

ROLE OF METALS AND MINERALS IN AYURVEDIC THERAPEUTICS**Shantinath S. Bagewadi¹, Vidyanand F. Kumbhojkar²**¹Assistant Professor, Dept. of Rasashastra and B.K,
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Seth GovindjiRaojiAyurvedMahavidyalaya, Solapur, Maharashtra, India**ABSTRACT**

Ayurveda has earth-shattering in audience of worldwide on virtue of its holistic approach of life and its fewer side effects. *Ayurvedic* herbal and herbo-mineral preparations are used for the treatment of diseases without any side-effect. Herbo-mineral formulation includes herbs, minerals or metals as *bhasmas* for disorders and have proved its efficacy. Formulations of Ayurveda are herbal, mineral, metal and animal in origin, which are processed pharmaceutically for their therapeutic effects. *Rasashastra* highlights the therapeutic efficacy of these *Rasaushadhis* to cure the ailments and rejuvenate the body. This article focuses on the role of *Rasaushadhi* in the *Ayurvedic* therapeutics.

Keywords: Ayurveda, *Rasashastra*, *Rasaushadhi*, *Bhasma*, Metals, Minerals, Herbo-mineral.

INTRODUCTION

Ayurveda an ancient system of medicine has rich heritage. Physicians of the ancient times practiced it as a service to mankind. People had great faith in it and in those days physicians involved themselves right from the procurement of the raw drugs to the administration of the medicines. *Rasashastra* is a branch of Ayurveda pharmaceutics specially dealing with the minerals, metals, precious stones, certain poisonous herbs and their processing. *Rasashastra* the science of mercury has enriched Indian pharmacopoeia by adding innumerable herbo-mineral formularies. Number of elements and minerals have been included in the form *Rasaushadhis*. *Rasashastra* highlighted the therapeutic efficacy of these *Rasaushadhis* to cure the ailments and rejuvenate the body.

The word *Rasayana* is composed of two words *rasa* and *ayana*. *Rasa* means *dhatu*-responsible for sustenance of life. *Ayana* means specific measures used for obtaining *rasa* and responsible for longevity.

Rasayana is a well-developed concept in Ayurveda. *Rasayana* means the augmentation of *rasa*, the vital fluid produced by the digestion of food, which sustains the body through the strengthening of the *dhatu*. The term *rasa* is derived from the root '*rasa*' which means 'to go'. Therefore, the *dhatu* which always moves is called *rasa*. *Rasayana* is the medium through which the *rasa* is maintained, replenished and augmented¹.

In modern term, the study and practice of *rasayana* is referred as *rasavidya* (alchemy). *Rasaushadhis* are known as metallic preparation which includes *bhasma* and *sindoor*. Metals like gold, silver, copper, lead, tin and iron, sand, lime and minerals like red arsenic, germs, salts and red chalk are indicated as drugs in Ayurveda.

MINERALS –

The materials are very potent in eliminating diseases and also for rejuvenation purposes, mineral based products are

known as *Rasaushadhis*. Minerals perform several vital functions which are absolutely essential for the very existence of organism, neuro muscular irritability, fluid balance and osmotic regulation. Certain minerals are integral components of biologically important compounds such as Haemoglobin (Fe), Thyroxin (I), Insulin (Zn) and Vit.B12 (co)². Sulphur is present in Thiamine, Biotin, Lipoic acid and co-enzyme. A several minerals participate as co-factors for enzymes in metabolism. Calcium is the main element which is present in *bhasma* of *Sudhavarga dravya*³.

In the classical texts of Ayurveda like *Charakasamhita*, *Sushrutasamhita* and others, many such minerals and metals are mentioned as therapeutic agents, however in most of the cases their use was limited to external applications e.g. substances like sulphur, Chalcopyrite, Arsenic oxide, Arsenic trisulphide, Arsenic disulphide, Ferric oxide, Lead compounds etc. are mentioned for treatment of various disorders.

METALS –

The *Sanskrit* word *dhatu* comes from a verb “*dha*” meaning “to support”. There are seven basic *dhatu*s which support and sustain the living body. In context with *Rasashastra* the word *dhatu* denotes a metal. Almost all metals are derived from ores, which means concentrations of appropriate minerals accessibly situated at or near the earth surface. The *sanskrit* word *Loha* derived from a root “*Luha*” meaning to pull. Thus ores, from which the metals are extracted were known as *Loha*⁴. If *doshas* are *ksheena* they are boosted by *samanguna*, aggravated *doshas* are evacuated this is *chikistasiddhanta*. The same should be adopted with *Rasaushadhis*. *Lohabhasma* is given in *Panduroga*⁵.

FUNCTIONS OF METALS AND MINERALS–

Metals and Minerals play important role in biological functions. *Rasaushadhis* are explained for many diseases mainly contains elements like Mercury, Copper, Calcium, Iron, Zinc etc. these elements play vital role in normalizing many metabolic activities if these elements given in excess amount may lead toxic effect. But *Rasashastra* with the help of different processes like *bhavana*, *shodhan* and *maran*⁶.

In *Rasashastra* Mercury is the main element which is present in many *rasaushadhis* during the preparation of these medicines elements like Mercury get changed into different form and these become easy for digestion and absorption. In *Rasashastra* many *sagandhayogas* are explained where *shudhaParad* and *shudhaGandhak* are main components of *Kajjali*⁷. Mercury when used for the preparation of different formulations it under go many drugs which have got their own importance increasing its potency and changing its forms.

IN DERMATOLOGY –

Anti-bacterial and Anti-fungal drugs are the most important discovery that has brought the revolution in the history of Dermatology the miraculous drugs. Thus growing resistance, serious side effects of the anti-bacterial and anti-fungal drugs have forced man to find out effective drugs to fulfil the need of the sick man. In ancient texts many *Krimighana* and *Kusthaghana* herbal, mineral and herbo-mineral drugs are explained. *Krimi* compared to various types of micro-organisms in contemporary science which include Bacteria, fungi etc. *Gandhak*, *Sasyak*, *Harital* and *Manshila* etc. *rasadravya* in *shodhit* or *bhasma* form explained in *rasagranthas* possessing *Krimighna* properties^{8,9}.

BIO-CHEMICAL FUNCTION OF COMPOUNDS –

Calcium is the main element, which is present in *bhasma* of *Sudhavargadravya*. Calcium controls excitability of nerves and muscles and regulates permeability of cell membranes. It also maintains integrity of cell membranes. Intracellular messenger for hormones and transmitters¹⁰. Its potency and changing its forms, so that it become easily absorbable and non-toxic. If we see the bio-chemical function of calcium, where it is very much needed for the development of bones, teeth and calcium also regarded as a second messenger for many hormonal functions it also helps to release certain hormones. Phosphorus, which is also present in many *Rasaushadhis*, is essential for activation of protein and enzymes¹¹.

Iron, which is main component of *Lohabhasma* and many herbo-mineral preparations. Iron has for been considered important for the body. *Lohabhasma* has been used in ancient Indian medicine. Iron was used for weakness, which is common in anaemia. The average daily diet contains 10-20 mg of Iron. Its absorption occurs all over the intestine, but majority in upper part. Dietary Iron is present either as haeme or as inorganic but former is a smaller fraction of the dietary Iron. The inorganic Iron is mostly in Ferric form, needs to be reduced ferrous form before absorption can take place. Absorption of haeme iron is largely independent of other foods simultaneously ingested, but that of inorganic iron is affected by several factors¹².

Copper, which is the main component of the *Tamrabhasma*, is an essential constituent of several enzymes and it is necessary for the development of bone and nervous system. Copper deficiency produces osteoporosis and fractures. Copper contain enzyme plays important role in the connective tissue metabolism¹³.

Zinc, which is also present in several *ayurvedic* formulations plays important role in storage and secretion of insulin from beta cells of Pancreas it is also required for wound healing and maintain normal levels of vitamin A. zinc deficiency causes anaemia, hepato-splenomegaly and diabetes mellitus. Zinc contains in leucocytes is reduce in Leukaemia's. In acute myocardial infraction Zn levels are decreased. Zn deficiency can produce skin lesions¹⁴. Hence *Yashadbhasma* is the choicest remedy for diabetes mellitus, anaemia, asthma as well as skin diseases associated with oozing and itching.

Gold: salts is considered to be the most effective agent for arresting the rheumatoid process. It has an effect on synovial membrane and collagen to prevent joint destruction, may induce healing of bony erosions and also it is good immuno modulatory¹⁴. So these elements play important role in physiological functions of our body. *Suvarnbhasma* is used to treat various diseases like tuberculosis, anaemia, cough, debility, sterility, cardiac debility, muscular debility and as a rejuvenate to promote longevity and prevent ageing.

DISCUSSION

Minerals and Metals are essential constituents of all cells, they form the greater portion of the hard parts of the body. They are essential components of respiratory pigments, enzymes. They regulate the excitability of muscular and nervous tissue. They play an important role in water metabolism and regulation of blood volume.

In *ayurvedic* formulations metals-minerals (*shodhitandBhasma* form) and herbs are mixed together and prepared medicines. These agents enhance the absorption and metabolism of administering in lesser doses. *Rasaushadhis* constitute *bhasma* as ingredients and are as superior and essen-

tial today. *Rasashastra* is a branch of Ayurveda which covers scientific validation till today.

Now the question arise about the *rasaushadhis* where we are lacking in giving good quality medicines, all the *rasaushadhis* contain minerals and metals which repair disturbed bio-chemical functions. As far as toxicity is concerned, proper preparation method, *shodhanandmaran* will give good quality medicines which does not harm the body.

CONCLUSION

Ayurveda is renowned by its medicine. Medicine is a tool by which diseases are destroyed. Ayurveda pharmaceuticals, specially dealing with the minerals, metals, certain herbs and their processing. These materials are very potent in eliminating diseases and rejuvenation purposes. Due to small dose, quick effectiveness and long self-life *rasaushadhis* are superior status among the *ayurvedic* medicine.

REFERENCES

1. <http://www.ijpi.org> Volume 3, Issue 3: May-June 2013: 122
2. <http://lifesciencesleaflets.ning.com> published: 29/02/2012: 142.
3. Dr Anil Potnis, Dr DevalParanjpe: Text book of Biochemistry: Himalaya publishing house: first edition 2005.
4. Dr Vilas Dole & Dr Paranjpe: A text book of Rasashastra: Chaukhamba Sanskrit pratishthan:269.
5. Kaviraj Dr Ambikadattshatri: Sushrut-Samhita: second part:Chaukhamba Sanskrit pratishthan:291.
6. Dr Vilas Dole & Dr Paranjpe: A text book of Rasashastra: Chaukhamba Sanskrit pratishthan
7. KashinathShatri: Rasa tarngini: MotilalBanarasidas: Edi. 1979:124.
8. Dr Ambikadattshatri: Rasaratna-Samuchchaya: Chaukhamba Sanskrit series office: fifth edication 1976.

9. KashinathShatri: Rasa tarngini: MotilalBanarasidas: Edi. 1979.
10. Dr Anil Potnis, Dr DevalParanjpe: Text book of Biochemistry: Himalaya publishing house: first edition 2005.
11. K. D. Tripathi: Essentials of Medical pharmacology: Third Edi.:Jaypee brothers pub.: 297.
12. Dr Anil Potnis, Dr DevalParanjpe: Text book of Biochemistry: Himalaya publishing house: first edition 2005: 468.
13. K. D. Tripathi: Essentials of Medical pharmacology: Third Edi.:Jaypee brothers pub.: 545,546.
14. Dr Anil Potnis, Dr DevalParanjpe: Text book of Biochemistry: Himalaya publishing house: first edition 2005: 481,489.
15. K. D. Tripathi: Essentials of Medical pharmacology: Third Edi.:Jaypee brothers pub.: 423.

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Source of support: Nil

Conflict of interest: None Declared