Metabolism Of Minerals And Trace Elements In Human Disease

#mineral metabolism #trace elements #human disease #metabolic disorders #nutrient essentiality

Explore the critical role of mineral and trace element metabolism in maintaining human health. This section delves into how the body processes essential nutrients, examining the complex interplay that, when disrupted, can lead to various human diseases and metabolic disorders. Understanding these pathways is crucial for addressing nutritional imbalances and their broad impact on well-being.

Metabolism of Minerals and Trace Elements in Human Disease

Disorders of Mineral Metabolism, Volume I: Trace Minerals covers the pathophysiology of clinically relevant minerals and elements. This volume focuses on minerals whose average daily intake is under 50 mg. This text is composed of 12 chapters that tackle the clinical relevance and essentiality of various trace minerals in the human body, with particular emphasis on the disorders due to their abnormal metabolism. The trace mineral and elements considered in this volume include iron, coppers, zinc, lead, nickel, manganese, chromium, molybdenum, cadmium, aluminum, tin, lithium, and fluoride. Each chapter discusses the properties, body requirements, analysis, nutritional interactions, and toxicity of the mineral. This book will prove useful to biochemists, pathophysiologists, and workers in the medical field.

Disorders of Mineral Metabolism

Each year, it becomes more apparent that trace elements play an important role in human metabolism. The concept is no longer new. The literature on the subject is voluminous. Dr. Prasad, who has been interested in this field for many years, has undertaken the enormous task of bringing our knowledge together in a comprehensive fashion. This monograph should prove very informative and extremely useful to everyone who is concemed with human disease and with the maintenance of good health. His coverage of the subject is broad. Because ofthe importance of iron, in addition to "trace" elements, in human metabolism and nutrition, a chapter dealing with iron has been included. Maxwell M. Wintrobe, M.D. vii PREFACE It has been known for several decades that many elements are present in living tissues, but it was not possible to measure their precise concentra tions until recently. They were therefore referred to as occurring in "trace" amounts, and this practice led to the use of the term "trace elements." Although techniques now available are such that virtually all trace elements can be determined with reasonable accuracy, the designation "trace ele ments" remains in popular usage.

Trace Elements and Iron in Human Metabolism

Trace element status and requirements; Trace element balance studies and homeostasis; The availability, absorption and retention of trace elements; Trace element supplementation; Trace elements in pregnancy and lactation; Trace elements and the development of organs and tissues; Trace element deficiencies; Trace element enviromental contamination and toxicity; Trace elements and human disease; Trace element interaction; Functions of trace elements; Mratallothionein; Aspects of trace analysis.

Trace Minerals

Diet and Health examines the many complex issues concerning diet and its role in increasing or decreasing the risk of chronic disease. It proposes dietary recommendations for reducing the risk of the major diseases and causes of death today: atherosclerotic cardiovascular diseases (including heart attack and stroke), cancer, high blood pressure, obesity, osteoporosis, diabetes mellitus, liver disease, and dental caries.

Trace Element Metabolism in Man and Animals

Trace element status and requirements; Trace element balance studies and homeostasis; The availability, absorption and retention of trace elements; Trace element supplementation; Trace elements in pregnancy and lactation; Trace elements and the development of organs and tissues; Trace element deficiencies; Trace element environmental contamination and toxicity; Trace elements and human disease; Trace element interactions; Functions of trace elements; Metallothionein; Aspects of trace element analysis.

Diet and Health

A comprehensive survey of the latest information on the biochemical, immunological, and clinical aspects of trace elements essential to humans (e.g., zinc, copper, iron, chromium, selenium, and manganese), including methods measuring these elements in human subjects--and common toxic elements, such as lead, cadmium, mercury, and aluminum. Addresses the relationships of trace elements to immunity, fluoride metabolism, free radicals, cancer chemotherapy, parenteral nutrition, and micronutrient interactions in humans.

Trace Element Metabolism in Man and Animals

The Nutrition and Health series of books have, as an overriding mission, to provide health professionals with texts that are considered essential because each includes 1) a synthesis of the state of the science, 2) timely, in-depth reviews by the leading researchers in their respective fields, 3) extensive, up-to-date fully annotated reference lists, 4) a detailed index, 5) relevant tables and figures, 6) identification of paradigm shifts and the consequences, 7) virtually no overlap of information between chapters, but targeted, inter-chapter referrals, 8) suggestions of areas for future research, and 9) bal anced, data-driven answers to patient questions which are based upon the totality of evidence rather than the findings of any single study. The series volumes are not the outcome of a symposium. Rather, each editor has the potential to examine a chosen area with a broad perspective, both in subject matter as well as in the choice of chapter authors. The international perspective, especially with regard to public health initiatives, is emphasized where appropriate. The editors, whose trainings are both research and practice oriented, have the opportunity to develop a primary objec tive for their book; define the scope and focus, and then invite the leading authorities from around the world to be part of their initiative. The authors are encouraged to provide an overview of the field, discuss their own research and relate the research findings to potential human health consequences.

Essential and Toxic Trace Elements in Human Health and Disease

Trace Elements in Human Health and Disease is a collection of papers presented at an international symposium on trace elements held in Detroit, Michigan on July 10-12, 1974. The symposium provided a forum for discussing the role of essential and toxic elements in human health and disease. These two volumes bring together a vast amount of information on trace elements zinc and copper, magnesium, selenium, fluoride, cadmium, lead, and mercury. They will be of great value to physicians, nutritionists, and toxicologists. A particularly interesting section relates to the leaching of important trace metals by excess dietary fiber in some developing countries. These books are one of the important monograph series published by the American Nutrition Foundation.

Clinical Nutrition of the Essential Trace Elements and Minerals

From the Preface The major change in the format of the fifth edition is the presentation of the book in two volumes, necessitated by the rapidly increasing knowledge of metabolism, interactions, and requirements of trace elements. The guiding principle was to present the minimum of results that would serve as a logical foundation for the description of the present state of knowledge.

Trace Elements in Human Health and Disease

MILS-13 provides an up-to-date review on the relationships between essential metals and human diseases, covering 13 metals and 3 metalloids: The bulk metals sodium, potassium, magnesium, and calcium, plus the trace elements manganese, iron, cobalt, copper, zinc, molybdenum, and selenium, all of which are essential for life. Also covered are chromium, vanadium, nickel, silicon, and arsenic, which have been proposed as being essential for humans in the 2nd half of the last century. However, if at all, they are needed only in ultra-trace amounts, and because of their prevalence in the environment, it has been difficult to prove whether or not they are required. In any case, all these elements are toxic in higher concentrations and therefore, transport and cellular concentrations of at least the essential ones, are tightly controlled; hence, their homeostasis and role for life, including deficiency or overload, and their links to illnesses, including cancer and neurological disorders, are thoroughly discussed. Indeed, it is an old wisdom that metals are indispensable for life. Therefore, Volume 13 provides in an authoritative and timely manner in 16 stimulating chapters, written by 29 internationally recognized experts from 7 nations, and supported by more than 2750 references, and over 20 tables and 80 illustrations, many in color, a most up-to-date view on the vibrant research area of the Interrelations between Essential Metal Ions and Human Diseases.

Minerals, Trace Elements and Human Health

Dietary trace minerals are pivotal and hold a key role in numerous metabolic processes. Trace mineral deficiencies (except for iodine, iron, and zinc) do not often develop spontaneously in adults on ordinary diets; infants are more vulnerable because their growth is rapid and their intake varies. Trace mineral imbalances can result from hereditary disorders (e.g., hemochromatosis, Wilson disease), kidney dialysis, parenteral nutrition, restrictive diets prescribed for people with inborn errors of metabolism, or various popular diet plans. The Special Issue “Dietary Trace Minerals” comprised 13 peer-reviewed papers on the most recent evidence regarding the dietary intake of trace minerals, as well as their effect on the prevention and treatment of non-communicable diseases. Original contributions and literature reviews further demonstrated the crucial and central part that dietary trace minerals play in human health and development. This editorial provides a brief and concise overview of the content of the Dietary Trace Minerals Special Issue.

Trace Elements in Human Disease

Trace Elements in Human Health and Disease is a collection of papers presented at an international symposium on trace elements held in Detroit, Michigan on July 10-12, 1974. The symposium provided a forum for discussing the role of essential and toxic elements in human health and disease. These two volumes bring together a vast amount of information on trace elements zinc and copper, magnesium, selenium, fluoride, cadmium, lead, and mercury. They will be of great value to physicians, nutritionists, and toxicologists. A particularly interesting section relates to the leaching of important trace metals by excess dietary fiber in some developing countries. These books are one of the important monograph series published by the American Nutrition Foundation.

Trace Elements in Human and Animal Nutrition

The remarkable development of molecular biology has had its counterpart in an impressive growth of a segment of biology that might be described as atomic biology. The past several decades have witnessed an explosive growth in our knowledge of the many elements that are essential for life and maintenance of plants and animals. These essential elements include the bulk elements (hydro gen, carbon, nitrogen, oxygen, and sulfur), the macrominerals (sodium, potas sium, calcium, magnesium, chloride, and phosphorus), and the trace elements. This last group includes the ultra trace elements and iron, zinc, and copper. Only the ultratrace elements are featured in this book. Iron has attracted so much research that two volumes are devoted to this metal-The Biochemistry of Non-Heme Iron by A. Bezkoravainy, Plenum Press, 1980, and The Biochemistry of Heme Iron (in preparation). Copper and zinc are also represented by a separate volume in this series. The present volume begins with a discussion of essentiality as applied to the elements and a survey of the entire spectrum of possible required elements.

Interrelations between Essential Metal Ions and Human Diseases

This book is the published proceedings of the Sixth International Symposium on Trace Element Metabolism in Man and Animals. The Symposium was held at the Asilomar Conference Center in Pacific Grove, California, U.S.A. from May 31 through June 5, 1987. The decision to hold TEMA-6 at Asilomar was made at TEMA-5 in 1985. The International Guidance Committee decided to hold the meeting in California in part to recognize the significant cont~i butions made to the field of trace element metabolism by Professor Lucille S. Hurley. As such, she was the obvious choice as chair of the local organ izing committee. One of the principal goals of Professor Hurley was that TEMA-6 serve as a forum for discussing the use and application of newer methodologies, such as molecular biology, computer modelling and stable isotopes, in studies of trace element metabolism. Based on the comments which the local organizing committee has received, this goal was achieved. The Symposium was attended by 275 scientists from 32 countries covering 6 continents. Twenty-five speakers were chosen for our plenary sessions.

Dietary Trace Minerals

This volume, containing the proceedings of the tenth of the highly successful TEMA meetings, presents recent progress in the research on the functional role and metabolism of trace elements, and new developments in the understanding of molecular and cellular biology.

Trace Elements in Human Health and Disease: Zinc and copper

"Offers comprehensive, definitive information on all of the essential mineral elements--focusing on biochemical and physiological processes. Describes in detail the function of the nutritionally necessary elements revealed through the latest techniques in molecular biology as well as traditional research methods."

Biochemistry of the Essential Ultratrace Elements

Colloidal mineral supplements allow 98 percent of the supplement to be absorbed by the body, as opposed to the 3 to 5 percent absorption of standard mineral supplements. "Colloidal Minerals and Trace Elements" details 55 trace elements, their beneficial effects, and the ideal combinations of colloid supplements to use based on your health concerns.

Essential and Toxic Trace Elements in Human Health and Disease

Trace Elements in Human Health and Disease, Volume II: Essential and Toxic Elements is a collection of papers presented at an international symposium on trace elements held in Detroit, Michigan on July 10-12, 1974. The symposium provided a forum for discussing the role of essential and toxic elements such as magnesium and chromium in human health and disease. Comprised of 21 chapters, this volume begins with an overview of magnesium deficiency and magnesium toxicity in humans, followed by an analysis of magnesium deficiency and its relation to calcium, parathyroid hormone, and bone metabolism. The reader is then introduced to the biochemistry and physiology of magnesium, along with chromium metabolism and its biochemical effects on humans. Subsequent chapters deal with the metabolism and biochemistry of selenium and sulfur; the health and disease implications of selenium and glutathione peroxidase; effect of pre-eruptive or post-eruptive fluoride administration on caries

susceptibility in the rat; and perinatal effects of trace element deficiencies. The book also considers the basis of recommended dietary allowances for trace elements before concluding with a description of quantitative measures of the toxicity of mercury in humans. This book will be useful to physicians, researchers, nutritionists, and toxicologists.

Trace Elements in Man and Animals 6

This book describes the role of trace elements in health and longevity, pursuing a biogerontological approach. It offers essential information on the impact of trace elements on molecular and physiological processes of aging, and on their impact on health in connection with aging. The major topics covered in its 11 chapters, each dedicated to a specific trace element or mineral, are: a) Role of the element in species longevity, b) Recommended intake for longevity in animal species and in the elderly, c) Deficiency and age-related disease, d) Excess/toxicity and age-related disease, and e) Interactions with drugs prescribed in the elderly. Clinical, animal and other laboratory models of interest in aging are included, which enable a more in-depth analysis to be made. The respective chapters are a mixture of overviews and more in-depth reviews in which the mechanisms of aging are described from the point of view of their specific interactions with trace elements and minerals.

Trace Elements in Man and Animals 10

This book is an excellent compilation of trace elements and their positive and negative effects on human health and the environment. Over two sections, the book examines the adverse effects of trace elements in the human body and the atmosphere and how to overcome them.

Handbook of Nutritionally Essential Mineral Elements

Trace elements are involved in almost every biochemical process in body cells, and inadequacy or unbalance of trace element supply consequently affects a number of physiological functions. Recently developed and improved analytical techniques have strongly contributed to an increased understanding of the role of trace elements for health and disease. This publication gives an excellent overview of the present knowledge concerning their significance in a number of conditions. The specific problems in evaluating trace element intakes and status are highlighted. An adequate nutrient supply is particularly important in periods of growth, especially for infants, children and pregnant women. Improvement of trace element status through food fortification or supplementation is another central theme of this volume. Moreover, the biochemical and epidemiological evidences that they play a role in the prevention of coronary heart disease, cancer and osteoporosis are discussed. To keep track of the exciting developments in the field of trace elements, this publication is important for nutritionists, dietitians, pediatricians, general practitioners, public health professionals and food technologists alike.

Trace Elements in Human Health and Disease

Comprehensive resource on all aspects of nutrition and metabolism; covering vitamin and mineral deficiencies, diseases, immunity, brain and bone health, and more. Now in its third edition, Nutrition and Metabolism has been updated throughout to present readers with the core principles of nutrition in the context of a systems and health approach. Written by a team of internationally renowned experts, the text includes information on: Body composition, energy metabolism, proteins, amino acids, carbohydrates, lipids, vitamins, minerals, trace elements, food intake, and food composition Energy, macronutrients, pregnancy and lactation, growth and aging, brain nutrition, sensory systems and food palatability, the gastrointestinal system, and the cardiovascular system Societal food choices, over- and undernutrition, eating disorders, dieting, foetal programming, cancer, osteoporosis, and diabetes How nutrition affects the liver, pancreas, kidney, lungs, heart and blood vessels, and how nutrition relates to the development of traumatic, infectious, and malignant diseases Nutrition and Metabolism is an essential resource for students and practitioners of nutrition and dietetics, as well as students majoring in other subjects that have a nutrition component.

Colloidal Minerals and Trace Elements

Around a quarter of the world's population is affected by iron deficiency, and women of childbearing age as well as children and adolescents are considered a particular risk group. This reference book deals with the latest scientific findings concerning the iron supply of the human organism with natural foods. It dispels the misconception that plant iron is less valuable than animal iron by presenting the absorption

of iron from plant foods via a newly discovered metabolic pathway. From this, new points of view can be derived for vegetarians and vegans, who until now have belonged to the risk group. Furthermore, it is dedicated to forward-looking possibilities of diagnosing iron deficiency and describes modern concepts for determining the bioavailability of iron in food. New findings on the biochemistry of iron in brain metabolism, the description of the different reference values of the international professional societies and practical advice for special diets, risk groups and age groups as well as cooking recipes with simple information on iron intake complete the work. The book is aimed at nutritionists and medical practitioners, nutrition and food scientists, dieticians, pharmacists and sports scientists.

Essential and Toxic Element

Recent studies have raised concerns about the health effects of dietary exposure to trace elements. An estimated 40 percent of the world's population suffers from developmental and metabolic functional disorders due to trace element deficiencies. Conversely, there is an established link between excess intake of mineral components and diseases of th

Trace Elements and Minerals in Health and Longevity

The Fourth International Symposium on Trace Element Metabolism in Man and Animals (TE~1A-4), was held in the Sheraton Hotel, Perth, Western Australia from May 11 to 15, 1981. One of the aims of TEMA-l, which was held in Aberdeen in 1969, had been to promote a meeting at which involved scientists from a variety of disciplines would be given the opportunity to present and discuss recent research findings. It was our intention to maintain this aim. We also intended to continue the initiative taken at TEMA-3, held in Freising-Weihenstephan in 1977, which was to encourage participation by our colleagues in human medicine. We feel that a pleasing degree of success was achieved for both these aims. The decision to hold TEMA-4 in Perth was made at the TEMA-3 meeting in 1977. The International Guiding Committee wished to acknowledge the significant body of work on trace element metabolism and disorders that had been undertaken in Australia.

Trace Elements and Their Effects on Human Health and Diseases

Issues authoritative recommendations concerning nutritional requirements and safe ranges of intake for nineteen trace elements important to human health. Representing the consensus reached by a large number of international experts, the book aims to give scientists and those responsible for nutrition planning a solid basis for assessing dietary intakes of trace elements, detecting deficiencies and excesses, and recognizing the clinical features of related disorders. Throughout, guidelines and advice respond to greatly expanded knowledge about the significant impact that even subtle differences in trace elements can have on health and disease. The core of the report, which has three parts, provides authoritative recommendations on the nutritional significance, requirements for health, and safe range of daily intakes for nineteen trace elements in three categories. These include essential elements, such as iodine and zinc, probably essential elements, such as manganese and silicon, and potentially toxic elements, such as fluoride, lead, cadmium and mercury, which may also have some essential functions at low levels.

Trace Elements in Human Health and Disease

Dietary trace minerals are pivotal and hold a key role in numerous metabolic processes. Trace mineral deficiencies (except for iodine, iron, and zinc) do not often develop spontaneously in adults on ordinary diets; infants are more vulnerable because their growth is rapid and their intake varies. Trace mineral imbalances can result from hereditary disorders (e.g., hemochromatosis, Wilson disease), kidney dialysis, parenteral nutrition, restrictive diets prescribed for people with inborn errors of metabolism, or various popular diet plans. The Special Issue “Dietary Trace Minerals” comprised 13 peer-reviewed papers on the most recent evidence regarding the dietary intake of trace minerals, as well as their effect on the prevention and treatment of non-communicable diseases. Original contributions and literature reviews further demonstrated the crucial and central part that dietary trace minerals play in human health and development. This editorial provides a brief and concise overview of the content of the Dietary Trace Minerals Special Issue.

Minerals

Contains up-to-date reviews on the latest advances in the role of trace elements in such areas as brain function, thymic hormone, appetite regulators, gene expression, metallothionein, free radicals and immunity. Marginal deficiency of zinc in humans, therapeutic developments in the treatment of Wilson's disease, human trace elements' requirements and analytical methods of trace elements are among the issues discussed.

Role of Trace Elements for Health Promotion and Disease Prevention

The major change in the format of the fifth edition is the presentation of the book in two volumes, necessitated by the rapidly increasing knowledge of metabolism, interactions, and requirements of trace elements. The guiding principle was to present the minimum of results that would serve as a logical foundation for the description of the present state of knowledge.

Health and Disease Role of Micronutrients and Trace Elements

Trace Elements and Other Essential Nutrients