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Critical Analysis of Rasa Chandashu Ukta Iatrogenic Disorders Due to Consumption of Impure Minerals and Metals

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Abstract: Iatrogenic diseases are those diseases which results due to adverse effect of drugs. In ancient Indian alchemy there are many such diseases mentioned which results due to the ingestion of impure mineral and metals. In alchemy (Rasashastra), the various minerals have been classified in various categories such as Rasa, Maharasa, Uparasa, Sadharan Rasa etc and metals into dhatus, updhatus, mishradhatus etc. Review of literature shows that Diabetes (Prameha), Skin disease, Fever (Jwara), Constipation (Vibandha), Chest pain (Hrut Peeda), Anemia (Pandu) , Jaundice (Kamala), Impotence (Klaibya), Emaciation (Kshaya), Vomiting and giddiness (Vanti and Bhranti) , Loss of appetite (Agnimandya) , Cough (Kasa), Breathlessness (Shwasa), Vertigo (Bhrama) are noticed as the iatrogenic disorders of consumption of various minerals and metals if they remain unpurified form. Discussion reveals the possible role of chemical responsible for giving rise to these disorders. All these are well documented in books like Rasa Chandashu and other but in present study, the toxicity was studied only from the Rasashastra book called 'Rasa Chandashu'. In the conclusion, it can be said that ingestion of impure Rasakalpas can lead to variety of iatrogenic disorders, Hence, there is need to take these drugs always in purest form.

Keywords: Toxicity, Minerals, Metals

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INTRODUCTION:

Iatrogenic diseases are those diseases which results due to adverse effect of drugs. In ancient Indian alchemy there are many such diseases mentioned which results due to the ingestion of impure mineral and metals. In alchemy (*Rasashastra*), the various minerals have been classified in various categories such as *Rasa*, *Maharasa*, *Uparasa*, *Sadharan Rasa* etc and metals into *dhatu*s, *updhatus*, *mishradhatu*s etc. Review of literature shows that Diabetes (*Prameha*), Skin disease, Fever (*Jwara*), Constipation (*Vibandha*), Chest pain (*Hrut Peeda*), Anemia (*Pandu*), Jaundice (*Kamala*), Impotence (*Klaibya*), Emaciation (*Kshaya*), Vomiting and giddiness (*Vanti and Bhranti*), Loss of appetite (*Agnimandya*), Cough (*Kasa*), Breathlessness (*Shwasa*), Vertigo

(*Bhrama*) are noticed as the iatrogenic disorders of consumption of various minerals and metals if they remain unpurified form. Discussion reveals the possible role of chemical responsible for giving rise to these disorders. All these are well documented in books like *Rasa Chandashu* and *Ayurved Prakash*.

MATERIAL & METHOD

Literary analytical and observational method of research was adopted in the present study. The literary review of *Rasashastra* literature was done to find the adverse effect of impure minerals and metals. In this regard, *Rasashastra* books like *Rasa Chandashu* was studied particularly.

OBSERVATIONS

Table no. 1 Following iatrogenic effects were observed.

S. No	Iatrogenic Disease	Mineral & Metal Responsible
	Diabetes (<i>Prameha</i>)	1. Lead (<i>Naga</i>), 2. Zinc (<i>Yashad</i>), 3. Orpiment (<i>Hartal</i>), 4. Tin (<i>Vanga</i>), 5. Brass (<i>Pital</i>), 6. Bronz (<i>Kansya</i>).
	Skin disease	1. Cinnabar (<i>Hingul</i>), 2. Tourmeline (<i>Vaikrant</i>), 3. Mica (<i>Abhrak</i>), 4. Sulphur (<i>Gandhak</i>), 5. Mercury (<i>Parad</i>) 6. Orpiment (<i>Hartal</i>).
	Fever (<i>Jwara</i>)	1. Silver (<i>Rajat</i>), 2. Sulphur (<i>Gandhak</i>), 3. Brass (<i>Pital</i>), 4. Bronz (<i>Kansya</i>), 5. Orpiment (<i>Hartal</i>).

Constipation (<i>Vibandha</i>)	1.Silver (<i>Rajat</i>), 2. Copper Pyrite (<i>Makshik</i>), 3. Black Bitumen (<i>Shilajatu</i>).
Chest pain (<i>Hrut Peeda</i>)	1.Iron (<i>Lauha</i>), 2. Mica (<i>Abhrak</i>), 3. Tourmeline (<i>Vaikrant</i>), 4. Realgar (<i>Mansheel</i>),5.Tin (<i>Vanga</i>).
Anemia (<i>Pandu</i>)	1.Mica (<i>Abhrak</i>), 2. Tourmeline (<i>Vaikrant</i>).
Jaundice (<i>Kamala</i>)	1. Lead (<i>Nag</i>), 2. Copper Pyrite (<i>Makshik</i>).
Impotence (<i>Klaibya</i>)	1. Cinnabar (<i>Hingul</i>), 2. Mercury (<i>Parad</i>).
Emaciation (<i>Kshaya</i>)	1.Mica (<i>Abhrak</i>), 2.lead (<i>Naga</i>)
Vomiting and giddiness (<i>Vanti and Bhranti</i>)	1. <i>Tankankhar</i> , 2. <i>Kalkhapri</i> . 3.Copper sulphate (<i>Sasyak</i>),
Loss of appetite (<i>Agnimandya</i>)	1. Copper Pyrite (<i>Makshik</i>), 2. Realgar (<i>Mansheel</i>).
Coughing (<i>Kasa</i>)	1.Tin (<i>Vanga</i>).
Breathlessness (<i>Shwasa</i>)	1.Tin (<i>Vanga</i>).
Vertigo (<i>Bhrama</i>)	1. Sulphur (<i>Gandhak</i>), 2. Cinnabar (<i>Hingul</i>), 3. Zinc (<i>Jasta</i>), 4. Brass (<i>Pital</i>), 5. Bronz (<i>Kansya</i>),6. Black bitumen (<i>Shilajatu</i>) 7. Copper Sulphate (<i>Sasyak</i>).

DISCUSSION

Review of modern literature for toxicity of various metals shows that **Gold (Suvarna) Toxicity** may lead to , Diarrhea, Nausea, Inflammation of skin, or dermatitis causing itching, Damage to the kidneys (nephropathy) leading to proteinuria. Damage to the platelet function causing Purpura., inflammation of blood vessels, known as vasculitis. Enlarged lymph nodes and their dysfunction.

Neurological complications such as severe neuropathies may also occur.

Long term gold toxicity may lead to Bluish-grey discoloration of skin on the sun-exposed areas (chrysiasis) It is irreversible condition. Increased pigmentation can also occur in the lens/cornea of the eye (ocular chrysiasis) , Mouth sores , Severe liver necrosis. , Bone marrow suppression leading to anemia and frequent infections. In majority of the cases,

the signs and symptoms are mild and go away on its own. The prognosis of Gold Toxicity is generally good on discontinuation. Severe cases may require chelation therapy.

Silver (*Rajat*) Toxicity may lead to argyria (silver skin). Exposure to soluble silver compounds may produce other toxic effects, including liver and kidney damage, irritation of the eyes, skin, respiratory, and intestinal tract, and changes in blood cells. Metallic silver appears to pose minimal risk to health.

Lead (*Naga*) Toxicity may cause abdominal pain, constipation, headaches, irritability, memory problems, behavioural problems, inability to have children, and tingling in the hands and feet. Some of the effects are permanent. In severe cases anaemia, seizures, coma, or death may occur. The arsenic in realgar was the source of its toxicity. After its toxicity was realized in the Middle Ages, the mineral was used as a poison to kill rodents, insects, and weeds.

Mica (*Abhraka*) Toxicity may cause Wheezing, coughing, shortness of breath, lung fibrosis on chronic use.

Zinc (*Yashad*) Toxicity levels have been seen to occur at ingestion of greater than 225 mg of

zinc. Excessive absorption of zinc can suppress copper and iron absorption. The free zinc ion in solution is highly toxic to bacteria, plants, invertebrates, and even vertebrate fish. Following an oral intake of extremely high doses of zinc, nausea, vomiting, pain, cramps and diarrhea may occur. There is evidence of induced copper deficiency, alterations of blood lipoprotein levels, increased levels of LDL, and decreased levels of HDL at long-term intakes of 100 mg Zn/d.

There is also a condition called "zinc shakes" or metal fume fever that can be induced by the inhalation of freshly formed zinc oxide formed during the welding of galvanized materials.

Copper Toxicity may cause fever, chills, pain. Gastrointestinal features include nausea, vomiting, abdominal pain. There is metallic taste to the mouth. There may be jaundice and decrease in hepatic function. Kidney feature include anuria. There is muscular weakness and convulsions.

More or less, the features of toxicity of various minerals and metals mentioned in Ayurveda and modern science are same.

CONCLUSIONS

1. There is similarity in features of toxicity of metals and minerals mentioned in ancient Ayurvedic and modern science
2. Ingestion of impure Rasakalpas can lead to variety of iatrogenic disorders.
3. There is need to take these drugs always in purest form.
4. Iatrogenic disorders warrants the prompt stoppage of toxic metal & mineral preparation.

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Conflicts of interest

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