Free Rad. Res., Vol. 32, pp. 187–188
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Book Reviews

CANCER AND NUTRITION
EDITORS K.N. PRASAD AND W.C. COLE
ION PRESS, NETHERLANDS, 1999

This book is divided into two sections: nutrients and cancer prevention, and their use in cancer treatment. The second is shorter than the first, perhaps indicative of the fact that the area of nutrients in cancer treatment (as opposed to that of diet-derived nutrients in cancer prevention) has as yet little scientific or clinical basis. Nor does the use of mistletoe lectin, despite the chapter beginning on p. 223. Nevertheless, the important point is made (p. 213) that good nutritional status can help ameliorate some of the side effects of conventional cancer treatment.

Chapter 1 reviews the valuable contribution of the National Cancer Institute to our understanding of cancer prevention. Chapter 2 discusses (somewhat over-optimistically, I feel) the role of antioxidant nutrients in cancer prevention, especially as it concludes that "High doses of individual antioxidant vitamins such as ... β-carotene are needed to reduce the risk ..." The lack of beneficial effect and possible deleterious effects of β-carotene should be obvious to everyone by now, the chapter beginning on p. 105 notwithstanding. More useful is the chapter (p. 99) on the purity (or lack of it) of commercial β-carotene preparations, and the chapter (p. 121) showing that β-carotene can have variable (cancer-promoting or cancer-inhibiting) effects in animals depending on the protocols used, rather like the human studies in fact. β-Carotene from diet yes! but high-dose supplements certainly not. Chapter 3 is an interesting discussion of vitamin E succinate as a potential anti-cancer agent. It is clear from cellular studies that vitamin E succinate often acts differently from the non-esterified vitamin, but not clear exactly why. In Chapter 4 De Luca gives a valuable account of how 1,25-dihydroxycholecalciferol affects gene expression, although the relation of this to cancer is not clear.

The book then moves on to epidemiology. The Linxian trials are well-described, as is the potential role of soy bean-derived protease inhibitor (although again do I detect a whiff of over-enthusiasm here?). The mechanism of the established anti-cancer effect of retinoids is well-reviewed (p. 143), as is that of tea (p. 167) and, to a lesser extent, of organosulphur compounds (p. 157). There is a good summary of how the incidence of colorectal cancer might be decreased in industrialized societies by fairly simple dietary changes, and on the incidence of cancer in the different regions of India (p. 183). Perhaps we should all eat more chillies and ginger, since capsaicin and zingerol have cancer chemopreventive effects in animal models (p. 193). What is not clear in the book is the relevance of such models in which an animal is treated with a carcinogen: are most human cancers due to carcinogens such as nitrosamines, or to spontaneous DNA base deamination or even to the constant assault of oxygen radicals on DNA? If the latter, much animal work with carcinogens is irrelevant.

The penultimate chapter of the book is an excellent account of the relationship between antioxidant nutrient status (but is this only a surrogate marker for a diet rich in fruits and vegetables?) and pre-neoplastic lesions such as oral leukoplakia, colorectal polyps and cervical dysplasia. What a shame about the nonsense that followed it as the last chapter of the book.

This book is good in parts, like the curate's egg. A more critical selection of topics and authors would have improved it, as would an index, but it is still a good read.

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METALLOTHIONEIN IV
EDITOR C.D. KLAASSEN
BIRKHÄUSER VERLAG,
BASEL, SWITZERLAND, 1999

This book is based on the *Proceedings of the Fourth International Meeting on Metallothionein*, held in 1997. Oddly, it begins with a Table of Contents and 29(!) pages listing the contributors, but no general introduction stating the purpose of the book. Nevertheless, there are many valuable chapters in the book although, as in most conference proceedings, there are some (fortunately only a few here) of lesser value. The contents are logically arranged, beginning with definition, nomenclature and classification of metallothioneins, and following on to structural studies, measurement and biological aspects. Chapters I particularly enjoyed (in order of appearance in the book) were those on CD, emission and EXAFs studies (p. 23), HPLC analysis of metallothioneins (p. 73), changes in levels during cell proliferation (p. 117), the use of protein engineering to study metal binding (pp. 129 and 137), the role of metallothionein in the squirrel fish, an organism with an unusual metabolism of zinc (p. 157), the even-more-unusual Antarctic icefish (p. 167) and metallothionein in snails (p. 173) and in earthworms (p. 621). It can be seen that , this reviewer has a weakness for comparative biochemistry! Continuing the list of enjoyable chapters were those on metal-binding peptides in yeast (p. 195), transgenic animal studies (pp. 215, 223, also 505, 511, 547), the protective role of metallothionein in the ovary (p. 315), metallothionein in Parkinson's disease (p. 341), its relation to IL-6 (p. 363), its relationship to copper metabolism (pp. 397, 403, 413), metallothionein in pancreatic β-cells (p. 421), the moth-eaten syndrome (p. 437), metallothionein in obesity (p. 505) and in paracetamol hepatotoxicity (p. 547), its interaction with arsenic and other carcinogenic metals (p. 585), and its role in neoplastic cells (p. 613). The last few chapters of the book examine the possibility that metallothionein expression is a "biomarker" of metal ion exposure in "environmental indicator species" such as the earthworm, rainbow trout and mussel. The book ends with an index – useful but not comprehensive.

Anyone interested in metallothionein should have this book on his/her shelf, at least until the next proceedings are published. It is a useful compendium of "the state of the metallothionein art".

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