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### Review Article

## THERAPEUTIC SCREENING OF *RAJATA DHATU* (SILVER METAL) AS PER *AYURVEDIC CLASSICS* – A REVIEW

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### ABSTRACT:

*Rasashastra*, the *Ayurvedic* pharmaceuticals is present in the form of *Sanskrita* texts, containing the matter of preparations of herbo-mineral origin, which are used therapeutically in various clinical conditions. Since the pre-*Vedic* era, metal and minerals are well known to humans. Initially they are used for only for making ornaments as well as for domestic's purposes later on their use were shifted to various therapeutic purposes to secure human health. Likewise *Rajata* was used as a therapeutic agent which is beneficial in maintaining the health of healthy individual (*Vayasthapana*), increase the life span (*Ayurvedhana*) and also in various clinical manifestations. An attempt of this review article is made to explore the wide range of therapeutic utilities of *Rajata Dhatu* with special references to various classical texts of *Ayurveda*.

**KEY WORDS:** *Rasashastra*, *Rajata*, *Ayurvedic classics*, etc.

### INTRODUCTION:

Since the pre-*Vedic* era, metal and minerals are well known. Their earlier domestic use was shifted to various therapeutic purposes to procure health. The *Rajata* is precious and important metal in *Rasashastra*, since *Samhita* period as it is being used in for alchemical as well as therapeutic purposes. The oldest literature of Human civilization, in the *Rigveda*, the term 'Ayas' is found, which may have been used for 'Rajata' and 'Arjuna' is two words mentioned. In the *Yajurveda* six metals mentioned, in which *Rajata* is one metal. In *Atharva Veda*, (*Atharva-4/2811*), *Suvarna*, *Rajata* and other *Loha* (Metals) are mentioned which are compared with *Tri-guna* (*Satva-Raja-Tama*) respectively. Again, these *Dhatu* (metals) are like with *Rasadi-Dhatu* (body elements) (*Atharva-11/3178*).<sup>[1]</sup> *Ayurvedic* classics like *Sushruta Samhita* <sup>[2]</sup>, *Charaka Samhita* <sup>[3]</sup>, and *Ashtanga Hrudaya* and *Sangraha* also mentioned 8 types *Loha* (metals) including *Rajata Dhatu* various purposes. <sup>[4]</sup> In *Shatpada Bramhana*, reference found regarding the use of plate made from *Rajata* named as 'Rukma', which is indicated for taking food, to maintain good health along with prolonged life.

It strengthens the body element as well as the mind along with immunity power, due to its potent *Rasayana* property. Also, it acts as a powerful disinfectant due to this it is used to protect water born infections. In the modern era, it was successfully used for wound dressing to prevent wound infections. It is used therapeutically to treat many severe diseases along with different herbal and mineral drugs. The medical uses of Silver include its incorporation into wound dressing, creams and as an antibiotic coating a medical device. The Silver ion (Ag<sup>+</sup>) is bioactive and in sufficient concentration readily kills bacteria in vitro. A colloid consisting of Silver particles suspended in liquid and the formulation contains Silver salts were used by physicians in the early 20<sup>th</sup> Century. <sup>[4]</sup> Silver based compounds are becoming increasingly popular; through they have been used since the 1960s in the management of wounds. The Silver ions bind to bacterial DNA, reducing their ability to replicate. The antimicrobial activity of Silver and its salts is well known and there are various studies documenting its effect on a wide Variety of Organisms, including Anaerobic and Aerobic Bacteria, Fungi and Viruses.<sup>[5]</sup>

**MATERIALS & METHODS:**

This Literary Study mainly based upon review of various *Ayurvedic* classical texts mainly *Bruhatrayee* and text books related to *Rasashastra*.

**Synonyms -**

**Sanskrita** - *Rajata, Rucira, Roupya, Tara, Soudha, Shubhraka, Chandraloha, Chandrasasa, Rupaka, Chandrama, Rupyaka, Vasu-shreshtha, Kala, Dhouta, Chandra-bhuti, Raupyamala*, etc.<sup>[6]</sup>

**Hindi** - *Chandee, Rupyee*, etc.

**Marathi** - *Chandee, Rupyee*, etc.

**English** - Silver, **Latin name** - *Argentum*,

**Symbol** - Ag

**Utpatti (origin) of Rajata** - Origin of *Rajata Dhatu* is described in various ways by *Ayurveda* texts, which can be summarized as -

- *Rajata Dhatu* is said to be originated at the time of the killing of *Tripurasura*, from tears of the third eye of *Lord Shiva*.<sup>[7]</sup>
- Also, it is said to be created from the semen of *Lord Chandrama*.<sup>[8]</sup>
- As per another classical text, due to the holy touch of *lord Rama's* foot the *Vanga Dhatu* changed to *Rajata Dhatu*.<sup>[9]</sup>
- With the help of Mercury, *Krutrima Rajata Dhatu* is created by converting *Vanga Dhatu* to *Rajata*.<sup>[10]</sup>

**Rajata Bheda (Verities)**<sup>[8]</sup> - Various types of *Rajata Dhatu* are summarized as -

**Table 1: Rajata Bheda (Varieties of Silver)**

Reference	Details
<b>Ayurveda Prakash</b> Varieties -3	(1) <i>Sahaja</i> - type of <i>Rajata</i> which is obtained from <i>Kailasha</i> mountain (2) <i>Khanija</i> - <i>Rajata</i> type obtained from the hills of <i>Himalaya</i> (3) <i>Krutrima</i> - <i>Rajata</i> type obtained by conversation of Tin metal into <i>Rajata Dhatu</i> from the holly touch of <i>Lord Rama's</i> feet. (Used for <i>Vedana Karma</i> of <i>Parada</i> )
<b>Rasendra - chudamani</b>	Varieties -2 (1) <i>Tarashulka</i> (2) <i>Tarakrushna</i>
<b>Rasaprakash sudhakar</b>	Varieties -3 (1) <i>Khaneeya</i> (2) <i>Vangaja</i> (3) <i>Vedhaja</i>

**Grahya - Tyajya Rajata Swarupa**<sup>[10], [11]</sup> -

**Grahya Rajata Swarupa -**

Good quality of *Rajata* should be appearing white in colour like *Shankha* or Full moon; on heating or by cutting or by rubbing over examination stone. It is heavy enough by weight, smooth, soft, and should bear the heat and hammering. In the intense fire; it becomes whiter, brighter, clear, non- brittle and solid.

**Tyajya Rajata Swarupa -**

*Rajata* having following characteristics known as inferior quality of *Rajata* or *Tyajya Rajata* and should not be taken for pharmaceutical works. On heating, which becomes yellowish which is light in weight and rough as well as thick; on hammering, which breaks with cracks and looks hard.

**Rajata Shodhana Prayojana**<sup>23[12]</sup> -

If *Ashudha Rajata* is used for medicinal purpose, it causes *Santapa* (Fever), *Malabadhata* (Constipation), *Shukranasha* (Oligospermia), destroys health and vigor. It is also mentioned in *Ayurvedic* classics that when *Ashudha Rajata* is consumed it leads to production of *Maharoga*

**Rajata Shodhana Process -**

As per *Rasashastra* Metals and Minerals are can be used internally only after *Shodhana* (purification) and *Marana* (calcivation). Processes after these two pharmaceutical procedures, the solid metal material are converted into very fine particles than can be absorbed easily and therapeutically effective.

*Shodhana* process of *Rajata Dhatu* can be done by two ways:

1. *Samanya Shodhana*
2. *Vishesh Shodhana*

**Samanya Shodhana of Rajata Dhatu** <sup>[13], [14]-</sup>

For all metals like *Suvarna*, *Rajata*, *Tamra*, *Loha*, etc. common *Shodhana* process is described in various texts. For this procedure thin foil of metal is heated till it become red hot and suddenly subsequent quenching (*Nirvapana*) is done into following liquid media for seven times in each respectively -

- *Tila Taila* (Sesamum oil),
- *Takra* (Butter milk)

- *Gomutra* (Cow's milk)
- *Arnala* (*Kanji* - fermented sour gruel)
- *Kulattha Kwatha* (Decoction of Horsegram *Dilichos biflorus*)

**Vishesh Shodhana Of Rajata Dhatu** <sup>[11]-</sup>

Different method of *Rajata Vishesh* (Special) *Shodhana* is described in the different texts of *Ayurvedic Rasashastra* which are summarized as -

**Table 2: Vishesh Shodhana procedures of Rajata Patra**

No.	Reference	Technique	Drugs used
1	R. T. 16/17-18	<i>Nirvapa</i>	<i>Nimbu Swarasa</i> or <i>Changeri Swarasa</i>
2	Rv. 7/103-104 R. R. S. 5/31, R.Ka. 2/1/167	<i>Nikshepa and Dravana</i>	<i>Pishachi (Jathamansi) Taila + Naga + Tankana</i>
3	R. Chu. 14/32-33 R. P. S. 4/24, R. R. S. 5/32-33	<i>Dhmapana</i>	<i>Sisa (Naga)</i>
4	R. S. S. 1/261	<i>Dravana, Pachana</i>	<i>Naga, Tankada, Kshara, Amla</i>
5	A. P. 3/94, R.T. 16/6	<i>Nirvapana</i> (3 times)	<i>Agastya Patra Swarasa</i>
6	A. P. 3/95-96 R. Ka. 2/1/168-170	<i>Nirvapana</i> (3 times) / <i>Dhmapana</i>	<i>Malkangi Taila, Sisa</i>
7	R. T. 16/17-18, B.R 2/103	<i>Dravana</i>	<i>Naga, Tankana</i>
8	B. R. 2/103	<i>Pachana</i>	<i>Kshara and Amla Dravya</i>

**Abbreviations.:** A. P. – *Ayurveda Prakash*, B.R – *Bhaishjya Ratnavali*, R. Chu. – *Rasa Chudamani*, R. Ka. – *Rasa Kalika*, R. P. S. – *Rasa Prakash Sudhakara*, R. R. S. – *Rasa Ratna Samuchchaya*, R. S. S. – *Rasendra Sara Sangrah*, R. T. – *Rasa Tarangini*, Rv. – *Rasarnava*

**Rasadi Guna and Karma of Shuddha Rajata** <sup>[15]-</sup>**Table 3: Rasadi Guna and Karma of Shuddha Rajata**

<b>Rasa</b>	<i>Madhura, Kashaya, Amla</i>
<b>Veerya</b>	<i>Sheeta</i>
<b>Vipaka</b>	<i>Madhura</i>
<b>Guna</b>	<i>Snigdha, Guru, Sara</i>
<b>Doshagnata</b>	<i>Vata-kaphanashaka</i>
<b>Karma</b>	<i>Vrushya, Balya, Lekhana, Medhya, Rasayana, Vayasthapaka, Vishaghna, etc.</i>
<b>Dose</b>	$\frac{1}{4}$ <i>Gunja</i> – 1 <i>Gunja</i> according to <i>Bala</i> of the patient and <i>Kala</i> <sup>[16]</sup>

*Shodhit Rajata* is *Snigdha*, *Medhya*, *Vishahara* means it cures the disorders related to *Toxins*, *Bruhana* (increases body mass), *Vrushya* (which increases Strength), increases digestive power, It therapeutically very useful in disease like tuberculosis, insanity.

It helps in improving intelligence, efficiency and memory power. It is good for the heart and eyes. Its taste is astringent and sweet, heavy in quality induces *Ruche*.<sup>[17]</sup>

**Prayoga Vidhi (Therapeutic Uses) of Shuddha Rajata [18]-**

Therapeutics application of *Shuddha Rajata* is well described in various *Ayurvedic* classics which can be summarized as -

**Table 2: Vishesha Shodhana procedures of Rajata Patra**

Sr. No.	Reference	Dose	Indication
1	<b>Rasa Ratna Samucchya</b>	--	<i>Vata-kaphahara, Jatharagni dipana, Balya, Vayasthapana, Medhya, Rasayana and Sarvarogapaha, etc.</i>
2	<b>Rasatarangini</b> [19]	¼ - 1 Ratti	<i>Vayasthapan, Balyam, Dahahara, Smrutivardhan, Kantivardhana, Trushna – Shoshprashmana, Vatta-pittahara, Bhramahara, Garbhashay vishaodhana, etc.</i>
3	<b>Rasamrita</b>	½ - 1 Ratti	<i>Vayasthapana, Lekhana, Vrushya, Balya, Ruchya and Vata-pittahara, etc.</i>
4	<b>Ayurveda Prakash</b>	--	<i>Vayasthapana, Lekhana, Vatapittahara, Pramehadi roga nashka, Trushna, Shosh-nashka, etc.</i>

**DISCUSSION AND CONCLUSION:**

On the basis of above mentioned literature review it is concluded that, *Rajata Dhatu* is an important potent metal which is frequently used in wide range of clinical manifestation, since pre-*vedic* era. Next to *Suvarna* (Gold), *Rajata* is second most important *Dhatu* in *Dhatu varga*. It has been used as an important ingredient in moreover 150 *herbo-mineral* preparations, which are mainly indicated for diseases mainly like *Jwara* (Fever), *Pandu* (Anemic condition), *Vatvyadhi*, *Amlapitta*, *Prameha*, *Hrudroga* (Heart diseases), *Rajayakshma*, *Kshaya*, *Hikka*, *Shvasa*, *Kasa*, *Grahni*, *Apasmar*, *Unmad*, *Kushtha*, *Kshudraroga*, *Shtreeroga*, *Balroga* and also in *Netrarog* (Eye diseases), *Svarabhed*, *Mutrakruchcha* (Burning micturation), etc. It is well known for its property of increasing immunity power, also giving strength to all *Rasadi Dhatu* (*Rasayana*), and increasing muscular strength of body (*Balya*) as well as mental strength (*Medhya*). It has ability to cure all disorders related to toxins (*Vishghna*). Due to this anti-toxins property, to achieve long life and to remove minute toxins in body, people used silver pot to drink water and eat food. Due to *Madhura* and *Amla* Rasa as well as *Snigdha* and *Guru Guna Rajata* acts as *Vata Dosha-nashaka*. Due to its *Kashaya Rasa* it acts as a *Kapha Dosha-nashaka* and due to its *Sheeta Virya* it is *Pittashamaka* in nature. *Shuddha Rajata* is therapeutically useful in various types of clinical condition like *Pramehadi Vyadhi*, *Trushna*, *Shosha*, *Brama*, *Garbhajnya Vyadhi*, *Agnimandhya*, *Aruchi*, etc. For establishment of therapeutic properties of *Shuddha Rajata* further pre-clinical and clinical trials are required.

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