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A Literary Review of *Kansya* (Bell Metal)

Sonbhoyar Devaki¹, Dongre Sushma²

¹Post Graduate Scholar, Dept. of Rasa shastra & Bhaishajya Kalpana, Government Ayurvedic College, Dharashiv, Maharashtra, India.

²Assistant Professor and PG. Guide, Dept. of Rasa shastra & Bhaishajya Kalpana, Government Ayurvedic College, Dharashiv, Maharashtra, India.

ABSTRACT

Kansya is a metallic alloy known as Bell metal worldwide typically comprised of 78% copper and 22% tin. The classical texts divided *Loha* or *Dhatu*s into three categories i.e., *Shuddha Loha*, *Puti Loha*, and *Mishra Loha*. *Kansya* is popularly categorized under *Mishra Loha*. As per the description available in *Rasa Granthas* *Kansya* constitutes of *Tamra* (Copper) and *Vanga* (Zinc) in a 4:1 proportion. *Kansya* was processed into *Bhasma* through the *Shodhana* and *Marana* processes. **Aim and Objectives:** To review classical literature on *Kansya* along with pharmaceutical process of *Shodhana* and *Marana* for preparation of *Kansya Bhasma*. **Material and Method:** All the classical literature in *Rasagrantha*, *Samgraha Grantha*, textbook of *Ayurveda* and *Rasashastra* regarding *Kansya Bhasma*. **Observation and Result:** The classical literature revealed that synonyms, vernacular name and type of *Kansya* from various classical text. The pharmaceutical process like *Kansya Nirman Vidhi*, *Grahyagrahyatva Lakshana*, *Shodhana* and *Marana* procedure is mentioned by various *Acharyas*. Therapeutic uses of *Kansya Bhasma* also mentioned in various text. **Conclusion:** This review was the compilation of information about *Kansya* compiled from different classical *Rasa Shastra* Texts. On reviewing the text, no or very little research information was quoted in regard to *Kansya*. There need to explore further study on *Kansya Bhasma*.

Key words: *Kansya*, *Bhasma*, bell metal, Copper and Tin

INTRODUCTION

Kansya (Bell metal) has been prevailing since period of *Samhita Kala*. It is an alloy of copper and tin. In *Rasa Shastra*, *Loha* is categorized into three groups i.e., *Shuddha Loha* (noble metals), *Puti Loha* (foul smell producing metal on heating), and *Mishra Loha* (alloy).^[1] *Kansya* is classified among *Mishra Loha*. Formerly, it was combined in the *Loha* group but thereafter in the *Mishra Loha* along with *Pittala* (Brass) and *Varta Loha* (Bronze). *Kansya* is quoted in a wide array of *Rasa*

Shastra texts like *Ras Ratna Samuchchya*, *Rasa Tarangini*, *Rasendra Chudamani*, *Rasendra Chintamani*, *Ayurveda Prakash*, *Rasa Prakash Sudhakara* and *Sharangdhar Samhita*. It is made up of *Tamra* (copper) and *Vanga* (tin) in a 4:1 proportion. *Kansya Bhasma* is advisable in the regimen for extensive ailments like *Krimi* (Worm infestation), *Kushtha* (Skin diseases) and eye disease. It is an element in the formulations such as *Nityanad Rasa*, *Laxmivilas Rasa*, *Chintamani Rasa*, *Kshayakeshari Rasa* and *Vatvidhvanasa Rasa*.

Address for correspondence:

Dr. Sonbhoyar Devaki

Post Graduate Scholar, Dept. of Rasa shastra & Bhaishajya Kalpana, Government Ayurvedic College, Dharashiv, Maharashtra, India.

E-mail: devakisonbhoyar@gmail.com

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AIM AND OBJECTIVES

Literary study of *Kansya* from various classical text books.

MATERIALS AND METHODS

1. Source of data: Literary study done by collecting data from all *Rasashastra* classical text book.
2. Including journal, website, internet
3. Previous work done.

REVIEW OF LITERATURE

Kansya is an important *Misra Loha* since period of *Samhita Kala*. *Misra Dhatus* is important because they have more therapeutic properties as compared to single-metal preparations. *Acharya Charak* used this metal to prepare *Basti Netra*.^[2] In ancient *Kala*, *Kansya* utensils were used for cooking practices. *Kansya Bhasma* has properties of *Tamra* and *Vanga*. It is used in worm infestation, skin diseases and blood disorders.^[3]

Table 1: Synonyms of Kansya by various literatures

SN	Classical text	Synonyms of Kansya
1.	<i>Rasa Tarangini</i> ^[4]	<i>Kansiya, Kansyaka, Kansya, Ghoshpushpa, Ghoshaka, Vahnilauha, Ghosha</i>
2.	<i>Shaligramnighantu</i> ^[5]	<i>Kansya, Vidutpriya, Tamrardha, Vangashulbaja, Kansasthi, Prakasha, Ghantashabda, Asurahya, Saurashtraka, Ghosha, Kasiya, Ghorpushpa, Vahnilauhaka, Diptilohaka, Ghoshpushpa, Diptiloha, Kasaka, Tamraputra, Dipti.</i>
3.	<i>Rajanighantu</i> ^[6]	<i>Kansya, Saurashtrika, Ghosha, Vahnilauhaka, Kansiya, Dipta, Loha, Ghorpushpa, Dipataka, Sumana</i>
4.	<i>Kaiyadevanighantu</i> ^[7]	<i>Kansya, Lohanibha, Ghosha, Prakasha, Kamala, Lavalam</i>
5.	<i>Dhanvantarinighantu</i> ^[8]	<i>Kansya, Lohama, Nijam, Prakasha, Kansyakam, Balam, Ghoshpushpa</i>
6.	<i>Rasa Jala Nidhi</i> ^[9]	<i>Dhwanishcha, Kansyakam, Kansya, Ghoshpushpa, Ghoshakam, Ghosho, Ghoshamagniloham, Ghosha</i>
7.	<i>AnandKandama</i> ^[10]	<i>Kansya, Saurashtrika, Ghosha, Kansiya, Vahnilauhaka, Dipta, Loha, Ghoshayu, Dipatka</i>

Vernacular Names^[11]

Sanskrit - *Kansya*
 English - Bell metal
 Hindi - *Kansya, Kansyi*
 Marathi - *Kase*
 Gujrati - *Kasu*.
 Farsi - *Royin*
 Telugu - *Kanchu*
 Kannada - *Kanchu*
 Arabi - *Talikuna*
 Vanga - *Kansa*

Kansya Nirmana Vidhi

Kansya is prepared by melting and mixing *Shuddha Tamra* (four parts) and *Shuddha Vanga* (one part). *Kansya Bhasma* contain copper and tin element. Hence some benefits of copper and tin in the human body.

Table 2: Rasa Panchak (Ayurvedic Pharmacological Property) of Kansya^[12]

SN	Rasa Panchak	Properties
1.	<i>Rasa</i> (Taste)	<i>Tikta</i> (Bitter), <i>Kashaya</i> (Astringent)
2.	<i>Guna</i> (Quality)	<i>Ruksha</i> (dryness), <i>Laghu</i> (Light)
3.	<i>Virya</i> (Potency)	<i>Ushna</i> (hot)
4.	<i>Vipaka</i> (Post Digestive State)	<i>Katu</i> (Pungent)
5.	<i>Prabhava</i> (Therapeutic Effect)	<i>Lekhana</i>
6.	Effect on <i>Dosha Karma</i>	Pacifies <i>Kapha</i> & <i>Vata</i> and Detoxifies <i>Pitta</i>
7.	Effects on Organs	Eyes, Skin & Intestines

Table 3: Type of Kansya^[13]

According to *Ayurveda Prakash* *Kansya* have 2 varieties which is mentioned

SN	Type	Quality
1.	<i>Pushpa</i>	<i>Shwetatam</i> (white) and <i>Grahya</i>
2.	<i>Tailika</i>	<i>Pitabh-Rakta</i> and <i>Agrahya</i>

Grahya Kansya Lakshana^[14]

Sample of *Kansya* having *Teekshana Shabdham* (sharp sound), *Mridu* (soft), *Snigdha* (smooth to touch), *Eshat Shayamalam* (slightly grayish), *Shubhram/Nirmalam* (without impurities), *Dahe Raktam* (turns red on heating) is preferred for therapeutic purposes.

Agrahya Kansya Lakshan

Sample of *Kansya* having *Pittavarna* (yellow in colour), turns *Tamravarna* (copper in colour) when heated, *Khara*, *Ruksha* (rough), *Ghanasaham* (prone to breaking when beaten with a mallet), *Mandanada* (makes a low sound when struck) and is *Gatjyoti* (lustreless), *Kansya* having these seven characteristics should be discarded. That is, do not use it for *Bhasma*.

Preparation of Kansya Bhasma

All metals and minerals undertake the two essential processes of *Shodhana* and *Marana* to transform into their most potent dose form, known as *Bhasma*.

Shodhana (Purification)

Rasa Tarangini has stated *Shodhana* (purification) as a process of elimination of *Doshas* from the *Lohadi Dhatus* by subjecting them to a procedure like *Peshana*, *Mardana* (trituration), *Bhavana* (levigation), etc. with a previously prescribed *Aushadha* (drug).

Shodhana process is grossly subdivided into two major categories:

1. *Samanya* (General procedure for all metals) and
2. *Vishesha* (Specific procedure for a single metal).

Samanya Shodhana of Kansya (Purification)^[15]

It is a series of processes in which five *Dravyas* (fluids) are used as quenching media viz, *Tila Taila* (Sesame oil), *Takra* (Buttermilk), *Gomutra* (Cow's urine), *Kanji* (Sour Gruel), *Kulattha Kwatha* (decoction of Horse gram). *Kansya* is heated and quenched 7 consecutive times in each media, in successive order. It will be 35 times heating and quenching. This process will be mitigating toxicity and enhance potency, it requires *Vishesh Shodhana* after *Samanya Shodhana*.

Table 4: Vishesh Shodhana of Kansya as mentioned in classics.

Shodhana Dravya	R.T [16]	R.R.S [17]	A.P. [19]	R.C. [20]	R.P.S [21]	R.CHI [22]
Gomutra (<i>Kansya Patras</i> is heated and quenched in cow's urine for 7 times)	✓	✓		✓	✓	
Nirgundi Swaras (<i>Kansya Patras</i> is heated and quenched in <i>Nirgundi Swaras</i> for 7 times.)						✓
Gomutra (Heating <i>Kansya Churna</i> in <i>Gomutra</i> mixed with <i>Saindhava Lavana</i> for one <i>Prahara</i>)	✓		✓			

Marana (Incineration)

Marana is defined as the process by which metals and minerals are grounded with liquids (*Svarasa* etc.) and when dry reduced to *Bhasma* by heat. For proper achievement of *Paka* of *Rasadi Dhatus*, a quantum heat (*Agni*) in the form of *Putra* is required which should be neither less nor more.^[15] For *Kansya* to be appropriate for internal administration, the *Shodhana* process must be implemented and succeeded by the *Marana* process. It is considered to be the ultimate stage in achieving the formation of nanoparticles. On the basis of the *Bhavana Dravya* (medium) adopted for the *Marana* technique, numerous methods have been suggested by the *Acharyas*.

Table 5: Marana of Kansya as mentioned in classics.

SN	Classical text	Marana of Kansya
1.	Rasendra Chudamani ^[23]	Kansya Marana is done by applying Shuddha Gandhak and Hartal 50-50gm each on 200gm Kansya Patra(leaflets). After this, heat is given in Varaha Puta and Gaja Puta to obtain Kansya Bhasma.
2.	Rasa Prakash Sudhakar ^[24] & Rasaratan Samucchyaya ^[25]	Kansya marana is done by using Hartal, Gandhak along with Nimbu rasa for trituration. Five or more Gaja Puta can be given till the Bhasma is formed
3.	Sharangdhar Samhita ^[26]	Samyoga of Gandhak (treated with Arka milk, Bargad milk, Sambhalu Patra Kalka, Chiraunji Kalka) with Tamra, Pittal and Kansya forms their Bhasma
4.	Ayurveda Prakasha ^[27]	Gandhak is grinded in Arka milk and this paste is applied on Kansya Patras. The heat of Gaja Puta is supplied and Kansya Bhasma is obtained after two Puta
5.	Rasatarangini ^[28]	Kansya Marana (1st Method) – Gandhak mixed with Arka milk is applied on Kansya Patra and dried. Now three Gaja Puta are given. Kansya Marana (2nd Method) - Shuddha Kansya churna and Shuddha Hingul is taken in equal quantities, trituated with Nimbu Swarasa and three Gaja Puta are given.

		Kansya Marana (3rd Method) - Shuddha Kansya churna and Manahshila Churna is mixed with Gandhak in equal quantities and trituated with Ghririkumari rasa. After the above mixture dries three Gaja Puta are given.
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Kansya Bhasma dosage:^[29]

General dose of Kansya Bhasma is ½ -1 Ratti. However, dose is finalized after through consideration of all relevant factors.

Benefits and Medicinal Uses of Kansya Bhasma

Kansa (Kansya) Bhasma has properties of Tamra and Vanga. It is used in worm infestation, skin diseases and blood disorders. However, potency (Virya) of Kansya Bhasma is Ushana (Hot), but it pacifies Pitta because of its Tikta (Bitter) & Kashaya (Astringent) in taste (Rasa). Due to qualities like Laghu (Light) & Ruksha (Dry), it may not be beneficial in Vata disorders. Therefore, it should be used in Kapha-Pitta disorders. Kansya Bhasma contains copper and tin elements. Here are some benefits of copper and tin in the human body. According to Rasprakash Sudhakar Kansya Bhasma has Vata Nashaka and Sarva Prameha Nashaka (cures all types of Diabetes).^[30]

DISCUSSION

Kansya is Mishra Loha of Tamra (Copper) and Vanga (tin). Although Kansya is well known since the Samhita period, its internal use was seen in the primitive period. Kansya one of such metals has been advocated in the management of innumerable diseases. Metals and minerals are important parts of therapeutics in Ayurveda. In our classics, Kansya Bhasma has been indicated in Krimi (Worm infestation), Kushtha (Skin diseases) and eye disease. In Rasashastra typically, minerals and metals are processed as Bhasma. There are multiple stages in the preparation of a Bhasma, encompassing Shodhana, Bhavana, and Marana. After Bhasmikarana, the macro-sized metals and minerals transform into micro-sized Bhasma. Kansya Bhasma

prepared after enduring these processes is therapeutically appreciated because of its nano-crystalline structure. The small particle size of *Kansya Bhasma* helps it to interact with the body at the molecular level. The bioavailability of *Bhasma* is enhanced even at lower doses owing to its substantially decreased particle size. The formulations of *Kansya* can be utilized in a number of diseases.

CONCLUSION

This review is the compilation of information about *Kansya* compiled from different classical *Rasa Shastra* Texts. *Pittala* (Brass) and *Varta Loha* (Bronze) were known in the later *Vedic* period, especially Bronze Age. On reviewing the text, no or very little research information was quoted in regard to *Kansya*. *Tamra* and *Vanga* being the component of *Kansya* is widely used for making *Bhasma*. Undoubtedly, the *Bhasma* of *Kansya* might be easy to prepare compared to *Tamra*, but there is no research study done on the pharmacological evaluation of *Kansya Bhasma*. *Kansya* could be a good substitute for *Tamra Bhasma* because it is convenient to formulate. Moreover, it is mild in temperament than *Tamra*. This article is only limited for literally study *Kansya*. This study shows that classical principle like *Shodhana* and *Marana* has own important hence need to be studied and followed well.

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