

## A REVIEW ARTICLE ON THE USE OF RAJATA BHASMA IN THE MANAGEMENT OF VARIOUS DISEASES

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### ABSTRACT

*Ras Vaidyas* have explained the use of various drugs of herbal, metal, mineral or animal origin along with their different *anupana* in various diseases. They have also mentioned to follow the *pathyapathya* during the use of these drugs which are suitable to maintain the health of the healthy individual and to treat the disease up to mark. The classical texts of *Rasa shatra* claimed that various processed metals like Gold, Silver, Lead, Zinc, Copper including Mercury etc were used by the *Acharyas* to treat the various disorders; the usage of these *herbometallic, mineral, metallic* preparations can be termed as a irreplaceable feature in healthcare system. For desired therapeutic benefits these metals are detoxified by the *Shodhana* (purification) and *Marana* (incineration) procedures. From the *vedic & samhita kal*, there

are abundant references regarding the use of various metals can be traced. Later on with advancement of *Ayurveda*, the adequately use of metals in the form of *bhasma* are found. *Swarna* (gold), *Rajata* (silver) are considered to be noble metals having properties like *medhya, rasayana, balya* and *vatahara* etc. Therapeutic potential of *Rajata* (silver) *bhasma* along with its dosage and *anupana*, indicated in various disorders like *smritinasha, unmada, apasmara, virya kshaya, vata rogas* etc are nicely explained by various *Rasashastra* authors.

**KEYWORD:** Rajata, Bhasma, Therapeutic Potential.

## INTRODUCTION

The various classical texts of *Rasa shastra* comprehend the description of metals and minerals, along with *grahya* (good quality) and *agrahya* (bad quality) characteristics, their processing techniques and their benefits in the management of various diseases. Now days, the *Ayurvedic pharmacopoeia of India* has routinely been used in practice to ensure their quality standards in different parts of India which includes the manufacturing of these preparations. They are prepared under the classical guidelines and said to be safe and effective even in minute doses. *Rajata* (silver) is a noble metal is known as silver having latin name is *Argentum* (Ag), atomic no. is 47, specific gravity of 10.5, with a melting point of 960°C.<sup>[1]</sup> It is bright shiny, lustrous white metal. In *Ayurveda* it is classified under *Dhatu varga*<sup>[2]</sup> also categorised in *shudh dhatu*.<sup>[3]</sup> Synonyms like *Taara*, *Shubhra*, *Ruchira*, *Chandrasahya*, *Roupya*, *Rupyaka*, *Chandraloha*, *Saudha* etc are mentioned in the classics<sup>[4]</sup>. Three types are mentioned by *Rasa Ratna Samuchaya* as *Sahaja*, *Khanija*, *Kritrima*<sup>[5]</sup>. The use of silver utensils and their benefits are found dates back to the period of *vedas*, *samhita* etc. *Rajata* being less cost effective, abundantly available and having similar properties as that of gold like *medhya*, *sathirvayaskarnam*<sup>[6]</sup> etc, can be used instead of gold in therapeutics.

**Grahya lakshanas:** According to the classical text *Rasa Tarangini*<sup>[7]</sup>, *Rajata* having properties like *Nirmal*, *Sawscha*, *Snigadh*, *Pischil*, *Nirdal*, *Mridu*, *Sharadindunibha* is called *Jatya Rajata* and can be considered acceptable for therapeutic purposes. On cutting, rubbing and heating becomes clear (*sawascha*) as *Sharada- kalin- chandrama*, *guru* (heavy in weight) & *snigadha*.<sup>[8]</sup>

### Agrahya Rajata Lakshana

**It has following characteristics:** When *Agrahya Rajata* is heated, it becomes *maleen*, *peet*, *rakta*. It also possesses the properties like *Ruksha*, *Laghu*, *Saphutam*, *Kathina* (*Hard*), *Sadal*<sup>[9]</sup>. It has been mentioned eight *agrahya lakshana* of *Rajata*: it becomes *Rakta*, *Peeta*, *Krishan* when heated on fire and also having properties like *Ruksha*, *Saphutam*, *Laghu*, *Sathulang*, *karkashang*<sup>[10]</sup>.

**Ill effect of *Rajata Bhasma*:** If anybody take *Rajata bhasma* from *ashudh Rajata* it may cause, *Gatra taap vivardhyati* (it may increase the body temperature by increasing *pitta dosha*), *virya nasha* (may cause infertility), *vidvibhand*(constipation), *angsada* (bodyaches) etc.<sup>[11]</sup>

**Rajata Bhasma:** Silver metal cannot be directly indicated for internal use. It subjects to various classical procedures like *shodhana* (purification of the metal) and *marana* (incineration) to make it suitable for the body when consumed internally. This *Rajata* in metal is converted into *Rajata bhasma* after it subjected to *samanya*, *visesha shodhana* explained for the *dhatu varga* and then the *marana* procedures where it is processed with sawrasa, kwatha of herbal origin (organic matter) or mineral like *Gandhak*, *hartaal*, *sawarnamakshika* etc, followed by the *puta samskara* (quantum of heat). These whole procedures convert the metal form of *Rajata* into micro fine powder i.e. *Bhasma*. This helps to reduce the toxic effect and makes the *Rajata* therapeutically potent, also suitable for consumption with a proper *anupana* for increasing the desired therapeutic effect. Quantitatively *Rajata Bhasma* is a combination of metallic silver Silver (Ag) 73.594 Mercury (Hg) 0.012064 Sulphur (S) 17.246 Iron (Fe) 0.43585 Copper (Cu) 0.29944 Cadmium (Cd) 0.0003144 Lead (Pb) 0.0075966 Platinum (Pt) 0.0014752 Zinc (Zn) 0.03651.<sup>[12]</sup>

#### Pharmacological properties of Rajata Bhasma

<b>Rasa</b>	-	Madhura, Kashaya, Amla
<b>Guna</b>	-	Guru, Snigdha, Sara
<b>Virya</b>	-	Shitta
<b>Vipaka</b>	-	Madhura
<b>Karma</b>	-	

<b>Ras Tarangini</b> <sup>[13]</sup>	<b>Ras Ratna Samuchya</b> <sup>[14]</sup>	<b>Ayurved Prakash</b> <sup>[15]</sup>
<i>Balya</i>	<i>Balya</i>	-
<i>Lekhna</i>	-	<i>Lekhna</i>
<i>Rasayana</i>	<i>Sthiravayaskaranma</i>	<i>Vayas Sthapana</i>
<i>Vaatkaphanashk</i>	<i>Vaatkaphanashak</i>	<i>Vaatpitjit</i>
<i>Medhya</i>	<i>Medhya</i>	-

**Indications and dosage:** *Rajata bhasma* has a wide range of indications, like in *smritinasha*, *unmada*, *apasmara*, *nidranasha*, *virya kshaya*, *vata rogas*, *netra rogas*, *amlapitta*, *aruchi*, *jwara*, *Suska kasa*, *dorbalya*, etc.<sup>[16]</sup> According to *Ras Trangini*, mentioned dose is  $\frac{1}{4}$  Ratti to 1 Ratti<sup>[17]</sup>, So the dosage range of *Rajata Bhasma* can be 30 mg to 125mg given along with different *anupana* depending upon the disorders prevailing.

**The Vedic period:** *Vedas* are earliest main records of the Indian civilization and are a vast source of Knowledge. The information in *Vedas* is very widely distributed and origin of almost all the sciences can be traced there. In *Yajurveda*, description of 6 metals was

mentioned, which includes *Rajata* In *Artharvaveda*, the clear word *Rajata* is mentioned. The term Arjun is also coined for *Rajata*, representing its whiteness.<sup>[81]</sup>

**In Samhita Kaal:** In *Charaka Samhita*, references mentioned are for preparation of *Bastinetra* (nozzle part of the enema instrument)<sup>[19]</sup>, *Jihwa nirlekhana* (Tongue cleaner)<sup>[20]</sup>, in *punsvan sanskara*<sup>[21]</sup>, etc. these are for the external uses. For the internal uses as an ingredient in *dividitya Bhramha rasayana*<sup>[22]</sup>, *Indrohta rasayana*<sup>[23]</sup>, *Muktadi Choorna* in *shwasa, hicca*.<sup>[24]</sup> In *Susruta Samhita*, references quoted are - *Rajata* pots should be used for *drava aahaara*<sup>[25]</sup>, *Jala* (water) quenched with *Rajata* (silver) metal is used as shower for new born baby<sup>[26]</sup>, making *shalaka* for *anjana*<sup>[27]</sup>, boiling water in silver pots to relieve *udarashoola* (it should be poured on the affected part)etc. According to *Ashtang hridaya*, references are found for water purification, preparation of *Choornanjana* in *andha moosha* contains silver, gold, iron<sup>[28]</sup> etc.

**In Classics of Rasa Shastra:** *Rajata bhasma* has a wide range of indications in various disorders. Commonly *Rajata bhasma* is indicated in *manovaha vikara* like *unmada, apasmara, mastikshka dourbalya, smritinasha, anidra, madatyaya* and *sukravaha vikara* like *viryakshaya, upadamsha*.

#### Various indications along with dosage and anupana.<sup>[29]</sup>

Diseases	Anupana
<i>Koshathagta Vaayu</i>	<i>Yavani &amp; devpushap churan</i>
<i>Ajiranrogajanit Hridsapandan</i>	<i>Ela churan</i>
<i>Suryavarat &amp; Ardhavbhedak</i>	<i>Ela &amp; mishri churan</i>
<i>Vaamdimbasya janit vedna &amp; Grabhchyuti</i>	<i>Rasa sindoor, shudh shilajit, loha bhasma, swaranmakshika bhasma with trifla kshaya</i>
<i>Durgandit srava vaamdimbasya janit vedna</i>	<i>Rasa sindoor, Shudh tankana, hridra sawrasa for two weeks</i>
<i>Gridhansi, vishvachi, trikvedna naadishula</i>	<i>Loha bhasma, swaranmakshika bhasma, ras sindoor, Ajwayan &amp; chitrak kwatha</i>
<i>Shakhagata Pitta prakop</i>	<i>Parpat usher dhanyadi pitaghna kwatha</i>
<i>Madatyaya</i>	<i>Rajavarat bhasma</i>
<i>Adhmaan</i>	<i>Chopchini churan or kashya</i>
<i>Shakhashrita daah</i>	<i>Sitopal</i>
<i>Unmaad</i>	<i>Sita, ghrita, ela</i>
<i>Prameha</i>	<i>Trijata churan</i>
<i>Garbhashyajanit &amp; masiksrava janit shula</i>	<i>Ksheerkakoli, rasa sindoor, chopchini churan</i>
<i>Krishtanashak</i>	<i>Shaalparni, atamgupta, shatavari, for two months</i>
<i>Sondrayavardhak</i>	<i>Vayavidanga, shudha bhllataka, soonth, keshar churan</i>

**Indications Dose of Rajata bhasma & Dravya given along with Rajata bhasma.**<sup>[30]</sup>

<i>Sharirak daah</i>	<i>Mishri Imasha &amp; rajata bhasma ½ ratti</i>
<i>Prakupit vaat and pitta dosha</i>	<i>Rajata bhasma 1 ratti, abhraka bhasma 1ratti, ela churan 2 ratti, madhu</i>
<i>Prameha</i>	<i>Rajata bhasma 1 ratti, ela churan, daalchini churan, tejpatra churan, 3-3 ratti mixed shudha shilajit</i>
<i>Mastishak dorbalaya</i>	<i>Rajata bhasma 1 ratti, praval pishti 1 ratti, smriti sagar rasa 1 ratti brahmi sharbat</i>
<i>Pandu roga</i>	<i>Rajata bhasma 1 ratti, mandur bhasma 1 ratti, trikatu churan 4 ratti, madhu</i>
<i>Shushak kaasa</i>	<i>Rajata bhasma 1 ratti, praval chandarputi 1 ratti, shudha tankana 2 ratti, vasa sharbat</i>
<i>Jawara</i>	<i>Rajata bhasma 1 ratti, pippali churan 2 ratti, ela churan 2 ratti</i>
<i>Udar vaat</i>	<i>Rajata bhasma 1 ratti, jeera churan 4 ratti, bhurjit hing 1 ratti ushnodak jala</i>
<i>Vaatik shula</i>	<i>Rajata bhasma 1 ratti, vacha churan 1 masha, godudh</i>
<i>Anidra</i>	<i>Rajata bhasma 1 ratti, sawaranmakshika bhasma 1 ratti, praval chanderputti 1 ratti</i>
<i>Unmaad &amp; Apasmaar</i>	<i>Rajata bhasma 1 ratti, Vacha churan &amp; brahamdandi churan 3-3 ratti</i>
<i>Snayu dorbalaya</i>	<i>Rajata bhasma 1 ratti, Abhraka shatputi 1ratti</i>
<i>Hicca</i>	<i>Rajata bhasma 1 ratti, Amalaki &amp; pippali churan 2-2ratti</i>
<i>Netra roga</i>	<i>Rajata bhasma 1 ratti, mulethi churan 4 ratti</i>
<i>Virya vridhi</i>	<i>Rajata bhasma 1 ratti, Mukta Bhasma ½ ratti, Vanshlochan, ela, keshar churan 2-2 ratti, madhu, godudha</i>

**Recent studies:** Silver metal has been used for centuries as an *antibacterial agent*, and the release of *silver ions* particular  $Ag^+$ , at the surface of the metal is considered the source of its antibacterial activities. Silver ions are known to have toxic effects in number of *biological species, including bacteria, viruses, fungi* and some aquatic organisms.<sup>[31]</sup> In contrast, silver exhibits relatively low toxicity in humans, due to the fact that human body fluids contain large no. of chloride and sulphide ions that form insoluble salts with silver ions and protect against silver toxicity.<sup>[32]</sup> Studies have shown that the uptake of ingested nanoparticles occurs via M-cells and enterocytes in the intestinal mucosa and that the fraction of administered dose that is absorbed ranges from 0.4% to 10% depending on the species.<sup>[33]</sup> But now a days silver nanoparticles are used as highly advanced technique to treat the diseases in which silver ions are reduced to <100nm. They are used in antimicrobial coating regeant, wound dressing, and now in biomedical devices that continously release a low level of silver ion to provide protection against bacteria. Recent advancement of Nanoparticles as they are now based on target oriented drug delivery system in which they are functionalised with different biological molecules, peptides, protein ligands for targeted drug delivery. The self assembling and colloidal properties of NPs have caused them to become the best vehicles for targeted or drug delivery.<sup>[34]</sup> The Plant extract mediated synthesis of Silver nanoparticles revealed that it is

economical energy efficient, cost effective, provide healthier work places and communities, protecting human health and environment lesser waste and safer products. These plant based biological molecules undergo highly controlled assembly for making them suitable for the metal nanoparticle synthesis.<sup>[35]</sup> It is also reported that Silver nanoparticles reduce the brain inflammation and related neurotoxicity through induction of H<sub>2</sub>S synthesizing enzymes.<sup>[36]</sup>

## DISCUSSION

*Silver* is a well-known noble metal used externally as well as internally since ancient times due to its antimicrobial activity for water purification and therapeutically also. After studying of various classical texts, it becomes clear that *silver* and other metals like *gold, iron, copper, lead, tin* etc as well as some other minerals, alloys of various metals were used to treat a wide range of diseases. Fine powders of these metals in the form of *Bhasma* were prescribed in both ways internal as well as external use. Systemically, *Rajata bhasma* is prescribed in the management of *naadi doyrbalya* (neurological conditions) like *ardavhedak, suryavarta, gridhrasi, mansika roga* (psychological conditions) like *Unmada, Apasmara, Smritinasha*(memory loss), *shirobhram, moha* etc., *Shawasvaha sansthan janya roga* (respiratory conditions) like *Kaasa* (dry cough), *agnimandya janya roga* (digestive disorders) like *adhman, udar roga, vishtabadhajiran, twaka janya roga* (skin diseases) like *Kotha, kantikara & other infectious conditions* like *upadamsha* (Gonorrhoea) and urinary tract infection etc. It is also indicated in various *shurkajanya roga*( male reproductive organs) like *Viryakshaya*(oligospermia) which are supposed to increase the fertility rate, reduces any infection or pus if present, works as antibiotic. Its *lekhana guna* (scraping property) might be helpful in cardiovascular disorders. Due to its *sheeta Virya*, it may act as *Pitta Shamaka* and *Daahahara* as it is used in various ointments. The judicious use of its metallic preparation i.e. *bhasma* with great authority is said to be quite safe and efficacious. By reviewing all these classical texts of *Rasashastra*, it reveals that emphasising is required while prescribing these metallic preparations for therapeutic benefits. The various pharmaceutical procedures like *shodhana, marana* etc with particular herbal or mineral drug were described by our *Rasa vaidya* having their own significance in detoxifying and increasing the therapeutic potency of any metal.

## CONCLUSION

From above studies, it is concluded that when metals and minerals are converted into *bhasma* by strictly obeying to the classical guidelines indicated in ancient texts, they are devoid of

any toxicity. The incinerated metal (bhasma) may contain associated compounds composed with major elements, which may have their own significance in the process of disease resolution. *Rajata bhasma* is also used as an ingredient in various formulations prescribed in almost all systemic disorders, when prescribed in proper dose with mentioned *anupana* (vehicle) which may show the effective results. It is comprehensively prescribed in *neurological, psychological disorders, infertility, degenerative disorders and infectious conditions* etc. Due to its proven anti-microbial activity it has wide applications in the stream of medicine. Though various Rasa shastra texts like *Rasa Tantra Saara, Siddhi Prayoga, Rasa Chikitsa, Ayurveda Saar Sangraha* etc, explained their practical observations and experiences regarding the therapeutic applications of *Rajata bhasma* in management of various disorders. There is lack of proven clinical scientific data on various studies. It is need of time to carry out various scientific clinical trials and statistical data to prove its therapeutic efficacy in various disorders. So that internal use of *Rajata bhasma* can explore more for the benefit of human races.

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