



Review Article

A LITERARY REVIEW ON MERCURY W.S.R. TO ITS MEDICINAL ASPECT

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ABSTRACT

Rasasastra is a branch of *Ayurvedic* medicine dealing with metals and minerals having higher therapeutic efficacy. Recent world wide discussions on hazardous nature of Mercury have led to the global ban on Mercury through *Minamata* Convention. This is a crisis situation for *Ayurveda* as *Parada* (Mercury) is the heart of *Rasasastra*. An attempt has been made to educate the readers regarding the medicinal aspects of Mercury. *Rasasastra* texts starting from *Rasendra mangalam* to *Rasatrangini* have been analyzed for relevant verses regarding Mercurial formulations with respect to its disease curing property. Mercury has qualities similar to ambrosia. Mercurial medications prepared from purified Mercury can readily treat even *Asadhya rogas* (incurable diseases). Purified Mercury samples were tested for their therapeutic efficacy through alchemy. A systematic classification regarding types of Mercury, their impurities and purification procedures are mentioned after extensive research in *Rasasastra*. Method of intake, *Pathya* (wholesome), *Apathya* (unwholesome), complications during Mercurial medication have been cited in classical verses. *Paribhasha* (definitions) regarding basics of *Rasasastra* have been described for better understanding of Mercurial processes. Procedures like *Jarana* (digestion), *Astadasa samskara* (eighteen purification procedures), *Dhruvi* (stable liquid metal), *Satwapatana* (extracting the essence), *Bandhana*, etc have been elaborately described in the texts, but their techniques are still unclear in practical aspect. A special clause should be created for the use of Mercury in *Ayurvedic* medicines with respect to its health benefits and disease curing properties. Also there is a need to intensify research in the field of *Rasasastra*.

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INTRODUCTION

Ayurveda is a holistic science of life. *Rasasastra* is a branch of *Ayurvedic* medicine dealing with metals and minerals having higher therapeutic efficacy. *Parada* (Mercury) is the heart of *Rasasastra*. Recent world wide discussions on hazardous nature of Mercury have led to the global ban on Mercury. The *Minamata* Convention is a global treaty on Mercury¹. In January 2013, the intergovernmental negotiating committee concluded its fifth session by agreeing on the text of the *Minamata* Convention. Though this convention there will be ban in a phased manner on the production, import and export of products that contain mercury by 2020. India, by signing it has joined the club of 120 countries who have done this so far. This is a crisis situation for *Ayurvedic* practitioners. Immense research has been done on Mercury, metals and minerals regarding their medicinal benefits. Metallurgy and Alchemy also has a special place in *Rasasastra* beyond medicinal formulations. Here an attempt has been made to enlighten the readers regarding the importance of Mercury in medicinal aspect.

MATERIALS AND METHODS

Rasasastra texts starting from *Rasendra mangalam* to *Rasatrangini* have been analyzed for relevant references regarding Mercury from the library of RARISD (Regional Ayurveda Research Institute for skin disorders), Vijayawada.

There is a verse saying by attaining absolute control over Mercury will make the world free from diseases². The *rasa* (taste), *Virya* (potency) and *Vipaka* (taste at the end of digestion) of Mercury has been quoted as similar to ambrosia³. Mercury is *Shadrasa* (six tastes) having properties like *Tridosha hara* (alleviates all morbidities), *Snigdha* (unctuous), *Rasayana* (rejuvenative), *Yogavahi* (fast acting), *Maha vrishya* (highly aphrodisiac), *Drusti prada* (good for eyes) and *Bala prada* (strength promoting). Purified Mercury cures all diseases specifically skin disorders⁴. Mercurial preparations show quick results in small doses. They cause instant *Pachana* (digestive) and *Dipana* (appetiser)⁵.

Mercury possesses all the qualities of *Animadi astaguna* (eight qualities) which are required for the

accomplishments of human life. There is no other thing in the earth than Mercury to attain salvation. It imparts glory to human body by eradicating old age⁶. Combination of all drugs originated from plant, animal, mineral or marine origin cannot stand even in 1/100 crore part in comparison with Mercurial preparations⁷. Medication of plant origin may at times cause *Dosha prakopa* (increase the morbidity) and *Klesa* (difficulty or complications). *Lohadi* (metals and minerals) may produce *Daaha* (burning sensation) and are *Asthira* (unstable). Mercury devoid of these qualities imparts health and longevity⁸.

Table 1: Five types of Mercury mentioned along with their qualities⁹

| S.No. | Types of Mercury | Properties |
|-------|------------------------|---|
| 1. | Rasa ¹⁰ | Red coloured, devoid of impurities, rejuvenative |
| 2. | Rasendra ¹¹ | <i>Syava varna</i> (grey colour), <i>Ruksha</i> (roughness), devoid of impurities, rejuvenative |
| 3. | Suta ¹² | <i>Peeta varna</i> (yellowish orange), used after 18 <i>Samskara</i> only |
| 4. | Parada ¹³ | White colour, has disease curing property |
| 5. | Misraka ¹⁴ | <i>Mayura chandika chaya</i> (mixed colour), used after 18 <i>Samskara</i> only |

Table 2: Panchavidha gati (five movements) of Mercury¹⁵

| Sl.No. | Gati of Mercury | Characteristics |
|--------|-------------------|--|
| 1. | <i>Jala gati</i> | Loss of Mercury during washing with water as some quantity floats on water |
| 2. | <i>Mala gati</i> | Wastage of Mercury along with <i>doshas</i> (impurities) |
| 3. | <i>Hamsa gati</i> | Wastage of Mercury due to its <i>chanchalava</i> (quickenning) |
| 4. | <i>Dhuma gati</i> | Loss of mercury while heating in the form of vapour |
| 5. | <i>Jiva gati</i> | Loss due to volatile nature of Mercury |

Dhuma gati can be controlled by attaining heat stability in Mercury by processing with *Niyamana* (stabilizing) process¹⁶. *Jiva gati* (volatile nature) is said to be invisible. It can be controlled by *Mantra* (sacred chanting) and *Dhyana* (meditation)¹⁷.

Table 3: General classification of Doshas (impurities) in Mercury

| Sl.No. | Name of Dosha | Types:12 |
|--------|---------------------------------|--|
| 1 | <i>Naisargika</i> ¹⁸ | Three: <i>Visha</i> , <i>Vahni</i> , <i>Mala</i> |
| 2 | <i>Yougika</i> ¹⁹ | Two: <i>Naga</i> (Lead), <i>Vanga</i> (Tin) |
| 3 | <i>Oupadika</i> ²⁰ | Seven: <i>Kanchuka dosha</i> |

Purification processes of Mercury are divided into *Astadasa samskara* (eighteen processes). First eight processes are done for *Rasayana* (rejuvenative) purpose and remaining *Samskara* are for *Dhatuvada* (alchemy) purpose²¹. Medications prepared from purified Mercury can readily treat even *Asadhya rogas* (incurable diseases)²².

Table 4: Disease curing properties of mercury with lohadi (metals)²³

| Sl.No. | Mercury + Lohadi | Diseases |
|--------|-------------------|-----------------------------------|
| 1. | Mercury & Gold | <i>Tridosha hara</i> |
| 2. | Mercury & Silver | <i>Pitta roga hara</i> |
| 3. | Mercury & Copper | <i>Kapha-vata roga hara</i> |
| 4. | Mercury & Iron | <i>Sula hara</i> |
| 5. | Mercury & Lead | <i>Amla & rakta roga hara</i> |
| 6. | Mercury & Tin | <i>Maha hara</i> |
| 7. | Mercury & Diamond | Prevents death |

Intake of Mercury:

Mercurial preparations should be consumed early morning. Food should not be taken for two *yaama* (6 hours) for the proper digestion of the medication²⁵. To prevent constipation medication should be taken with *Tambula* (*Piper betle* Linn.)²⁶. Complications (*Ajirna*) arising due to the wrong intake of Mercurial drugs²⁷ and treatment²⁸ have been cited in the classical texts. Prevention techniques of the complications arising with Mercurial medication have been clearly described. *Nasya* (inhalation) should be taken with the paste of *Triphala* seeds powder, Ghee and honey the night before if Mercurial medication is intended to be taken in the morning. Similarly intake of Sulphur, *Kankushta* (mysore gambose or *ruhbarb*) and applying paste of Sulphur are suggested to prevent the *Ajirna* of Mercury²⁹. *Apathya* (unwholesome) *Ahara vihara* (food & regimen) during Mercurial medication have been stressed to avoid like *Kakarastra* (eight specific food materials starting with the letter k), black gram, curd, preparations of buttermilk, excessive swimming, quarrelling, mental stress, etc³⁰. Mercurial preparations containing gold should not be taken by mixed with *Stanya* (mother's milk)³¹.

Important procedures in Rasasastra

Specific method of processing of Mercury like *Murchana* (swooning), *Jarana* (digestion), *marana* (incineration) have been described in detail. *Murchana* of Mercury is two types, *Nirgandha* (without Sulphur) and *Sagandha* (with Sulphur). *Murchana* of Mercury with Sulphur is again two types³², *Antardhuma* (concealed fumes) and *Bahirdhuma* (fumes going out); also three types³³, *Nirdhuma* (no fumes like *Kajjali* preparation), *Antardhuma* and *Bahirdhuma*. *Jarana* is an important process of Mercury. There are two definitions of *Parada Jarana*. Mercury retains its original state without being subjected to *Galana* (washing) and *Patana* (sublimation) after the *Jarana* process with *Abhraka* (mica) and other noble metals like gold³⁴. Liquefied *Grasa* (material used for *Jarana*) getting transformed and digested in Mercury is also called as *Jarana*³⁵. *Jarana* of Mercury is again

divider into *Antardhuma* (concealed fumes) and *Bahirdhuma* (fumes going out). It has been stated that the best method for *Marana* (incineration) of *Lohadi* (metals) is by adding *Parada bhasma* (incinerated Mercury) to the process²⁴. Mercurial bonds called as *Bandhana* are described as 26 in number, each having different techniques for processing and specific qualities related to disease curing aspects³⁶.

Metallurgical processes have also been dealt in detail with respect to Mercurial formulations. Mercury is called quicksilver. Mercury is unique as it is liquid at room temperature. Its atomic number is 80 with melting point: -38.9 C and boiling point: 356.6°C⁴³. In *Rasasastra Dhruiti* is a process to convert metals into liquid form at room temperature. As per the classics medications prepared out of *Dhruiti* are superior and have great efficacy. *Satwapatana* is a unique process of extracting the essence to get the purest form of metal which requires high temperatures. *Dwadva melapana* procedure quoted in the texts can be compared to alloy formation.

Alchemy has a special place in *Rasasastra*. It was stated that Mercury which is capable of alchemy is the best for medicinal purposes. They use to test the therapeutic efficacy of the purified mercury through alchemy. By using Mercury lower metals like copper, iron, lead, tin, etc were converted to higher metals like gold and silver. This was achieved by controlling the *Chanchalata* (slippery nature) of Mercury, making it *Agnisthai* (heat stable) and probably by inducing nuclear reactions in Mercury by different unique processes. In recent experiments gold was synthesized from mercury⁴⁴ by neutron bombardment in 1941, but the isotopes of gold produced were all radioactive. In 1924, Hantaro Nagaoka, a Japanese physicist, accomplished the same⁴⁵. In 1980, Glenn Seaborg at the Lawrence Berkeley Laboratory transmuted several thousand atoms of bismuth into gold. He was able to remove protons and neutrons from the bismuth atoms by an experimental technique using nuclear physics⁴⁶. Bismuth may be compared with *Chapala* in *Rasasastra* was used for alchemy along with Mercury. The artificial gold prepared in nuclear reactors are costlier than the gold produced. The *Rasasastra* procedures for alchemy might be cheaper but their practical applications might take intense research.

DISCUSSION

The utility of a product depends on the person who uses it. One has to gain sufficient knowledge in order to produce desired results. *Paribhasha* (definitions) regarding basics of *Rasasastra* have been described which engenders a better comprehension about the science of Mercury and also to avoid errors during mercurial procedures³⁷. Systematic descriptions of different types of *Yantra*³⁸ (instruments), *Musha*³⁹ (crucibles), *Kosti*⁴⁰ (fireplace) for the preparation of mercurial formulations have been mentioned.

There are references of animal experimentations in *Rasasastra* where goat is used as an experimental model to test the efficacy of Mercurial drugs⁴¹. Amalgam

formation of Mercury with iron is impossible in modern chemistry. In *Rasasastra* the amalgam formation of Mercury with *Kanta pashana satwa* (extract or essence of magnetite) shows the advanced research done in those days but lost their practicality in present era⁴².

CONCLUSION:

Mercury is a rejuvenative, *Yogavahi* (fast acting), can be used in all diseases with change in *Sahapana* (drugs taken along with medicine) and *Anupana* (drugs taken after the medicine). A special clause should be created for the use of Mercury in Ayurvedic medicines with respect to its health benefits and disease curing properties. Although processes like *Jarana* (digestion), *Astadasa samskara* (eighteen purification procedures), *Dhruiti* (stable liquid metal), *Satwapatana* (extracting the essence), *Bandhana*, etc have been elaborately described in classical texts, their techniques are still unclear in practical aspect. There is a need to intensify research in the field of *Rasasastra* especially on Mercury.

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