



Pharmaceutical Study of Sri Siddhadaramruta Rasa

*Dr. Dinesh Gupta, **Dr. Pardeep Agnihotri, ***Dr J. G. Mitti and ****Dr. M. C. Patil
D. G. M Ayurvedic College & Hospital Gadag, Karnataka, India

Abstract :

Sri Siddhadaramruta Rasa is a preparation involving Shodhita Hingula, which when subjected to Dal (liquefaction) and Pachanasamskara (heating) with specified drugs like Vataksheera (Ficus bengalensis Palanduswarasa (Allium sativum), Bhallataka (Semicarpus anacardium), Lavanga (Syzygium aromaticum) Grutha (cow ghee) is claimed to increase the therapeutic efficacy in Amavata (Rheumatoid arthritis) v taken with Purana Guda (Old jaggery) as anupana. Organoleptic character variations such as change in cc from Red to Dark Brown were noticed along with changes in percentage of mercury (Hg) and sulphur before and after the preparation (Hg from 86.6% to 62% and S from 12.83% to 12.28% respectively). Electron Spectroscopy for Chemical Analysis (ESCA) reported the presence of mercury oxide (HgO) mercury sulphide (HgS) in the ratio 60:40. It was noted that there was presence of selenium in le proportion which was not in elemental form.

Key words : Samskara, Dahana, Pachana, Sri Siddhadaramruta Rasa, Organoleptic characters, ESCA

Introduction :

Sri Siddhadaramruta Rasa¹ is a unique preparation which does not fall under chaturvidha rasayana (Kharaliyasayana, Pottalirasayana, Parpatirasayana and Kupipakwasayana). It involves pachanasamskara of Shodhita Hingula with Vataksheera and Palanduswaras, Dahana with ShuddhaBhallat and lastly pachana with Gogrutha². This pachita Hingula develops properties to cure Amavata. The samskara help in Gunaantardhana of a dravya. Hingula is a compound of parada and gandhaka. Parada and Gandhaka are most renowned rasa dravyas in the field of Rasashastra as well as Ayurveda. Being main ingredients of formulation, it can give miraculous results in Amavata. There are several preparations listed in Ayurvedic classics for Amavata which involve guggulu preparations and gold preparations. These ingredients are costly and list of ingredients is confusing. Compared to these, Sri Siddhadaramruta Rasa is cost effective. Hence, it is considered for study.

Materials & Methods :

- For the study, raw materials like Grahya Hingula⁵, Samskarartha Prayojya Ghatakas: Grutha, Bhallataka⁵ and Lavanga⁶, Ghruta, and Palandu⁷ were obtained from the market and Vataksheera⁸ collected from its natural habitat. All the raw materials were authenticated from experts in the subject of Rasashastra & Dravyaguna. Qualitative and quantitative analyses were performed in Bangalore Industrial Test House and other drug testing laboratories.
- Shodhita Hingula⁹ was made into cakes. Each cake was tied with cotton thread separately such that the entire cake was densely covered with the thread. This was done to ensure that Hingula is not exposed to the different media.
- Then Pachanasamskara-I: - All the Hingula cakes tied with cotton thread were placed in a moderate sized deep frying pan. Vataksheera and Palanduswarasa were poured into the pan and the pan placed over mruduvagni till all the liquid in the pan evaporated. The dry cakes (pachita Hingula) were collected and subjected to Dhahanasamskara.
- Dhahanasamskara: - Lavangayavakuta choorna was spread at the bottom of a pan and pachita Hingula was placed over it. A heap of shudhabhallataka¹⁰ was made over the Hingula cake in the form of a cone. The gaps were filled with lavanga choorna such that it formed a tight pack. Over this, an inverted funnel was placed such that the funnel wall covered the cone of Bhallataka completely. The funnel was surrounded with charcoal and the charcoal was ignited. When Bhallataka was completely burnt, Hingula cake (dahita Hingula) was taken out cleaned and subjected to Pachanasamskara- II.
- Pachanasamskara- II: - The Hingula cake was placed in the centre of deep frying pan on mandu. Grutha was poured gradually over the Hingula cake and allowed to evaporate. After evaporative distillation, the cake was collected and the cotton threads were untied. The cake was then powdered. The powdered form is ready for administration. Temperature during the procedure was 260°C - 280°C. The Sri Siddhadaramruta Rasa prepared by the above process was subjected to qualitative and quantitative analysis.

The results are as given below :

- Observational
- Analytical

1. Observational Results

Pharmaceutical process Preparation of Sri Siddhadaramruta Rasa :

Table 01: Organoleptic features of Sri Siddhadaramruta Rasa

Sr. No.	Feature	Sri Siddhadaramruta Rasa
01	Colour	Dark brown
02	Smell	Faint

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03	Touch	Fine
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Table 02: Results of Hingula Shodhana

Ingredients In quantity	Bhavanadravya Ardrakaswasa in ml	Mardana in hours	Results in gm	Remarks Gain in gm
Hingula 500 gms.	130	8	505	5
	130	8	512	7
	130	8 ½	518	6
	130	8½	525	7
	130	9	530	5
	130	9	538	8
	130	10	545	7

Table 03 : Effect on weight of Hingula :

Quantity of Hingula before shodhana (gm)	Quantity of Hingula after shodhana (gm)
500	545

Table 04 : Effect on weight of bhallatka:

Weight of Bhallataka before Shodhana (gm)	Weight of Bhallataka after Shodhana (gm)
800	750

Table 05: Weight of Hingula before and after threading

Drug	Before Threading (gm)	After Threading (gm)
Shuddha Hingula Cakes	100	105
	110	115
	110	115
	110	115
	115	120

Table 06 : Details of Pachanasamskara

Drug	Pachanadravya	Quantity	Temperature/ Total no of hours	Total weight before	Total weight after
Shuddha Hingula Cake	Vataksheera	250 ml	80°C for 5 hours	570 gm	650 gm
	Palanduswarasa	2 litres			

Table 07 : Details of GhrutaPachana

Drug	Weight before Pachana (gm)	Weight after Pachana (gm)
Dahita Hingula	135	130

2. Analytical Results

A) Qualitative Analytical Results¹¹

- Loss on drying at 110°C:
One gram of accurately weighed Sri Siddhadaramruta Rasa was heated in an electric oven up to 110°C and weighed again. The difference in weight was calculated and found to be 0.21%.
- Acid insoluble ash :
The ash obtained (during loss on drying) was mixed with dilute HCl and filtered through Whatman no. 1 filter paper. The residue was washed with hot water till it was free from chloride. The residue was dried in a crucible, dried and ignited at a low temperature. The percentage of acid insoluble ash was calculated with reference to the moisture free drug and was found to be 0.42%.
- The fineness of particle test :
It is possible to use the ordinary microscope for measuring the particle size in the range of micrometers to about 100 micrometers. The initial standardization of micrometer was carried out by coinciding with the lines of both Oculo-micrometer (OM) and stage micrometer (SM). Then, the stage micrometer was removed. The fine powder of Sri Siddhadaramruta Rasa was sprinkled on a slide covered with a cover slip, mounted slide on the mechanical stage and focused. The particles were measured along the arbitrarily chosen fixed lines covered by the particles using the Oculo-micrometer.

The size of the particle was calculated using the standard value. In the same way, the particle fine was measured for the powder of shodhita Hingula.

Results:

Table 08 : The fineness of particles in shodhita Hingula and Sri Siddhadaramruta Rasa

Sample	Atomic Mean Diameter (μm)	Mean Surface Volume Diameter (μm)
Shodhita Hingula	6.534	9.222
Sri Siddhadaramruta Rasa	4.788	8.198

- d. Determination of pH: The pH value of the Sri Siddhadaramruta Rasa was determined by a digital meter. As the sample was dry and solid in the form of capsules, 1% solution was prepared by dissolving 1gm sample in 100ml water. The pH of the 1% solution was found to be 6.66.
- e. Determination of total ash: About 2gm of ground drug (Sri Siddhadaramruta Rasa) was taken previously traced, ignited and weighed silica dish. The drug was scattered in a fine even layer or bottom of the dish. The drug was incinerated by gradually increasing the heat, not exceeding dull heat (4500C) until the sample was free from carbon. The residue was cooled and weighed. percentage of ash with reference to the air-dried drug was found to be 29.1%.
- f. Estimation of fat content: About 2 g of previously dried (during loss on drying) Sri Siddhadaramruta Rasa was weighed and placed in a thimble made of coarse filter paper and knotted with a thread. sample was extracted with 25ml anhydrous alcohol, free ether or petroleum ether in a Soxhlet extraction apparatus. Extraction period may vary from 4 hours at condensation rate of 5-6 drops/sec to 16 h at 2-3 drops /sec. The solvent was then evaporated and the extract was dried to a constant weight at 1100C. The fat content percentage was calculated and found to be 7%.

Table 09: Summary of qualitative analysis of prepared Sri Siddhadaramruta Rasa

Sr. No.	Parameters tested	Sri Siddhadaramruta Rasa
01	pH	6.66
02	Fineness of particle	8.198
03	Loss on drying 110 0	0.21%
04	Total ash	29.1%
05	Acid insoluble ash	0.42%
06	Flow rate	15%
07	Fat content	7%

B) Quantitative Analytical Results

Table 10 : Quantitative analysis of sulphur and mercury by Atomic absorption spectroscopy and Gravimetric method.^{1,2}

Sr. No.	Parameter used	Shodhita Hingula	Sri Siddhadaramruta Rasa
01	Sulphur	12.83%	12.28%
02	Mercury	86.10%	64.28%

ESCA Report : Mercury was present in oxide and sulphide forms. No elemental Mercury was present. The ratio of mercury oxide to mercury sulphide was found to be 60:40. The Selenium presence is increased mark after the samskaras.

Discussion :

- a. Shodhana was carried for Hingula with 7 bhavanas of ardrakaswarasa. One of the advantages of shodhana is to reduce the sample into smaller or finer particles. Finer particles are easier for absorption in the GI tract. After shodhana, the weight of the Hingula was increased from 500gm (before shodhana) to 545gm (after shodhana). As ardrakaswarasa contains fibrous matter and starch, it may cause an increase in the weight of Hingula.
- b. The colour of Hingula, as noted, changed with the change in temperature and nature of preparation. After the bhallatakashodhana procedure, Hingula lost its weight from 800 gm (before shodhana) to 700 gm (after shodhana). The pericarp of the bhallataka contains corrosive juices. To minimize its ill effects, shodhana with gomutra is mentioned. Gomutra contains certain amount of ammonia which is a good solvent. It brings out the excess of oils from the pericarp. This accounts for the loss of weight of bhallataka after shodhana.
- c. The collection of Vataksheera was done in Hemantha rathu, that is, in the months of October and December. This period is the time for sprouting of off-shoots. When these off-shoots are broken, they yield latex. Cotton is known to tolerate heat for longer hours; hence this was used to act as a barrier between Hingula and the media used for samskara.
- d. Pachana with Vataksheera and PalanduSwarasa- 800C, Pachana with Grutha- 2600 C- 2800C. In classical texts, use of funnel for dahana procedure is not mentioned. However, if Dahana is done directly, Hg from cinnabar will escape and there will be a great amount of weight loss in the Hingula cake. To minimize this loss, an alternate method was planned which involved covering the bhallataka heap with an inverted funnel as a barrier and the sides were filled with charcoals and ignited. This was an appropriate arrangement as after dahana the Bhallataka and lavangachoorana was charred and Hingula also retained its weight.
- e. The vaporization point of gomutra is very high. At the temperature of 2600C-2800C it starts evaporating.

- e. The vaporization point of ghruta is very high. At the temperature of 200°C-250°C it starts evaporate. Hingula should be in contact with ghruta at the temperature till all the ghruta evaporates. At the end of the procedure, thick fibre-like structures remained as the un-evaporated mass. This would be due to the formation of the polymer which retained rubbery consistency.
- f. The ESCA report suggests that the Selenium presence is increased markedly after the samskara. Selenium is considered as antioxidant. Prepared Sri Siddhadaramruta Rasa shows Hg 62% and Se 12.28%. The ESCA reported the presence of HgO and HgS in the ratio of 60:40.

Conclusion :

The *Hingulashodhana* was done using *Ardrakaswarasa Bhavana* which again aims at increasing its *Amapaci* property. For *dahana* procedure, using the inverted funnel was most convincing as this procedure helps to reduce the loss of Hg to a greater extent. The size of the particle of *Sri Siddhadaramruta Rasa* is significantly less than that of *ShodhitaHingula*. This shows that the *samskara* had a role in making it fine and better absorption. There is no direct reference for the use of *ShodhitaHingula* internally, but by this *dahana pachanasamskaras* it was made feasible for sole administration. All the analytical results of *Siddhadaramruta Rasa* are well within the safety limits as mentioned in standard Ayurvedic Pharmacopeia of India.¹³

References :

1. Sadananda Sharma, Rasatarangini, edited by KashinathaShastri, 11th edition, Varanasi: MotilalBanarasi Das, 1979, 9th Taranga, shloka 36-49, p. 905
2. Sadananda Sharma, Rasatarangini, edited by KashinathaShastri, 11th edition, Varanasi: MotilalBanarasi Das, 1979, 9th Taranga, shloka 36-49, p. 905
3. CarakaSamhita of Agnivesha, edited by Dr. Gangasahaya Pandeya and introduced by Acharya Priyavrita Sharma 5th edition, Chaukhambha Sanskrit Sansthan, Varanasi.
4. Vagbhatacharya, Rasaratna Samucchaya, editor Ambikadatta Shastri, 9th edition, Varanasi: Chaukhambha Ambarabharati Prakashana, 1998, chapter 3rd, shloka 149, p. 83.
5. Sadananda Sharma, Rasatarangini, edited by Kashinatha Shastri, 11th edition, Varanasi: MotilalBanarasi Das, 1979, 24th Taranga, shloka 473, p.734.
6. Prof. P. V Sharma, text book of DravyaGuna Vol.-2, Reprint 2011, ChaukhambhaBharti Academy Varanasi India, p. 246.
7. Prof. P. V Sharma, text book of DravyaGuna Vol.-2, Reprint 2011, ChaukhambhaBharti Academy Varanasi India, p. 69.
8. Kirtikar. K. R. and B. D. Basu, Indian medicinal plants, Edited by E. Blatter, J. F. Caius and K. Mhaskar. 2nd edition, 1999, vol - III p.2313.
9. Sadananda Sharma, Rasatarangini, edited by KashinathaShastri, 11th edition, Varanasi: MotilalBanarasi Das, 1979, 9th Taranga, shloka 12, p.201.
10. Rasatantrasara - va - Siddhaprayoga Sangraha, 16th edition, Krishnagopal Ayurveda bhavan, Patna, Dravya Shodana Prakarana, p.77
11. Government of India The Ayurvedic Pharmacopoeia of India Part 1, 1st edition Vol.3. Dept. of ISM & H. Health and Family welfare; 2001. p.234-5, 241-44.
12. Edward Smith, Pharmaceutical Analysis and Procedures, 3rd. Edn. p.219.

* P.G Scholar
 ** Ex P.G Scholar
 *** Guide - Assistant Professor
 **** Head of Department