

ROLE OF METAL IONS IN BIOLOGICAL SYSTEM

Biological system

A biological system, sometimes simply referred to as a system, is a group of entities or organs that work together to carry out a particular task. It is a biological unit of the body or of an organism.

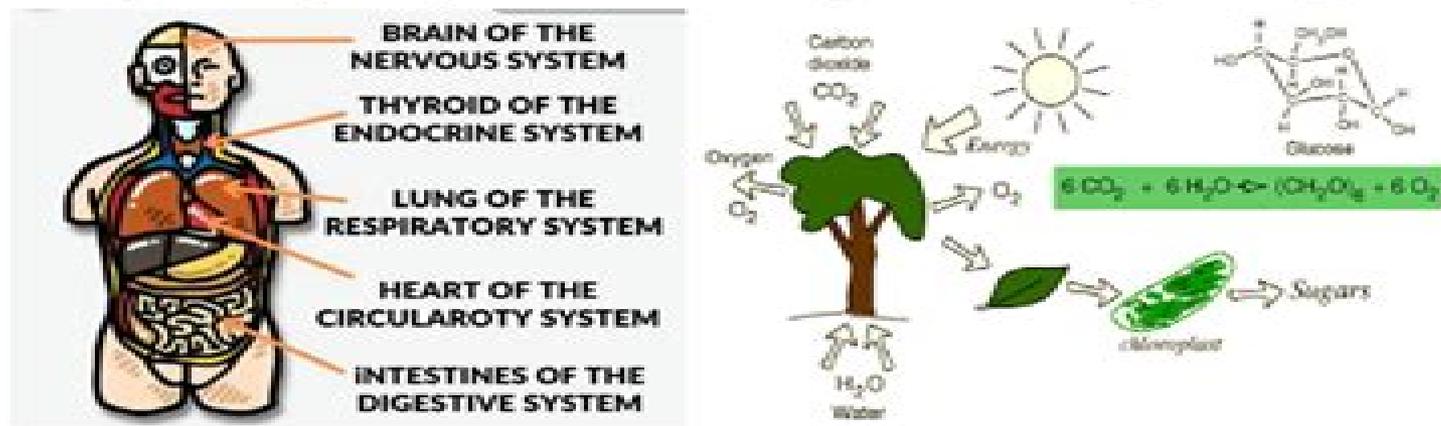


Figure 1: Biological System

Metal ions

Metal ions are fundamental elements for the maintenance of the lifespan of plants, animals and humans. Their substantial role in biological systems was recognized a long time ago. They are essential for the maintenance of life and their absence can cause growth disorders, severe malfunction, carcinogenesis or death.

- They are protagonists as macro or microelements in several structural and functional roles.
- They participate in many biochemical reactions and arise in several forms.
- They participate in intra and inter cellular communications.
- They help in maintaining electrical charges and osmotic pressure in organisms.
- They help in photosynthesis and electron transfer processes.
- They perform their role in the maintenance of pairing, stacking and the stability of nucleotide bases.
- They also in the regulation of DNA transcription.
- They contribute to the proper functioning of nerve cells, muscle cells, the brain and the heart.
- They act to transport of oxygen and in many other biological processes up to the point.

Metal Ions In Biological Systems

Astrid Sigel, Helmut Sigel



Metal Ions In Biological Systems:

Metal Ions in Biological Systems Astrid Sigel, Helmut Sigel, 1996-02-05 Volume 32 covers metal ion bonding to phosphate sugar and nucleobase residues the ambidentate as well as the stacking properties of nucleotides kinetic aspects as well as properties of nucleobase and nucleotide analogs and the oligonucleotides and nucleic acids It examines electron transfer reactions over a large number of base repairs in DNA the role of metal ions in ribozymes ternary metal nucleic acid base protein complexes metal responsive gene regulation and the structure activity relationships of anticancer drugs and their action on DNA including cisplatin and the role of proteins [Metal Ions in Biological Systems](#) Sanat Dhar, 2013-03-09

The articles published in this volume are based on the papers delivered at a conference on the Role of Metal Ions in Biological Systems held November 20 and 21 1972 at Argonne National Laboratory The purpose of the conference was to present to an interdisciplinary audience of physical scientists some recent developments illustrating the chemical and environmental participation of the heavy metal ions in the biological system The invited speakers at the conference are specialists in the fields they describe and the articles presented here are at a level of interest to readers with backgrounds in physical sciences who are not necessarily doing research in the areas described The articles are referenced through 1972 and in some cases early 1973 and thus should also be of value to research workers It is hoped that the book will be of particular interest to chemists biologists workers in the fields of environmental science and public health as well as graduate and senior undergraduate students in these disciplines The conference was sponsored by the Central States Universities Inc a consortium of sixteen midwestern universities the Center for Educational Affairs Argonne National Laboratory and the United States Atomic Energy Commission It is my pleasure to thank the members of the conference committee for their ideas and active help in organizing the conference **Metal Ions in Biological Systems** Helmut

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Volume 35 covers the biological cycling of iron in oceans the transport of iron in microorganisms fungi and plants the roles and properties of siderophores the regulation of iron transport and uptake in animals plants and microorganisms and more

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and mercury are also covered to some extent as are those of the non metals silicon phosphorus and sulfur and the haloperoxidase route of the biogenesis of halomethanes by fungi and plants The properties of these alkyl derivatives their biosynthesis including mechanistic aspects their appearance in waters rivers lakes oceans and sediments and their physiological and toxic effects are summarized **Handbook on Metals in Clinical and Analytical Chemistry** Hans Seiler,Astrid Sigel,Helmut Sigel,1994-01-25 Describes general aspects of metals in clinical chemistry focusing not only on the physiology of metal ions and their analytical determination in biological materials but also on their geochemical distribution technical uses and environmental effects

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