Book Reviews

Clinical Nutrition of the Essential Trace Elements and Minerals. The Guide for Health Professionals, edited by JD Bogden and LM Klevay, 2000, 397 pages, hardcover. Humana Press, Totowa, NJ.

New claims about the special health benefits of a particular nutrient appear in the press almost daily. In the area of trace elements, 2 examples of such claims include the role of zinc lozenges in treating the common cold and the value of chromium supplements in enhancing muscle mass. *Clinical Nutrition of the Essential Trace Elements and Minerals* carefully reviews the scientific literature regarding the function of essential trace elements in specific health conditions or in groups of diseases. Excellent practical information is provided. The in-depth discussions are timely and include comprehensive reference lists and many relevant figures and tables.

The book is organized into 4 major sections: *1*) basic concepts, consumption, deficiency, and toxicity; *2*) trace element and mineral nutrition in healthy people; *3*) trace element and mineral nutrition in disease; and *4*) a short appendix with a guide to relevant literature. There are 21 chapters, each of which is authored by an expert in that field; 10 of the 21 chapters focus on various diseases. Within each chapter, all of the essential trace elements relevant to the condition or group of diseases are discussed. Those minerals reviewed include 9 essential trace elements (chromium, copper, fluoride, iron, iodine, molybdenum, manganese, selenium, and zinc) and 3 macrominerals (calcium, magnesium, and phosphorus). In most cases, each mineral is discussed separately. Lengthier discussions of the interactions among trace elements and minerals in disease states would have been useful.

In the first section, the review of possible essential trace elements is comprehensive and includes an excellent reference list. Also, the chapter on current dietary intakes of trace elements and minerals provides many tables with valuable data on national consumption patterns. The chapter on consumption of trace elements and minerals by preagricultural humans is fascinating and is an excellent review of this topic. The apparent high intake of most minerals documented by the author challenges current concepts about toxicity. The chapter on assessment of trace element status focuses on laboratory measurements. Inclusion of behavioral and physiologic indicators of status would have strengthened this chapter.

The second section contains 4 outstanding chapters on pregnancy, lactation, adolescence, and the elderly. A chapter on infants and young children would have made this section a complete review of the entire life cycle.

The third, and largest, section discusses genetic, endocrine, skeletal, cardiovascular, kidney, gastrointestinal, infectious, surgical, and ophthalmologic disorders. Two chapters are devoted to infectious disorders; one deals with immune dysfunction and the other with HIV infection and AIDS. Both chapters are excellent. The discussion of genetic disorders is also very good. However, given the vast amount of research on trace elements and diabetes or hypertension, it is unfortunate that the editors did not include a chapter on these common health problems. Also, some discussion of fuel metabolism and obesity would have been useful and the absence of a chapter on the importance of minerals in cancer is notable. The treatment of cancer patients is discussed briefly in the chapter on enteral and parenteral nutrition, but there is no in-depth discussion of the role of trace element or mineral intake in reducing, or possibly increasing, the risk of cancer.

Although several topics in clinical nutrition are omitted from this book, the reviews provided on the scientific bases for the role of minerals in human biology and health are excellent. The book is probably too specialized to be used as a textbook for a course in clinical nutrition; however, it is an excellent reference for members of the health profession, nutrition researchers, and college and university faculty.

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Coenzyme Q: Molecular Mechanisms in Health and Disease, edited by Valerian E Kagan and Peter J Quinn, 2001, 408 pages, hardcover; $99.95. CRC Press, LLC, Boca Raton, FL.

Coenzyme Q (ubiquinone 10) is a lipid-soluble compound composed of an oxidation-reduction-active quinoid moiety and a hydrophobic side chain made up of isoprenoid units. The compound plays a key role in mitochondrial energy production, and can act as a free radical scavenger or chain-breaking antioxidant. A unique feature of coenzyme Q10 not shared by most endogenously synthesized compounds is that its content in certain organs (eg, liver and spleen) can be greatly augmented by exogenous administration. Coenzyme Q is currently generating much research interest and has become one of the most popular dietary supplements in the United States. This increased interest is partly the result of findings suggesting that risk of chronic disease can be reduced by enhancing cellular antioxidant potential, and that endogenous coenzyme Q may not be adequate for maintaining optimal health.

The book *Coenzyme Q: Molecular Mechanisms in Health and Disease,* edited by Kagan and Quinn, attempts to summarize the latest developments in coenzyme Q research. Each chapter was prepared by researchers recognized in their respective fields.

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The book consists of 3 parts: part 1, molecular mechanisms of coenzyme Q; part 2, nutritional aspects of coenzyme Q; and part 3, health effects of coenzyme Q. Part one covers chemical and physical properties (3 chapters), biochemical mechanisms in electron transport (3 chapters), antioxidant mechanisms (4 chapters), and prooxidant mechanisms (1 chapter). Part 2 focuses on biosynthesis and nutritional sources (2 chapters) and dietary supplementation and plasma and tissue concentrations (2 chapters). Part 3 includes coenzyme Q status and oxidative stress (2 chapters), cardiovascular pathology (4 chapters), liver injury (2 chapters), physical performance and training (3 chapters), and aging (1 chapter).

The book as a whole is well written and well referenced, especially the chapters on the chemical and physical properties of coenzyme Q and its functions in mitochondrial and extramitochondrial electron transport. Also well written are chapters concerning the antioxidant and prooxidant mechanisms of coenzyme Q and the genetic analysis of coenzyme Q biosynthesis. Partly because of the nature of the subject areas and the availability of information, the chapters in part 3 are not as informative as those in part 1. In part 3, only cardiovascular and liver diseases are sufficiently covered. Certain relevant areas, such as neurodegenerative disorders, diabetes, cancer, and mitochondrial diseases, are not addressed or are not addressed adequately. In light of the increasing use of coenzyme Q by many as a dietary supplement, the book's value would have been enhanced if more information had been included on the biological effects and consequence of supplemental use of coenzyme Q. Also, not all chapters were prepared with the same format. Two chapters (20 and 27), for example, are presented in an original research article format and the length of several chapters is ≤8 pages. Similar to the case for most books with multiple authors, delay in publication time is largely responsible for the lack of more recent references.

In summary, the publication of the book *Coenzyme Q: Molecular Mechanisms in Health and Disease* is timely and the book should serve as an excellent reference for biochemists, nutritionists, clinicians, and other biomedical researchers interested in coenzyme Q. It complements other coenzyme Q publications well.

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