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PHARMACEUTICO-ANALYTICAL STANDARDIZATION OF *SIDDAPANCHANANA RASA* – A CLASSICAL HERBO-MINERAL FORMULATION

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Abstract

Background: *Siddapanchanana Rasa*, a classical herbo-mineral *Kharaliyarasayana* from *Rasaprakasha Sudhakara* for *Prameha* (Diabetes), lacks published Pharmaceutico-Analytical standardization. **Methods:** Prepared via classical *Shodhana*, 180-hour *Kajjali Mardana* (97.27% yield). Evaluated through Organoleptic, Physico-chemical (pH, ash values, particle size), XRD, and FTIR analysis. **Results:** Greenish-black powder, XRD confirmed HgS, FTIR showed phenolic O-H alkaloid CN (2162 cm^{-1}) signatures. **Conclusion:** Demonstrates reproducible quality parameters suitable for *AYUSH* pharmacopoeial standardization as *Pramehaghna* formulation.

KEYWORDS: *Siddapanchanana Rasa, Rasa Shastra, Prameha,* Pharmaceutical standardization, XRD, FTIR.

Ayurveda, defined as "Ayusho Vedah Ayurvedah" is the science of life. aims to maintain health in the well and cure diseases through Shodhana, Shamana, and Pathya· Rasashastra and Bhaishajya Kalpana, pharmaco-therapeutic branches, utilize herbal, mineral, and animal sources, Rsoushadhis having fast action and small dose it cures even Asadhyavyadhis, when it was subjected with proper Samskara. Rasoushadis are prepared from Parada murchana and classified into Chaturvidha Rasayana[1] (Karaliaya Rasayana, Parpati Rasayana, Kupipkwa Rasayana, Pottali Rasayana). The medicines which are prepared in and end product which is collected from Khalwa yantra are kown as Kharaliya Rasayana, they are Sparadiya and Aparadiya Kharaliya Rasayana, more number of formulations are prepared by this method like Arogyavardhini vati, Chitrakadi vati, Chandraprabha vati etc, Siddapanchanana Rasa[2] is one among Sapaadiya Kharaliya Rasayana mentioned in Rasaprakasha sudhakara it containes Shuddha Parada, Shuddha Gandhaka, Shuddha Vtsanabah, Shuddha Tankana, Triphala, Trikatu, Mustha. It is indicated in diaseases caused by Kapha dosha and Medhadhatu. Having actions like Pramehagna, Medahara, Kusthaghna, Rasayana. Yet no

comprehensive pharmaceutico analytical standardization study exists. This research fills the critical gap through organoleptic, physic- chemical, and instrumental analysis to establish quality benchmarks.

AIMS AND OBJECTIVE

Aim

Pharmaceutico-Analytical standardization of Siddapanchanana Rasa.

Objectives

- Preparation of Siddapanchanana Rasa by classical Kharaliya method.
- Analytical study of Siddapanchanana Rasa.

MATERIALS AND METHODS

Preparation of Siddapanchanana Rasa

Procurement and Authentication of Raw Drugs-

Raw materials were procured from reliable local markets and authenticated at central Research facility, DGM Ayurvedic Medical Collage and Hospital, Gadag, Karnataka.

Pharmaceutical processing

1. **Hingulashodhana**[3]: 500g Ashuddha Hingula powdered, 7 Bhavanas with Nimbuswarasa (220ml total, 12 hours each), washed, dried. Yield: 507g (101.3%).
2. **Hingulotta Parada**[4]: 507g Shodhita Hingula on cotton bolus, Nadayantra with charcoal heating (5 hours). Parada collected from Nada interior. Yield: 255g (50.29%).
3. **Parada Shodhana**: 255g Hingulotta Parada + 16g Haridra churna, Mardana 3 days, filtered. Yield: 230g (92%).
4. **Gandhakashodhana**[5]: 250g Gandhaka in Bhudharayantra with Godugdha (1L) + Goghrita, mild cowdung fire. Granules collected, washed. Yield: 215g (86%).
5. **Tankanashodhana**[6]: 100g Tankana heated in Kshudrakatahi till popcorn-like, powdered. Yield: 62.5%.
6. **Vatsanabhashodhana**: Raw Vatsanabah cut into small small pieces and kept in Gomutra for period of Triratri, on 4^{th} day outer cover was scraped and washed with hot water. yield 51%.
7. **Kajjali Nirmana**: 100g each Shuddha Parada-Gandhaka, continues pressured Mardana in Khalvayantra for 180 hours till Nishchandratva, Rekhapurnatva achieved. Yield: 148g (74%).
8. **Siddapanchanana Rasa:** Kajjali + Shuddha Tankana, Shddha Vatsanabha, Triphala, Trikatu, Musta churna; final Mardana carried out until it becomes homogeneous mixture. Total yield: 97.27%.

Analytical study

Physico chemical analysis was carried out with Ancient and modern parameters.

Classical parameters

The ancient parameters for Kajjali and Siddapanchanana Rasa were analyzed at the Department of PG Studies in Rasa Shastra and Bhaishajya Kalpana, DGMAMC, Gadag.

Organoleptic parameters for Kajjali and SiddapanchananaRasa like Rasa, Varna, Sparsha, Gandha and Classical confirmatory tests for Kajjali. Analytical study Organoleptic

Modern parameters

Physical tests:- was carried out at SDM centre for Research in Ayurveda and Allied sciences (Ayush center for excellence and recognized Siros by dsir), Laxminarayan Nagar, P.O.Kuthpady – 574 118, Udupi [Karnataka]. Chemical test for Siddhapanchanana Rasa was carried out at Micro and Nano Characterization Facility (MNCF), Centre for Nano Science & Engineering (CeNSE) Indian Institute of Science, Bengaluru-560012, Karnataka, India.

Organoleptic characters- Color, odor, taste and touch of sample are noted using sensory organs.

Physico chemical characters- pH, ash values, LOD, SEM, Particle sizing.

Instrumental:- XRD (10-80^{o} 2Ɵ), FTRI(400-4000 cm^{-1}).

OBSERVATIONS AND RESULTS

Pharmaceutical Yields

Procedure	Input (g)	Output (g)	Yield (%)
Hingula shodhana	500	507	101.3
Hingutottha parada	507	255	50.29
Parada Shodhana	255	230	92
Gandhaka Shodhana	250	215	86
Kajjali	200	148	74
Final Formulation	-	-	97.27

Analytical results

1. Classical parameters

Classical parameters of Kajjali

Sl. No	Parameters	Results
	Varitarapariksha	Passed
	Rekhapurnata	Passed
	Sukshmatwa	Passed
	Nischandratwa	Passed
	Kajjalabhasa	Passed

1. Organoleptic characteristics: - Kajjali

Drug	Rupa		Sparsha (touch)	Gandha(odour)	Rasa
Kajjali	Appearance	Colour	Fine, smooth, soft	Odourless	Tasteless
	Amorphous	Jet black			

2. Siddhapnchanana Rasa

Drug	Rupa		Sparsha(touch)	Gandha(odour)	Rasa
Siddapanchanana Rasa	Appearance	Color	Amorphous, fine	Pungent	Sharp, pungent
	Amorphous	Greenish black			

Physico- chemical parameters

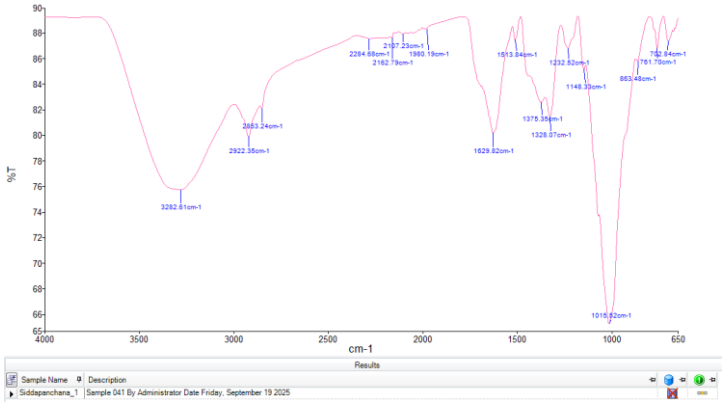
Sl.No	Parameters	Results n=3 %w/w Avg ±SD
	Particle size range between (μm)	1-50
	Loss on drying	11.26± 0.01
	Total Ash	20.78±0.80
	Acid insoluble Ash	0.0±0.0
	Water soluble Ash	1.60±0.00
	Ph	8.0

Instrumental Analysis

XRD:- Measurement conditions: - Totally 65 peaks were observed in S.P.R at different angles (2 ɵ) ranges from 10^0 to 90^0, 2 ɵ with a step of 0.01, which offers high – resolution data. Peaks for HgS appear around 26.5^0,31^0,43^0,51^0. HgS is confirmed as a major crystalline phase. Siddapanchanana Rasa shows mixed nature – predominantly crystalline with amorphous matrix. Sharp peaks- crystalline phases, broad background – Amorphous herbal residues.

FTIR:-

FTIR Analysis of Siddapanchana Rasa



Siddapanchanana Rasa reveals hydroxyls, alkenes, nitro, and aromatic compounds. Triple bonds and carbonyls suggest complex organic matrix. Supports its Ayurvedic potency.

DISCUSSION

Siddaachanana Rasa is one among the Karaliya Rasayana by Rasaprakasha Sudhakaara, primarily indicated for Prameha, Kushta, Shotha. The word meaning of this yoga is Sidda denotes perfected Parada, Panchanana refers to five additional ingredients symbolizing Shivas face, emphasizing its potent therapeutic profile with Katu –Tikta- Madhura Rasa, Ushna virya, Katu Vipaka, Tikshna, Ushna guna, Tridoshs Shamaka mainly Kapha –Vata Shamaka. The Pharmaceutico-Analytical and Experimental Study of Siddapanchanana Rasa validates this classical herbo-mineral formulation from Rasaprakasha Sudhakara as a standardized, through rigorous Shodhana, precise pharmaceutical processing, confirmatory analytical parameters. Shodhana of Hingula (Nadayantra, 50.29% Parada yield via HgS dissociation), Gandhaka (rhombic sulfur via Godugda Kurmaputa), Tankana (anhydrous borate), and Vatsanabha (49% alkaloid reduction via Gomutra) ensured detoxification, followed by 180-hour Kajjali Mardana producing HgS-confirmed nano-fine black powder (Rekhapurnatva, Nishchandratva) blended homogeneously with Trikatu-Triphala-Musta churnas. Organoleptic evaluation revealed characteristic greenish-black amorphous powder with pungent odour and taste; physico-chemical analysis demonstrated pH 8.0 (gastroprotective mild alkalinity), total ash 20.78±0.80% (high mineral content), zero acid-insoluble ash (silica-free purity), water-soluble ash 1.60%, loss on drying 11.26±0.01% (storage stability), and 1-50 µm particle size optimal for bioavailability. Advanced characterization via XRD confirmed crystalline HgS peaks from Kajjali formation alongside Tankana sodium borate derivatives within an amorphous herbal matrix, while FTIR spectroscopy identified bioactive functional groups—O-H/N-H stretch (3292 cm^{-1}, phenols/amines), C-H alkanes (2922/2853 cm^{-1}), C≡C/CN triple bonds (2162 cm^{-1}), and C=O carbonyls (1620 cm^{-1})—validating antioxidant, anti-inflammatory, and polyphenol-driven therapeutic potential from Trikatu-Triphala-Musta integration.These findings provide pharmacopoeial benchmarks ensuring Siddapanchanana Rasa's herbo-mineral

synergy, detoxification efficacy, and nano-scale pharmaceutical elegance, supporting its safe clinical application as a standardized Rasaoushadhi for contemporary Ayurvedic practice.

CONCLUSION

The pharmaceutico-analytical study of Siddapanchanana Rasa successfully establishes comprehensive standardization parameters, confirming its quality, safety, and reproducibility as a classical herbo-mineral Rasaoushadhi for Prameha management. Rigorous Shodhana of Hingula (Nadayantra, 50.29% Parada yield), Gandhaka (Kurmaputa-Godugda), Tankana (Nirjalikarana), and Vatsanabha (Gomutra Sthapana, 49% alkaloid reduction) ensured detoxification, while 180-hour Kajjali Mardana produced nano-fine HgS exhibiting classical Lakshanas (Rekhapurnatva, Nishchandratva).

Physico-chemical parameters (pH 8.0, total ash 20.78±0.80%, 0% acid-insoluble ash, 1-50μm particles), XRD (crystalline HgS + amorphous herbals), and FTIR (O-H 3292 cm^{-1}, C=O 1620 cm^{-1}) validate herbo-mineral synergy and antioxidant potential, providing pharmacopoeial benchmarks for safe clinical translation in Ayurvedic practice.

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