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Nota di contenuto	Chemistry of Metalloproteins: Problems and Solutions in Bioinorganic Chemistry; Contents; Preface; 1 Introduction; Proteins: Formation, Structures, and Metalloproteins; Organelles and Their Functions; Structure of DNA; Cell Growth and Division; Protein Synthesis; Common Natural -Amino Acids; Peptide Chain Formation; Protein physiological functions; Structural Features of Proteins; Causes of Polypeptide Chain Folding; Metal Amino Acid Complexes; Comparison of P-O versus M-O Bond Scission Rates for Row 3 Elements; Redox Advantages: Sulfur versus Phosphorus; Bioenergetic Phosphate Derivatives References2 Alkali and Alkaline Earth Cations; References; 3 Nonredox Metalloenzymes; Carboxypeptidases; What are the main functions of carboxypeptidases?; What are the main types of carboxypeptidases?; What are the requirements to stimulate carboxypeptidase-A and carboxypeptidase-B?; What are the main structural features of carboxypeptidase-A and carboxypeptidase-B?; How can Zn ²⁺ be extracted from carboxypeptidase-A and carboxypeptidase-B?What are the consequences of metal ion removal?; What are the spectral consequences when Zn ²⁺ is replaced by Co ²⁺ in carboxypeptidases? Describe the role of Zn ²⁺ in carboxypeptidase-A and carboxypeptidase-B.Design models to mimic the role of the metal ion in carboxypeptidase-A and carboxypeptidase-B.; Carbonic Anhydrase;

What are the main functions of carbonic anhydrase?; Conversion of carbonic acid to CO₂ and H₂O is a spontaneous process. Why is carbonic anhydrase needed?; What are the main structural and chemical features of carbonic anhydrase?; Describe the role of the metal ion in carbonic anhydrase.; What are the possible mechanisms that describe the action of carbonic anhydrase?

Design models for the carbonic anhydrase, and what do they reveal?

Rate Constants; Alcohol Dehydrogenase; What is the catalytic role and the structural features of the alcohol dehydrogenases?; What is the sequence of events during the reaction of alcohol dehydrogenase?; A number of model systems have been investigated to study the influence of Zn²⁺ on the reactivity of the carbonyl; give an example.;

References; 4 Copper Proteins; Introduction; Electronic Spectra of Copper Ions; What are the structural and spectral features of copper(II)-peptide complexes in the visible region?

ESR Spectra of Copper IonsHow can ESR spectra be used as a ``spectral probe to study copper enzymes?; Define; How do the nuclear-spin of Cu<sup>2+</sup> ion and the attached ligands affect the ESR signal? How can the hyperfine and superhyperfine splitting be used as a ``spectral probe for studying the copper enzymes?; How may the spectrochemical series and the stereochemistry affect g-values of Cu²⁺ ion and what is the significance of All-gII trend?; Copper Proteins Identify the significant roles of copper in the biological process, classify, give examples, and explain their functions and main chemical properties.

Sommario/riassunto

"This question-and-answer guide on metalloproteins reflects the broad range of aspects within this branch of protein science. It is divided into seven parts, addressing: the cell, the alkali and alkaline earth cations, non-redox metalloenzymes, carboxypeptases, carbonic anhydrase, alcohol dehydrogenase, copper proteins, electronic and ESR spectra of copper ions, plastocyanin, stellacyanin, superoxide dismutase, electronic spectra of iron ions, Mossbauer spectroscopy of iron ions, ESR spectra of iron (III), iron bioavailability, siderophores, non-heme iron proteins, ferritin, transferrin, dioxygenase-iron proteins, rubredoxin, 2Fe-2S Ferredoxins, 4Fe-4S Ferredoxins and hiPIP, aconitase, hydroxylases, hydrogenases, nitrogenases, binuclear Fe proteins, hemerythrin, ribotide reductase, purple acid phosphate and methane mono-oxygenase, heme proteins, myoglobin and hemoglobin, electronic spectra of hemoproteins, cytochrome C, peroxidase, cytochrome P450, ESR spectra of hemoproteins, vitamin B12, and chlorophyll. Each section ends with suggestions for further reading"-- Provided by publisher.
