

(REVIEW ARTICLE)



An explicit appraisal on *HINGULA*: An indigenous component of *Rasaushadhies*

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Abstract

Hingula, very well known as Cinnabar, is a chief ore of Mercury. It is available as natural ore and is also prepared artificially. While there are other ores of mercury, Hingula is considered to be the best ore, and Hingulottha Paarada is said to be equal to properties of Ashta Samskarita Paarada. An effort is made hereby to compile all the information related Hingula including its Historical aspect, origin, synonyms, classification according to different texts, artificial preparation of Hingula, Grahya Lakshana, complications caused due to Ashuddh Hingula sevan and its Chikitsa, Shodhan and Marana of Hingula, Extraction of parade from Hingula and its superiority over other types of Parada, Rasa Panchaka and Upyoga of Hingula. This paper also covers the Bio-medical counterpart of Hingula i.e. Cinnabar including its varieties, mineralogical characters and chemical properties.

Keywords: Hingula; Hingulottha Paarada; Cinnabar; Shodhana

1. Introduction

Hingula was used as application on forehead as Bindi because of its red colour in olden days. The description of Hingula is dated long back. In koutilya's Arthashastra, a book written around 200B.C, various methods has been mentioned for testing various metals using Hingula. There are a few references also available in Nighantu's like, Dhanwantari Nighantu, Raja Nighantu, Kaideva Nighantu, and Bhaava Prakaasa Nighantu.

- **RASA KAALA: (starts from 8th century)**- This is the period where Rasa Shastra has developed vastly and different methods of formulations, extractions have been developed.
- **RASENDRA MANGALA (8th century)**:- The oldest text of Rasashastra, Rasendramangala described for the first time about shodhana and the therapeutic usage of Hingula and this is also used for the preparation of Loha Bhasma. He has considered Paaradaas the Satwa of Hingula.
- **RASA HRIDAYA TANTRA (10th century)**:- Acharya Bhagvata Govindpada has mentioned in list of eight Rasadravyas.
- **RASARNAVA (12th century)**:- He has considered Hingula as Maha Rasa; he also described the synonyms, varieties, properties and Satvapatana of Hingula. He utilized the term "Rasa Gandha Sambhotam" which indicates the awareness about chemical composition of Hingula.
- **RASARATNAKAR (15th century)**:- Rasaratnakara described the Hingula and also mentioned its artificial preparation.

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1.1. Other granthas

Rasaratnasamuchchaya, Rasaprakasha Sudhakara, Rasendra Sara Sangraha, Rasendrachudamani, Ayurved prakasha Bhavaprakash etc., and recent Rasagranthas like Rasatarangini, Rasamritakara, Siddha Bhaishajya Manimala, RasaJalaNidhi, Itrochemistry of Ayurveda have mentioned the Synonyms, varieties, properties, Shodhana, Grahyalakshana and uses. These texts also mentioned the artificial preparation of Hingula.

1.2. Origin of Hingula

According to Rasa Ratna Samucchaya, Hingula is considered as the Veerya of Lord Shiva. It has got the name Darada because the Virya of Lord Siva, which was received by God Agni but due to unbearable intensity he omitted it. The omitted material fell in 'Darada Desha' and became known as Darada, a synonym of Hingula.

Table 1 Synonyms of Hingula according to different texts

S.NO	SYNONYMS	R.T ¹	R.S.S ²	A.P. ³	Dh.Ni ⁴	Kai.Ni ⁵	B.P. ⁶
1	Hingulam	-	-	-	+	-	-
2	Hingul	+	-	-	-	-	-
3	Hingula	+	+	+	-	-	+
4	Ingula	+	-	-	-	-	+
5	Mlechha	+	-	+	+	+	+
6	Gairika	+	-	-	-	+	-
7	Suranga	+	-	+	-	-	-
8	Chitranga	+	-	-	-	+	-
9	Rasa Sthana	+	-	-	+	-	-
10	Barbara	-	-	+	-	-	-
11	Rasa Gandha Sambhuta	-	+	-	-	-	-
12	Maraka	-	-	-	+	-	-
13	Rasa Garbha	-	+	-	+	-	-
14	Rakta	+	-	+	-	+	-
15	Rasodbhava	+	-	-	+	-	-
16	Churna Paarada	+	-	-	+	-	+
17	Hamsapaada	+	-	-	+	-	+
18	Ranjana	+	-	-	-	-	-
19	Darada	+	+	-	-	-	+
20	Ati Rakta	-	-	-	-	+	-
21	Parvata	-	-	-	-	+	-

(-) - mentioned in text; (-) - not mentioned in text

Table 2 Synonyms on basis of Appearance, Guna, Karma, Constituents and Habitat

Names based on	Synonyms
Appearance	Kapishirshaka, Chitranga, Chinapishta, Churna Paarada, Makshi Vanga, Daitya Raktaka, Manohara, Markata Shirsa, Rakta, Raktakaya, Rakta Paarada, Shukatundaka, Supittaka, Suranaga, Hansapada, Hansandhri, Hansaka, Hingulu, Hinguli, Hingula, Kuruvinda.
Guna & karma	Charmanuranjana, Maraka, Maniraga, Ranjaka, Ranjana, Lohaghna, Ratna Ragakari, Raga Dravya, Vishesa, Barbara, Sagara, Charmara, Charmaragandhika, Charmarabandhanam, Charmaravardhana, Uru Charmaka.
Constituents	Rasagandha Sambhuta, Rasa Garbha, Rasasthana, Siddhi Paarada, Rakta Paarada, Rasodbhava, Rasa.
Habitat	Mleccha, Darada, Chinapista

2. Classification

Different authors have included Hingula under the various titles. The classification of all Rasa dravyas done generally, according to their usage and importance in the procedure related with Paarada. The important Rasa texts have included Hingula under following classes –

Table 3 Classification of Hingula according to different Texts

Sl.no	Authors	Rasa	Maharasa	Uparasa	Sadharana rasa	Swarnadi varga	Rasa dhatu	Dhatu varga
1	RasaHrudayaTantra	+	-	-	-	-	-	+
2	Rasarnava	-	+	-	-	-	-	-
3	Rasakamadhenu	-	+	-	-	-	-	-
4	Anandakanda	-	-	+	-	-	-	-
5	Rasaprakasa Sudhakara	-	-	+	-	-	-	-
6	RasendRasaRasangraha	-	-	+	-	-	-	-
7	Rasa Manjari	-	-	+	-	-	-	-
8	Rasendra Chintamani	-	-	+	-	-	-	-
9	Ayurveda Prakasa	+	+	-	-	-	-	-
10	BhavaPrakasa	-	-	+	-	-	-	-
11	RasaRatnaSamucchaya	+	-	-	-	-	-	-
12	RasendraChudamani	-	-	-	+	-	-	-
13	BharateeyaRasashastra	-	-	-	+	-	-	-
14	DhanvantariNighantu	-	-	-	-	+	-	-
15	Raja Nighantu	-	-	-	-	+	-	-
16	MadanaphalaNighantu	-	-	-	-	+	-	-
17	Rasamrita	-	-	-	-	-	+	-
18	Yogaratanakara	-	-	-	-	-	+	-
19	Kaideva Nighantu	-	-	-	-	-	-	+
20	Bhavaprakasa Nghantu	-	-	-	-	-	-	+

(-): mentioned in text; (-) - not mentioned in text

2.1. Hingula bheda

Basically Hingula is of two types: Khanija and Krutrimaja. Khanija is available in Mines and Krutrima is prepared artificially.

This Khanija Hingula is again of three types and according to some Acharyas it is of two types. They are Charmara, Shukatunda, Hamsapaada.

- Charmara is the one which is greenish red in colour. It is considered as Adhama for use in preparations.
- Shukatunda is yellowish red coloured like a beak of parrot. It is considered as Madhyama and can be used for preparations.
- Hamsapaada is red coloured one like a paw of Hamsa (swan). It is considered as the best variety of Hingula available and is best for medicinal use.

They are powerful in their ascending order. Among those Hamsapaada Hingula is considered to be the best variety for preparation of medicines and for extraction of Paarada.

Table 4 Types of Hingula according to Different Texts

Sl. No.	Name of Text	Charmara	Shukatunda	Hamsapaada	Anya
1	Anandakanda	+	+	+	-
2	Rasendra chudamani	-	+	+	-
3	Ayurveda Prakasha	+	+	+	-
4	Rasa Tarangini	+	+	+	Kritrima, Khanija
5	Rasamrita	-	-	+	Mleccha
6	Rasa RatnaSamucchaya	-	+	+	-
7	Paarada Vignyana	+	+	+	-
8	Ayurveda Sara Sangraha	+	+	+	-
9	Bhava Prakasha	+	+	-	-
10	Yogaratnakara	+	+	+	-

(-) - mentioned in text; (-) - not mentioned in text

2.2. Occurrence ^{7,8,9}

It is obtained from the mines as a natural mineral and also prepared artificially. In ancient days Hingula was imported from darada desha, hence the name Darada has come for Hingula. It can be found at many places all over the world i.e., Spain (almandine), Italy, Russia, Yugoslavia, Czechoslovakia, Germany (Idria mines), Japan, China, USA, Australia, Nepal. But, now a day no deposits of cinnabar are detected in India. Artificial Hingula is prepared in Surat and Calcutta. The Hingula what we get from market is artificially prepared.

2.3. Chemical composition (HGS)

According to Rasarnava Hingula is referred as "Rasagandha Samnbutham" by this it can be said that Hingula is a compound of Paarada and Gandhaka. Chemically it is Red Sulphide of Mercury. It contains 86.2% of Paarada and 13.8% of Gandhaka and trace amount of Arsenic, Iron pyrite, Clay, Gypsum, and Black earthy material.¹⁰

2.4. Artificial preparation of hingula

Artificial Preparation of Hingula was first mentioned in 15th century by Rasaratnakara¹¹. Later other texts of Rasa Shastra has also mentioned about its artificial preparation. But the ratio of Paarada and Gandhaka is different.

- According to Rasatarangini¹²- 42 Part Paarada and 8 Part Gandhaka subjected to Paaka in Damaru yantra.
- According to Ayurveda Prakasha¹³- 1 part ashuddha Paarada and 4 part ashuddha Gandhaka, subjected to pachana in Loha patra. After paka 1/10 part Manashila was added and Mardana was done & fill in Kachakupi.

After filling, it was kept in Valuka Yantra and subjected to kramaagni Paaka karma (mridu, madyam, teevra) by adopting Kupipakwa method.

2.5. Grahya lakshanas of hingula

These lakshanas have been explained to collect and use the best Hingula out of the ones which are available. Different aacharyas have mentioned different lakshanas for Hingula.

Table 5 Grahya Lakshanas According To Different Acharyas

S.no.	GRAHYA LAKSHANAS	R.R.S.	A.P.	RT.	P.V.	R.S.S.	B.P.	Y.R.
1	Japakusum Varnabha	-	+	+	+	-	+	-
2	Mahojwala	-	-	+	-	-	-	-
3	Bharapoorna	-	-	+	-	-	-	-
4	ShwetaRekha	+	-	+	-	-	-	-
5	Pravalabha	+	-	+	-	-	-	+
6	Bimbiphala Sadrusha	-	-	-	-	+	-	-
7	Sumanohara	-	-	-	-	-	-	-
8	Uttama	+	+	+	+	+	+	+

(-) mentioned in text; (+) not mentioned in text

According to different Acharyas, Various drugs are used for HingulaShodhana:

- Kushmand swarasa and Lakucha swarasa.¹⁴
- Lakucha swaras or Ardraka swaras.¹⁵
- Sringveri swarasa, Meshidugdha, Amlavarga dravya, Nimbu swarasa.¹⁶
- Amlavargadravya, Meshidugdha, Nimbuswarasa, Ajamutra, Ardhrak swaras.¹⁷
- Ardhrakaswarasa or Lakuchaswarasa.¹⁸
- Ajadugda and Amlavarga, Ardrakaswarasa or Lakuchaswarasa.¹⁹

Table 6 Different process according to different Texts

Sl. No.	Name of Author	Process	
		Swedana	Bhavana
1	RPS ¹⁴	+	-
2	RRS ¹⁵	-	+
3	RT ¹⁶	-	+
4	RSS ¹⁷	+	+
5	RCH ¹⁸	-	+
6	AY.P. ¹⁹	-	+

(-) mentioned in text; (+) not mentioned in text

2.6. Complications caused due to asuddha hingula sevana:²⁰

According to Rasa tarangini, Ayurveda praakasa it causes different kinds of diseases like Moha, Prameha, Chitta vibhrama, Klama, Sareera ksheenatwa. Hence Shodhana of Hingula is necessary.

2.7. Chikitsa for asuddha hingula sevana

In Rasatarangini, chikitsa for asuddha sevita or asamyaksuddha Hingula sevana has been mentioned. The author says that, the chikitsa followed for asuddha sevita Paarada also can be followed for asuddha sevita Hingula. Sodhita Gandhaka can also be administered for management of complications of Asuddha Hingula Sevana.

3. Shodhana of hingula

Shodhana is a procedure which nullifies all the toxic elements present in a Mineral and makes it pure and eligible for medicinal preparation. As available both naturally and artificially, there is a necessity for Hingula to undergo Shodhana. There are different drugs and different Shodhya dravyas and Shodhana methods described for Hingula Shodhana by different Rasa Acharyas as mentioned below

- Nimbu Swarasa
- Kanji
- Ardraka swarasa or Lakucha swarasa
- Mesha ksheera.

3.1. Extraction of paarada from hingula

The Satwa of Hingula is described as Paaarada. There are number of references available on Satwapaatana of Hingula. It can be done by using Vidhyadhara Yantra or Damaru Yantra Paatana Yantra i.e., either through Urdhwa, Adhah, Tiryak Paatana as per the opinion of different Rasa Acharyas.

Table 7 Different types of Extraction of Paarada according to different Texts

Sl. No.	Author	Drugs used	Yantra			
			Urdhwa	Adhah	Vidyadhar	Damaru
1	R.Ch ²¹	Ardraka swaRasa bhavana	+	-	+	-
2	R.R.S. ²²	-	-	+	-	-
3	B.P.N ²³	-	+	-	-	+
4	A.P ²⁴	NimbuswaRasa	+	-	-	-
5	R.S.S ²⁵	Paribhadra swaRasa	+	-	-	-

(-) - mentioned in text; (-) - not mentioned in text

3.2. Method of paarada nishkashana (prachina granths):²⁶

In ancient days the only source of Mercury was Hingula (Cinnabar). It is accepted that Hingulakrushta Paarada is pure, devoid of Yougika Doshas (Naaga, Vanga)& believed to possess the property of "*JeernaGandha Gunaha*". In Rasaratnakara, it is also advised to use Hingulakrishta Paarada for all purposes without doing ashtasamskara. Prior to the extraction of Paarada from Hingula, it should be purified by giving Bhaavana with Nimbu Swarasa or Ardraka Swarasa. This enables to reduce the particles of Hingula to its fine state of sub-division. By this maximum surface area of Hingula is exposed for extraction of maximum quantity of Paarada. It is advised to keep cold pads over the top of Damaru Yantra, which facilitates the Sublimation of Paarada over the inner surface of the upper vessel of Damaru Yantra. Sublimated Paarada has to be collected, separated by repeated Prakshalana and to be stored in clean container.

3.3. Superiority of hingulotha parada

Parada extracted from Hingula is considered to be the best because it is free from various types of doshas. Hence, the same does not need any further Samskar and could be used even without subjecting it to AshtaSamskaras and is claimed to be capable of performing all the action attributed to it. According to Rasaprakash Sudhakar, Parada extracted from Hingula may possess all those properties, which are seen in Shadgunabalijarita parada thus it is considered to be superior.

3.4. Marana of hingula

In Bruhat Rasaraja Sundara total 3 methods are described for Hingula Marana. In Yogaratnakara, Hingula Bhasma Vidhi has been described. Most of Rasa Aacharyas have mentioned Sodhita Hingula with different Anupanas.

3.5. Rasa panchaka of hingula

- Rasa : Tikta, Katu, Kashaya
- Guna : Ushna Guna²⁷
- Veerya : Ushna Veerya²⁷
- Vipaka : Katu vipaka²⁷
- Doshagnata : Tridoshahara

Karma : Agnivardhaka, Rasayana, Balya, Medhya, Kantivardhaka, Garavishnashaka.

Upayog: ^{27,28} Prameha, Jwara, Hridroga, Kusta, Garavisha, Amlapitta, Kamala, Pleehavraddi, Mandagni, Aruchi, Amavati, Sandhivata, Hrillasha. Lohamarnarta, Lohajaranarta, Paradaniskashanartha, Dehavadatmaka, Swarnapariksanarthaka.

4. Cinnabar²⁹

Cinnabar is an important ore of mercury. It is generally found in massive, granular, or earthy form. It occurs as hard in small complex and highly modified hexagonal structures. It is Vermilion in colour.

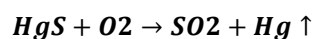
VARIETIES: There are three varieties of Cinnabar. They are:

- **Cinnabar native** – This is one of the most important ore of mercury. Chemically it contains 84% mercury sulphide. It is bright and dark red in colour it contains other impurities like Carbon, Silica, Quartz etc.
- **Hepatic cinnabar** – When percentage of carbon impurities is higher in cinnabar, its colour becomes darker like liver colour, such an ore is called as hepatic cinnabar.
- **Meta cinnabar** – This type contains muddy dust in more percent and that makes its colour still darker almost to a black shade.

4.1. Mineralogical characters of cinnabar

According to Inorganic chemistry, Cinnabar crystallizes in rhombohedral/trapezohedral crystals. Crystals are also thick tabular. In habit sometimes it occurs as twins and acicular prismatic grains, in crystal incrustations, granular, massive and sometimes with earthy coatings.

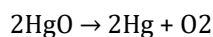
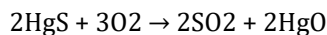
- Identified as - Cinnabar
- Chemical name - Mercuric Sulphide
- Chemical formulae - HgS
- Cleavage - Prismatic perfect
- Fracture - Sub-conchoidal to uneven, somewhat sectile
- Hardness - 2 to 2.5
- Specific Gravity - 8 to 8.2
- Lustre - Admentive, inclining to metallic and dull.
- Colour - Red, brownish red and lead gray.
- Streak - Scarlet
- Transparency - Opaque
- Solubility - Insoluble in water and acids
- On heating - Mercury evaporates and sulphur dioxide is formed.



4.2. Chemical properties

- Cinnabar is a red coloured mineral. This ore will be having a crystalline mass that is easily distinguishable from all other red minerals and by its peculiar shade of colour and its weight.

- Cinnabar is oxidized to mercuric oxide and sulphur dioxide is released at the temperature of the furnace and mercuric oxide so forms decomposes to give mercury and oxygen.



- The mercury obtained by above method is the purest mercury.

5. Discussion

According to mythology, the origin of Hingula has come from Paarada, while it was being carried by Lord Agni from Lord Shiva. Hingula is a chief ore of Paarada, which is available naturally and can be prepared artificially also. There are 3 types of Hingula which were described in classics. Of them, Hamsapaada Hingula is considered to be the best because of its qualities. Hingula which is having the qualities like colour of Hibiscus flower, which is having shiny lines, great colour (red colour), and heavy in weight should be taken for medicinal preparation. It contains maximum amount of Paarada. Being Tikta rasa, Ushna guna, Ushna veerya, and Katu vipaaka, it can be used as Agnivardhaka, Rasayana, Balya, and Medhya.

6. Conclusion

Description of *Hingula* is found almost everywhere in *Ayurvedic* lexicon and is an indigenous part of Rasa Shastra. Present review aimed at compiling all possible information that can assist in strengthening the knowledge of personnel interested in dealing with Rasaaushadhies specially Hingula.

Compliance with ethical standards

Disclosure of conflict of interest

None to Declared.

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