73%

Showing results from Arka Ksheera *Bhavana* to Bakuchi Kashaya Bhavita Kajjali-

Quantity of Bhavita Kajjali taken	Quantity of Arka Ksheera	Quantity obtained after Bhavana	Gain	Yield %
350gm	150ml	360gm	10gm	102.85%

Showing results from Preparation of Talakeshwara Rasa-

Quantity of Bhavita Kajjali Taken	Kantastha Talakeshwara Rasa	Talastha Talakeshwara Rasa	Loss	Yield %
250gm	100gm	20gm	130gm	48%

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B. Analytical Results

Showing Results of Organoleptic characters of Kajjali,Bhavita Kajjali,Kantastha Talakeshwara Rasa(KTR),Talastha Talakeshwara Rasa(TTR)

Physical test	*Kajjali*	Bhavita Kajjali	*KTR*	*TTR*
Colour	Greyish Black	Dark Grey	Reddish Orange	Black
Odour	Characteristic	Characteristic Urine	Characteristic Metalic	Characteristic Metalic
Taste	Astringent	Astringent	Astringent	Salty
Touch	Fine	Fine	Fine	Fine

Showing Results of Physical tests of Kajjali,Bhavita Kajjali,Kantastha Talakeshwara Rasa(KTR),Talastha Talakeshwara Rasa(TTR)-

Parameter	*Kajjali*	Bhavita Kajjali	*KTR*	*TTR*
pH (10 % Aqueous Solution)	10.22±0.10	10.67±0.10	10.32±0.10	8.48±0.10
Total Ash value	Nil	1.5%	1%	28%
Acid insoluble ash	Nil	1%	0.5%	14%
Water soluble ash	0.5%	1%	0.5%	18.5%
Loss on drying at 105^0C	0.95%	3.83%	0.78%	16.73%

Showing XRD results of *Kajjali*-

Compound Name	Chemical Formula	Crystal Structure
Metacinnabar	Beta HgS	Cubic
Sulphur	S	Orthorhombic

Showing XRD results of *Bhavita Kajjali*-

Compound Name	Chemical Formula	Crystal Structure
Metacinnabar	Beta HgS	Cubic
Sulphur	S	Orthorhombic
Orpiment	As_2S_3	Monoclinic

Showing XRD results of KTR-

Compound Name	Chemical Formula	Crystal Structure
Cinnabar	Alpha HgS	Triagonal

Showing SEM EDS result of *Kajjali*-

Sl no	Element	Weight %	Atomic %
1.	S	21.12	20.76
2.	Hg	39.92	6.27
3.	C	22.90	60.66
4.	O	2.53	4.98

Showing SEM EDS result of *Bhavita Kajjali*-

Sl.no	Element	Weight%	Atomic%
1	S	26.52	25.51
2	Hg	42.60	6.47
3	As	3.00	1.22
4	Cl	1.36	1.17
5	C	24.37	61.84
6	O	2.14	4.08

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Showing SEM EDS result of *KTR*-

Sl.no	Element	Weight%	Atomic%
1	S	17.73	20.52
2	Hg	47.42	8.77
3	As	13.64	6.76
4	C	19.16	59.20
5	O	2.05	4.75

Showing Particle Size of *Kajjali*, *Bhavita Kajjali*,*Kantastha Talakeshwara Rasa(KTR)*-

Sample	Mean diameter(nm)
Kajjali	472.2nm
Bhavita Kajjali	566.9nm
KTR	425.7nm

Showing FTIR Peaks of *Kajjali*

Wavenumber (cm^{-1})	Functional group / Bond	Interpretation
3115.85, 3021.96	=C–H stretch (aromatic), O–H stretch	Indicates presence of aromatic compounds or hydroxyl groups.
2804.57	C–H stretch (aldehyde or alkane)	Suggests presence of aliphatic C–H stretching.
1740.02	C=O stretch (carbonyl group)	Strong absorption, suggests ester, aldehyde, or ketone group.
1443.31	C=C stretch (aromatic ring), CH_2 bending	Indicates aromatic skeletal vibrations or methylene bending.
1394.42	C–H bending (aliphatic)	Suggests alkane framework or methyl group vibrations.

Showing FTIR Peaks of *Bhavita Kajjali*

Wavenumber (cm^{-1})	Functional group / Bond	Interpretation
3145.46, 3036.76	O–H stretch, =C–H stretch (aromatic)	Indicates hydroxyl groups and aromatic character.
2849.63	C–H stretch (alkane/aldehyde)	Suggests aliphatic hydrocarbon framework.
2077.59	C≡C stretch (alkyne) / overtone band	Presence of possible alkyne or combination band.
1625.69	C=C stretch (aromatic ring) or C=O stretch	Suggests aromatic skeletal vibration or conjugated carbonyl.
1396.19	C–H bending (methyl/methylene)	Indicates alkane framework.
1075.12	C–O stretch (alcohols, esters, ethers)	Suggests oxygen-containing functional group.
699.67	C–H out-of-plane bend (aromatic ring)	Confirms aromatic ring substitution pattern.

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Showing FTIR Peaks of Kantastha Talakeshwara Rasa(KTR)

Wavenumber (cm^{-1})	Functional group / Bond	Interpretation
3253.84	O–H stretch / N–H stretch	Indicates hydrogen-bonded O–H groups or N–H groups.
2279.43	C≡N stretch / overtone	May indicate nitrile or combination band.
2082.33	C≡C stretch / overtone	Possible alkyne or metal–ligand related vibration.
1627.01	C=O stretch or C=C stretch	Suggests conjugated carbonyl or aromatic C=C.
1423.86	CH_2 / CH_3 bending	Indicates aliphatic bending or aromatic skeletal vibration.
1019.67	C–O / C–N stretch	Suggests oxygen- or nitrogen-containing groups.
672.34	C–H out-of-plane bending / lattice mode	Represents aromatic substitution or inorganic vibration.

Showing NPST of Kantastha Talakeshwara Rasa(KTR)-

Phase	Time Duration	Observation (Colour Pattern)	Interpretation
Phase 1	0-5min	Deep red central spot, surrounded by dark orange margin and thin dark brown peripheral margin.	Indicates initial reaction and interaction between ingredients.
Phase 2	5-20min	Central spot fades to light pink, surrounded by orange margin and thick dark brown peripheral margin.	Suggests ongoing transformation and stabilization of components
Phase 3	After 1hr	Central spot fades to almost white, surrounded by vermilion margin and brown peripheral margin with yellow shades.	Denotes complete reaction and final stabilization of the formulation.
Conclusion	-	The triphasic NPST pattern confirms complete reaction and stabilization of all ingredients during Kupipaka.	Validates the authenticity, safety, and proper formulation of *Talakeshwara Rasa*.

V. DISCUSSION

A. Discussion On Pharmaceutical Study

HingulotthaParada:

Mechanical trituration with *Nimbu Svarasa* reduced particle size, increased surface area, and facilitated uniform Hg–S interaction, while citric acid chelated metallic impurities. Controlled *Urdhvapātana* enabled selective sublimation of mercury, with *Jala-dhāra* aiding condensation and removal of volatile impurities. Subsequent trituration with *Haridrā* enhanced safety through curcumin-mediated chelation and antioxidant activity, imparting *Dīpana–Pācana* properties and improving bioavailability. Overall, the process ensured purified, stabilized, and pharmaceutically active mercury.

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GandhakaŚodhana:

Go-Ghṛta and Go-Dugdha acted as detoxifying and softening media, reducing *Tīkṣṇatā* and facilitating impurity separation. Controlled heating using cow-dung cakes enabled sublimation of Gandhaka, leaving non-volatile impurities behind. Post-Śodhana changes—bright yellow color, reduced odor, and softer texture—indicated successful detoxification and pharmaceutical suitability.

HāratālaŚodhana:

Kūṣmāṇḍa Svarasa facilitated chelation and diffusion-based impurity removal during *Svedana*. Controlled heating accelerated purification reactions, while the *Madhura–Śīta–Snigdha* properties of the medium balanced the irritant nature of raw Hāratāla, enhancing its *Rasāyana* and *Rogahara* potential.

NavasādaraŚodhana:

Powdering enhanced dissolution, producing an endothermic reaction indicative of ammonium chloride dissociation. Filtration removed insoluble impurities, and *Tīvra Agni* ensured complete evaporation and detoxification, yielding pharmaceutically acceptable *Śodhita Navasādara*.

KajjalīPreparation:

Extended *Mardana* of *Śodhita Pārada* with *Dviguna Gandhaka* resulted in complete disappearance of mercury globules and fulfillment of classical *Siddhi Lakṣaṇas*. Formation of a stable Hg–S complex reduced free mercury, enhancing safety and *Kuṣṭhaghna* potential, confirming the importance of prolonged trituration and optimal sulfur proportion.It took 190 hours of trituration to attain siddhi lakshanas.

BhāvanāDravyas:

Bhāvanā with *Bākucī Kaṣāya* and *Arka Kṣīra* produced a fine, homogeneous, unctuous Kajjalī, indicating effective phytochemical impregnation. These media imparted *Kuṣṭhaghna*, *Raktaprasādaka*, and antimicrobial properties, while dry trituration improved stability and suitability for *Kupipāka*.

PreparationofTalakeśhwaraRasa:

Classical *Kupipāka* over 50 hours facilitated stepwise sublimation and transformation. Observation of *Sūryodaya Lakṣaṇa* confirmed completion. The *Kāṇṭastha* fraction represented fully sublimed, therapeutically superior Talakeśhwara Rasa, whereas *Talastha* residue indicated incomplete processing.

B. Discussion On Analytical Study

Organoleptic parameters confirmed progressive refinement from Kajjalī to Kāṇṭastha Talakeśhwara Rasa. pH values indicated alkaline stability of Kajjalī, Bhāvita Kajjalī, and Kāṇṭastha fractions, whereas Talastha showed lower stability.

Low total ash, acid-insoluble ash, water-soluble ash, and loss on drying in Kajjalī, Bhāvita Kajjalī, and Kāṇṭastha Talakeśhwara Rasa reflected high purity, minimal contamination, and excellent stability. In contrast, elevated values in Talastha confirmed its therapeutic unsuitability.

Instrumental Analysis-

XRD:

Kajjalī and Bhāvita Kajjalī predominantly showed β-HgS (metacinnabar), while Kāṇṭastha Talakeśhwara Rasa exhibited complete transformation to thermodynamically stable α-HgS (cinnabar), confirming chemical maturation during *Kupipāka*.

SEM-EDS:

Elemental analysis demonstrated progressive stabilization from Hg–S complexes in Kajjalī to mature α-HgS in Kāṇṭastha, with incorporation of As and herbal residues without compromising stability.

Particle Size Analysis:

All samples were in the sub-micron range, with Kāṇṭastha Talakeśhwara Rasa showing the smallest particle size, indicating enhanced bioavailability and therapeutic potential.

FTIR:

FTIR confirmed retention of the Hg–S framework with progressive integration of herbal functional groups, culminating in a stable mineral-herbal complex in Kāṇṭastha Talakeśhwara Rasa.

Overall Interpretation-

The combined pharmaceutical and analytical findings confirm that classical *Śodhana*, *Bhāvanā*, and *Kupipāka* processes induce controlled physico-chemical transformations, yielding a stable, safe, and therapeutically superior Kāṇṭastha Talakeśhwara Rasa. This validates the classical methodology through modern analytical evidence.

C. Probable Mode Of Action

Talakeśhwara Rasa, prepared by *Kupipāka* of *Dviguna Kajjalī* with *Śuddha Hāratāla* and *Navasādara* using *Bākucī Kaṣāya* and *Arka Kṣīra* as *Bhāvanā dravyas*, forms a chemically stable, homogeneous, and therapeutically active herbo-mineral formulation. *Dviguna Kajjalī* serves as the primary mineral base, wherein mercury and sulfur form bioavailable and stable mercuric sulfide (HgS) with sub-micron particle size, enabling deeper tissue penetration. Mercury contributes *Rasāyana* and *Śodhana* actions, while sulfur provides *Krimighna* and *Kuṣṭhaghna* effects, aiding control of microbial involvement in *Kuṣṭha*. *Śuddha Hāratāla* and *Navasādara* act as synergistic mineral adjuncts, supporting detoxification, antimicrobial activity, and regulation of skin metabolism, thereby promoting resolution of chronic lesions and tissue repair. *Bākucī Kaṣāya* imparts *Varnya*, *Kuṣṭhaghna*, and *Rasāyana* properties; its phytoconstituents (psoralens, flavonoids, phenolics) contribute antioxidant, anti-inflammatory, and melanocyte-regulating effects, enhancing therapeutic efficacy and bioavailability. *Arka Kṣīra* facilitates mineral dispersion and absorption, while providing *Uṣṇa*, *Snigdha*, and *Krimighna* actions that promote wound healing and reduce irritation. The *Kupipāka* process yields a *Kāṇṭastha* fraction rich in thermodynamically stable α-HgS, uniform sub-micron particles, and well-integrated herbal constituents, as confirmed by analytical studies. Collectively, Talakeśhwara Rasa exhibits antimicrobial, anti-inflammatory, Rasāyana, and skin-regenerative actions, ensuring enhanced bioavailability, reduced toxicity, and effective management of *Kuṣṭha*.

VI. CONCLUSION

The present study on Talakeśhwara Rasa, a *Kupipākva Rasāyana*, systematically evaluated its classical pharmaceutical preparation and modern analytical characteristics. The formulation, prepared using *Dviguna Kajjalī*, *Śuddha Hāratāla*, and *Navasādara* with *Bākucī Kaṣāya* and *Arka Kṣīra* as *Bhāvanā dravyas*, was found to be chemically stable, homogeneous, and pharmaceutically sound. Classical *Rasaśāstra* procedures ensured effective detoxification, incorporation of bioactive constituents, and formation of a stable mercuric sulfide matrix. The *Kāṇṭastha* fraction fulfilled classical *Siddhi Lakṣaṇas* and demonstrated superior quality and safety compared to the residual *Tālastha* fraction. Analytical investigations confirmed phase transformation from β-HgS to thermodynamically stable α-HgS, uniform sub-micron particle size, minimal impurities, and enhanced bioavailability. These findings validate the effectiveness of the classical *Kupipāka* process. Overall, Talakeśhwara Rasa exhibits potential Rasāyana, antimicrobial, anti-inflammatory, and dermatological benefits. The study bridges classical Ayurvedic principles with modern analytical evidence and provides a strong foundation for standardization, quality assurance, and future pharmacological, toxicological, and clinical evaluation.

ANNEXURE

Fig: 01



Raw Hingula

Fig: 02



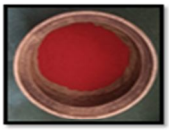
Nimbu Swarasa

Fig: 03



Mardana of Hingula

Fig: 04



Hingula placed at base Of lower pot

Fig: 05



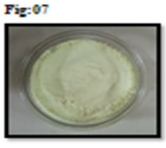
Urdhwapatana vidhi

Fig:06



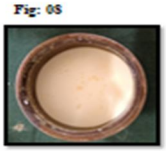
Parada Sublimation

Fig:07



Powdered Gandhaka

Fig: 08



Goktheera

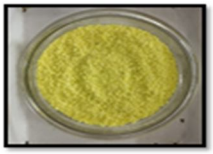
Fig:09



Gandhaka Placed in Kurma Puta



Ignition

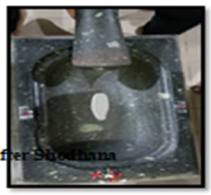


Shuddha Gandhaka



Mardana with Haridra

Raw Navasadara



After Shodhana

Addition of S.Haratala



Shuddha Parada

Shuddha Gandhaka

Kajjali

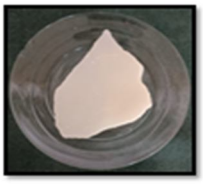


Asuddha Haratala



Swedana

Shuddha Haratala Churna

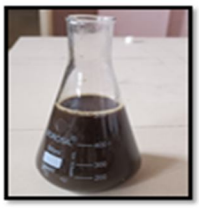








Addition of S.Navasadara



Bakuchi Kashaya



Bhavana



Arka Ksheera



Bhavana

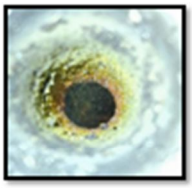


Bhavita Kajjali





Filling of Kachakupi | Placing in Valuka Yantra | Bhatti

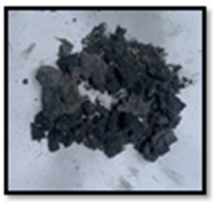

Kupipaka 12hrs | Kupipaka 24 hrs | Tapta Shalaka Insertion





Copper coin test | Sinyodaya Lakshana | Mukha Mudrana



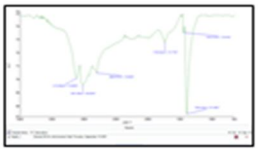


Breaking of Kupi | Kantastha product | Talastha product

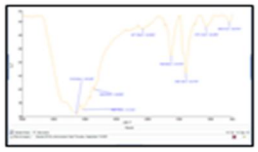



Kantastha product | NPST

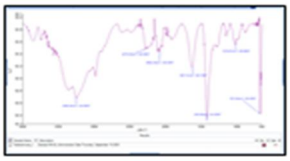
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue III Mar 2026- Available at www.ijraset.com



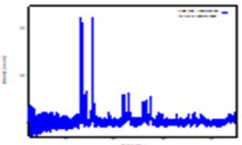
FTTR – Kajjali



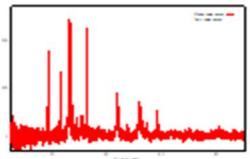
FTTR - Bhavita Kajjali



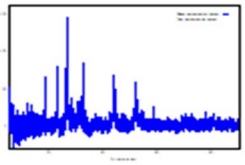
FTTR – Talakeshwara



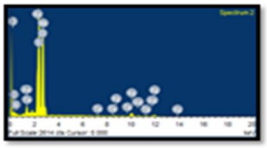
XRD – Kajjali

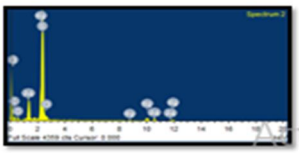


XRD – Bhavita Kajjali



XRD- Talakeshwara





SEM - Talakeshwara



Particle Size – Kajjali



Particle Size – Bhavika



Particle Size – Talakeshwara

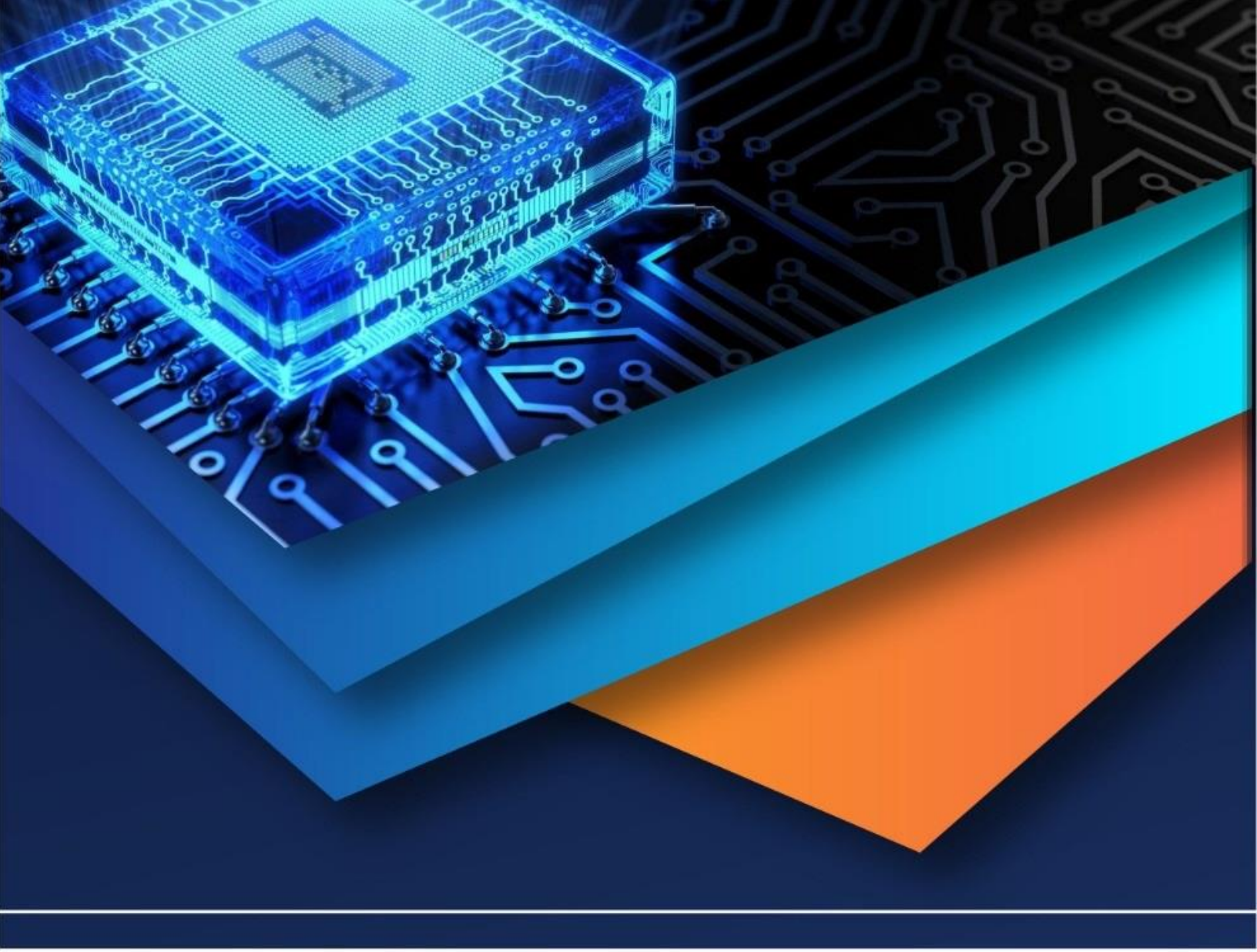
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