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Ayurvedic Management and Knowledge of Untoward Effects of Inappropriately Processed Minerals and Metals (*Rasaajeerna and Lohaajeerna*)

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ABSTRACT

From the concept of *Rasashastra* (Iatro-chemistry) “there is nothing in this world that can empower the empirical body with longevity other than *parada* (Mercury)”. There are many formulation which contain *rasa* and *loha* (minerals and metals) as ingredient which on administration shows its therapeutic effect. Apart from this, it may also cause some adverse effect due to certain factors such as improper processing, inadequate processing and not following the regimen in right way (*pathya-apathya*). This adverse effect is called as *rasaajeerna* and *lohaajeerna* in *Ayurveda*. The toxic symptoms produced can be eliminated using certain antidotes mentioned in our classics, for example *Swarna Bhasma* (Nanoparticles of Gold) and *Haritaki Churna* (Fine powder of *Terminalia chebula*) mixed with sugar can be given for 3 days to nullify the toxicity caused by improperly purified *naga* (lead). *Ayurvedic* chelating drugs and medication have the potential to detoxify metal toxicity without losing the essential minerals from our body and thus help to cure *rasaajeerna* and *lohaajeerna*.

KEYWORDS

Lohaajeerna, Metals, Minerals, Toxicity



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INTRODUCTION

Metals and Minerals are used in both modern and traditional system of medicines. In *Ayurveda*, metals and minerals are made fit for therapeutic use by various pharmaceutical processes. There are also different drugs described by *Ayurvedic Acharyas* for removing the toxic signs and symptoms produced by improperly prepared medicine. These drugs can be termed as chelating agents of *Ayurveda* based on certain researches as these drugs help to chelate metal ions from the body.

In *Ayurveda*, the science which deals with the study of metals and minerals is termed as *Rasashastra* (Iatro-chemistry). In *Rasashastra* (Iatro-chemistry), the term *rasa* include *parada* (Mercury) and other *dravyas* (drugs) such as *abhraka* (mica), *vaikranta* (tourmaline) etc and the term *loha* include *swarna* (gold), *rajata* (silver), *tamra* (copper), etc. Here the term *Rasajeerna* and *Lohajeerna* means the unusual symptoms caused by the intake of *asuddha* (improperly processed) *rasa* and *loha* which are not getting digested properly. These symptoms are caused due to certain factors such as improper processing, inadequate processing and not following the regimen in right way (*pathya-apathya*). *Rasajeerna doshas* (signs and

symptoms caused by *rasa*) include *jawara* (pyrexia), *tandra* (drowsiness), *naabhimoolaatigauravam* (heaviness around umbilicus), *antardaaha* (burning sensation), *agninaashana* (loss of digestive fire), *moorcha* (giddiness), *shoka* (grief), *brahma* (hallucination), *kampa* (tremors), *chardi* (vomiting), *moha* (delusion), *hikka* (hiccup), *vepathu* (tremor), *shoola* (pain), *nidra* (sleepiness), *alasya* (laziness), *aroachakam* (tastelessness), *atisaara* (diarrhoea), *kaasa* (cough), *swaasa* (dysnoea), *vijrumbhikaa* (excessive yawning), etc whereas *Lohajeerna doshas* include *ayu- shukra- bala haani* (hampers life, virility and strength), *vidbandha* (constipation), *pandu* (anaemia), *kandu* (pruritis), *shiroruja* (headache), *prameha* (diabetes), *gulma* (tumor), *hrudroga* (cardiac diseases), *arshas* (haemorrhoids), *kushta* (skin disease), *vatarakta* (gouty arthritis) etc. These symptoms may also include death. So it is very important to understand about those *lakshana* (signs and symptoms) and its *chikitsa* (treatment).

Metals have also been used in treatments since ancient times. Toxic metals sometimes imitate the action of an essential element in the body, interfering with the metabolic process resulting in illness. In modern the treatment modalities adopted include prevention of absorption of metals



further into the system, elimination of metal from circulation and inactivation of bioavailable metal in the system.

MATERIALS AND METHODS

Medicines used for treating rasajeerna and lohajeerna

According to *Rasa Chintamani*, the *chikitsa* for *malarodha* (constipation) caused by *parada sevana* (intake of mercury) include administration of *Pippali* (*Piper longum*) and *hareetaki churna* (powder of *Terminalia chebula*) during night time before sleep. To prevent the reoccurrence of the condition it can be administered along with *tambula patra* (*Piper betle*).

Rasajeerna Chikitsa also includes the following (*Ra. Chi*)

1) *Karkotikanda Kashaya* (decoction prepared of tuber of *Momordica dioica*) for 3 days

2) *Gomutra* (cow's urine) + *sauvarchala* / *saindava* (black salt / rock salt) + *maatulunga* (*Citrus medica*)

3) *Kaaravellaka rasa* (*Momordica charantia*) + *sarja kshara* (alkali of *Vateria indica*) - 1 *karsha* (12g) + *sauvarchala* (black salt)

4) *Kaaravellaka rasa* (*Momordica charantia*) + *karkotimoola* (*Momordica dioica*) + *saindava* (rock salt) + *sauvarchala* (black salt)

5) *Mochaka rasa* (juice of *Moringa oleifera*) + *ghrita* / *raja koshaataki rasa* (juice of *Luffa aegyptiaca*) – help in faster digestion

6) 3 days fasting

7) *Sharapunga* / *Devadaali* (*Luffa echinata*) / *Patola beeja* (seed of *Trichosanthes dioica*) + *kakamachi* (*Solanum nigrum*) – in *kwatha* (decoction) form

Table 1 “Different *Rasa*, their signs and symptoms and treatment”

RASA	SIGNS AND SYMPTOMS (Ayu.Pra)¹	TREATMENT (Br.Ra.Ra.Su)²
<i>ABHRAKA</i> (Mica)	<i>Kushta</i> (skin disease), <i>Pandu</i> (anaemia), <i>Shotha</i> (inflammation), <i>Hrutparshvapeeda</i> (pain in heart region and flanks), <i>Vahniruth</i> (loss of digestive fire), <i>Guru</i> (heaviness), <i>Prameha</i> (diabetes), <i>Marana</i> (death)	<i>Umaphala</i> (fruit of <i>Linum usitatissimum</i>) crush and soak in water taken for 3 days
<i>MAKSHIKA</i> (Chalcopyrite)	<i>Mandagni</i> (dyspepsia), <i>Balahaani</i> (loss of strength), <i>Netraroga</i> (eye disorders), <i>Kushtaroga</i> (skin diseases), <i>Gandamaala</i> (lymphadenitis), <i>Krimi</i> (worm infestation)	<i>Kulathakwatha</i> (decoction of <i>Dolichos biflorus</i>) / <i>Dadimatwakkwatha</i> (<i>Punica granatum</i> bark decoction)
<i>VIMALA</i> (Iron pyrite)	<i>Jwara</i> (pyrexia), <i>Shirashoola</i> (headache), <i>Chardi</i> (vomiting)	<i>Meshashringichoorna</i> (<i>Gymnema sylvestre</i>) + <i>sita</i> (sugar)
<i>TUTHA</i> (Copper sulphate)	<i>Vaanti</i> (vomiting), <i>Bhranti</i> (hallucination)	<i>Jambeera rasa</i> (<i>Citrus limon</i>), <i>Laajamanda</i>
<i>KHARPARA</i> (Ore of Zinc)	<i>Bhranti</i> (delusion)	<i>Gomutra</i> (cow's urine)



GANDHAKA (Sulphur)	<i>Kushta</i> (skin disease), <i>Brahma</i> (hallucination), <i>Pittaruja</i> (Pain), <i>Roopa-Veerya-Balahaani</i> (hampers physique, potency and strength)	<i>Ushnaksheera</i> (luke warm milk) + <i>ghrita</i> (ghee)
HARATALA (Arsenic trisulphide)	<i>Kaphavatajaroga</i> , <i>Prameha</i> (diabetes), <i>Taapa</i> (heat)etc	<i>Kushmaandaswarasa</i> (juice of <i>Benincasa hispida</i>)
MANASHILA (Arsenic disulphide)	<i>Mutrashmari</i> (urinary calculi), <i>Mutrakrucchra</i> (nephritis), <i>Malabandha</i> (constipation), <i>Vanti</i> (vomiting), <i>Trushna</i> (thirst), <i>Bhrama</i> (hallucination)	<i>Ksheera</i> (milk)+ <i>Madhu</i> (honey) – for 3 days
GOURIPASHANA (Arsenic trioxide)	<i>Jwara</i> (fever), <i>Shirashoola</i> (headache), <i>Bhrama</i> (hallucination), <i>Aakshepaka</i> (convulsion) etc.	<i>Ksheera</i> (milk) + <i>Ghrita</i> (ghee) + <i>Sita</i> (sugar) or <i>Navaneeta</i> (butter) + <i>Sita</i> (sugar) + <i>Tilachoorana</i> (sesame powder) or <i>Karavellakaswarasa</i> (<i>Momordica charantia</i>) or <i>Tankanajala</i> (borax water)

Table 2 “Different *Loha*, their signs and symptoms and treatment”

LOHA	SIGNS AND SYMPTOMS (Ayu.Pra)¹	TREATMENT (Br.Ra.Ra.Su)²
SWARNA (Gold)	<i>Bala- Veeryahaani</i> (loss of strength and potency), <i>Roga</i> (disease) and <i>Marana</i> (death)	<i>Abhaya</i> (<i>Terminalia chebula</i>)+ <i>Sita</i> (sugar)- 3 days
ROUPYA (Silver)	<i>Ayu- Shukra- Balahaani</i> (loss of virility and strength), <i>Taapa</i> (heat), <i>Vidbandha</i> (constipation), <i>Pandu</i> (anaemia), <i>Kandu</i> (pruritis), <i>Galagraha</i> (stiffness of neck), <i>Shiroruja</i> (headache)	<i>Sarkara</i> (sugar)+ <i>Madhu</i> (honey)
TAMRA (Copper)	<i>Kanti-Aayu-Bala-Veerya-haani</i> (hampers glow, life, strength and potency) , <i>Vamana</i> (vomiting), <i>Moorcha</i> (giddiness), <i>Bhrama</i> (hallucination), <i>Kushta</i> (skin disease), <i>Shoola</i> (pain), <i>Atisaara</i> (diarrhea), <i>Daaha</i> (burning sensation), <i>Moha</i> (delusion)	<i>Munivrihi</i> (<i>Sesbania grandiflora</i>) + <i>sita</i> (sugar)or <i>Dhanyakam</i> (<i>Coriandrum sativum</i>) + <i>sita</i> (sugar)along with water
LOHA (Iron)	<i>Aamadosha</i> , <i>Agnimandyam</i> , <i>Aruchi</i> (anorexia), <i>Gulma</i> (tumor), <i>Shoatha</i> (inflammation), <i>Hruthshoola</i> (cardiac pain), <i>Nanaruja</i> (pain), <i>Hasta-padadaha</i> (burning sensation in palm and feet), <i>Ashmari</i> (urinary calculi)	<i>Vidanga</i> (<i>Emblia ribes</i>) <i>bhavana</i> (trituration) in <i>Agastyavruksha rasa</i> (juice of <i>Sesbania grandiflora</i>) or <i>Abhrakabhasma</i> (nanoparticles of mica)+ <i>Vayuvidanga</i> (<i>Embelia tsjerium</i>) + <i>Vidangarasa</i> (juice of <i>Embelia ribes</i>) or <i>Sita</i> (sugar) + <i>Madhu</i> (honey)+ <i>Ela choorna</i> (powder of cardamom) – for 3 days
NAAGA (Lead)	<i>Prameha</i> (diabetes), <i>Kamala</i> (jaundice), <i>Kushta</i> (skin disease), <i>Gulma</i> (tumor), <i>Aruchi</i> (anorexia), <i>Raktavikara</i> (blood disorders), <i>Mutrakrucchra</i> (nephritis), <i>Jwara</i> (pyrexia), <i>Ashmari</i> (calculi), <i>Sho ola</i> (pain), <i>Bhagandara</i> (fistula – in –ano)	<i>Swarnabhasma</i> (nanoparticles of gold) + <i>Haritaki</i> (<i>Terminalia chebula</i>) + <i>Sita</i> (sugar) – for 3 days <i>SuddhaGandhaka</i> (Purified Sulphur)
VANGA (Tin)	<i>Prameha</i> (diabetes), <i>Gulma</i> (tumor), <i>Hrudroga</i> (heart disease), <i>Shoola</i> (pain), <i>Arshas</i> (haemorrhoids), <i>Kaasa</i> (cough), <i>Swasa</i> (<i>dysnoea</i>), <i>Kushta</i> (skin disease), <i>Vatarakta</i> (gouty arthritis)	<i>Meshashringi</i> (<i>Gymnema sylvestre</i>) + <i>Sita</i> (sugar)– 3 days



YASHA DA (Zinc)	<i>Prameha</i> (diabetes), <i>Vami</i> (vomiting), <i>Bhrama</i> (hallucination).	Small tender <i>Abhaya</i> (<i>Terminalia chebula</i>) + <i>Sita</i> (sugar) – for 3 days
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In practise, the treatment includes the following

1. To digest the metal – *deepana pachana dravya*(digestive and carminative) can be given.
2. To expel out the metal from our body purgatives or laxatives can be given
3. To reduce the toxic symptom symptomological treatment can be given.

For example when a metal or mineral is administered without proper *shodhana*(purification) then it may result in indigestion. Thus the drug which is used for the *shodhana*(purification) procedure can be administered which helps in curing the signs and symptoms. Along with it, drugs that help in digestion can also be administered to cure the symptoms. Later if needed purgatives can be given to expel out the metal from the body.

Various natural substances are also used in the form of antidotes such as *tankana*(borax), *madhu*(honey), *ghrita*(ghee), *go-ksheera*(cow's milk), *gandhaka*(sulphur) etc are administered to remove the ill effects due to toxicity. These natural antidotes may be considered as the chelating agents of *Ayurveda*, which not only helps in removing the toxic effects of metal and minerals without causing any

side effects but also prevent the loss of essential elements from the body.

Properties of different antidotes used for the treatment

Ksheera (milk)

Milk dilutes and helps to neutralize the poison. It act as demulcent and protect the body from further absorption. It also have slight purgative action in our body.

Example: *Ksheera*(milk) is used as the antidote of *Gandhaka*(sulphur).

Madhu (honey)

Honey contains a number of enzymes (like catalase and glucose oxidase) and free amino acids. It also contains some vitamins like riboflavin (vitamin B2), ascorbic acid (vitamin C), minerals like iron and calcium, antioxidants (such as flavonoids, vitamin C, catalase enzyme, polyphenols) and antibacterial agents. Thus honey exert protective role through restoring enzymatic activity and through its antioxidant mechanism.

Ghrita (ghee)

Fats, oils, milk and egg albumin are also mentioned as a group of substances that delays the absorption of metal. They basically form a coating on the mucous membrane of the stomach and prevent the absorption of the metals or minerals.



Diet to be followed

Even after the cure of *rasajeerna* if the patient continues the consumption of *atyamla*(sour), *lavana*(salt), *katu rasa* (pungent) then it results in *jadaragni nashana*(loss of digestive fire) and improper *kramana*(circulation) of *rasa*. So proper *pathyas*(regimen) should be followed such as

- *Tanduliya*(Rice), *dhanyaka*(*Coriandrum sativum*), *patola* (*Trichosanthes dioica*), *alabuka*(*Cucurbita lagrenaria*) etc which are processed with *ghee+saindhava lavana*(rock salt)+*jeeraka* (*Cuminum cyminum*) +*ardraka*(*Zingiber officinale*) etc
- *Godhuma*(wheat)
- *Purana shaali*(old rice)
- *Ksheera*(milk)
- *Ghrita*(ghee)
- *Hamsodaka*(water exposed to sunlight and moonlight)
- *Mudga rasa* (green gram) etc

RESULTS

- A study on toxicity of *Naga bhasma*(nanoparticles of lead) show reduction in spermatogenesis - *Swarna Bhasma*(nanoparticles of gold) and *Haritaki Churna*(powder of *Terminalia chebula*) mixed with sugar were given for 3 days and it was found that the primary and secondary spermatocytes was properly

developed. This shows that the side effect caused by *naga*(lead) is nullified by *Ayurvedic* treatment³.

- A study also showed that honey has a significant effect on reducing the lead uptake in blood and tissues and have a marked recovery in the biochemical alterations caused by lead⁴.
- Another study have revealed that drinking milk (two bottles a day, about 700 ml per day) have an effect on protecting lead peripheral neurotoxicity⁵.

DISCUSSION

- In case of intake of *Ashuddha Haratala* (unpurified Arsenic trisulphide), *Kushmanda* (*Benincasa hispida*) is told as an antidote. It reduces the toxicity caused by *Ashuddha Haratala* and also reduces the *tikshnata* and *pittakara* nature of *Haratala*, converting acidic *haratala* into alkaline. *Kusmanda* also converts the inorganic arsenic into organic compound thus enabling it for absorption and bioavailability. The organic qualities of *Kusmanda* (*Benincasa hispida*) help in purification of *haratala* (Arsenic trisulphide) and also help to potentiate it⁶. On administration of *Kusmanda* (*Benincasa hispida*), diffusion takes place and it act as a sorbent for removal of Arsenic. It also contains fibres that mixes with the *haratala* helping in absorption or



expelling out the *haratala*(Arsenic trisulphide).

- On intake of *Ashuddha Gandhaka*(unpurified sulphur) and *Ashuddha Manashila* (unpurified Arsenic disulphide), *Ksheera* (milk) and *Ghrita* (ghee) are consumed as it help to reduce the *teekshnata* and nullifying the ill effects of sulphur. *Ksheera* (milk) dissolves the toxic ingredients into it and thus help in reducing the toxic effect caused by *gandhaka* (sulphur) and *manashila* (arsenic disulphide).
- All the *kakaarashtaka gana dravya* act as purgatives, especially *karavellaka*, *kushmanda* etc which can be given during most of the *ajeerna avasta*.

CONCLUSION

Rasashastra is a branch of Ayurveda which deals with purified metals and minerals for the preparation of medicine. If the metals and minerals are not properly purified before consumption these may result in toxic effect or side effect. *Ayurvedic* chelating agents and other medication have the potential to detoxify metal toxicity without losing the essential minerals from our body thus helping to cure *rasaajeerna* and *lohaajeerna*. So it is very important to understand about the signs and symptoms produced by *rasaajeerna* and *lohaajeerna*

and to know about the available treatment modalities for curing the same.



REFERENCE

1. Acharya Sri Madhava (1999).Ayurveda Prakasha.ChaukambhaBharati Academy.
2. PanditDattaraamaChaube (2000). BrihatRasarajasundara.ChaukambhaOrient alia.
3. Dr. Manoj Dash , Dr. Namrata Joshi , Asst. Prof. R.S Gupta and Prof. L.K. Dwivedi (2012).Toxicity Study of Naga bhasma w.s.r. to Ayurvedic Measure for Toxicity Eradication. International Journal of Pharmaceutical & Biological Archives, 3(5), 1250-1254.
4. Waleed O. El shawakh, Afaf A. El-Sawa, Sahar K. Shafik (2016).Protective role of honey after lead toxicity effect on albino rats lingual papillae. Alexandria Dental Journal, 41, 214-219.
5. Chuang HY , Tsai SY, Chao KY, Lian CY, Yang CY, Ho CK, Wu TN(2004).The influence of milk intake on the lead toxicity to the sensory nervous system in lead workers.Neurotoxicology, 25(6), 941-9.
6. Lavanya.S.A and Doddamani.M.S. (2017). A critique on shodhana and marana of Haratala. International Journal of Applied Ayurved Research 3(2), 438- 448