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BOOK REVIEWS

VITAMINS AND CANCER PREVENTION by Stewart A. Laidlaw, Marian E. Swenseid. Wiley-Liss, New York, 1991, 134 pp., (ISBN 0-471-56066-9).

This booklet of 134 pages presents a compact overview on what is known (and how little it is) on the role of vitamins in cancer prevention. While much interest has been focused on this topic in recent years, little in terms of hard facts is available for specific types of cancer in the human. On the other hand, it is generally agreed that with the exception of smoking, dietary habits are the single most significant lifestyle factor in cancer risk. As P. Greenwald from the National Cancer Institute points out in his final chapter of this book on "The Future of Nutrition Research in Cancer Prevention", it will be sometime until we have firm scientific knowledge on this topic. In the meantime it is prudent, based on existing findings in the field, to propose interim guidelines to increase the intake of fruits, vegetables and whole grains while decreasing the intake of fat and maintaining desirable weight. This is in line with the general consensus in the field.

Regarding the specific vitamins, E.R. Greenberg examined possible effects in carotenoids in skin cancer prevention, H.F. Stich *et al.* discussed the vitamin A and beta-carotene long-term protective effects in oral leukoplakia, A.K. Verma presented the modulation of carcinogenesis by vitamin A and its analogs (retinoids).

Of other vitamins, C.L. Krumdieck examined localized folate deficiency and cancer, and L.A. Poirier considered folate, vitamin B_{12} and methylation interactions in tumor formation, M.P. Carpenter gave a brief review on the role of vitamins E and C in neoplastic development, and M. Kizaki and H.P. Koeffler discussed 1,25-dihydroxyvitamin D_3 and hematopoietic cells in their applications to cancer therapy. Finally, coenzyme Q_{10} deficiency in cancer patients and the potential for immunotherapy with coenzyme Q_{10} were presented by K. Folkers *et al.*

These chapters given by specialists in the field provide an interesting overview in a compact form, and the references for further reading are quite well selected. Even though the meeting which formed the basis for these chapters took place already in 1989, the material is essentially valid. In short, the booklet is a useful introduction to the field. Hopefully, the further studies under way and represented in several tables will provide results in a few years, so that the important issue "Vitamins and Cancer Prevention" can develop one step further.

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OPHTHALMIC TOXICOLOGY by George C.Y. Chiou. Target Organ Toxicology Series. Raven Press, New York.

Why was this book written? The preface suggests "a broad audience, including researchers, teachers, students, ophthalmologists, optometrists, pharmacists, nurses, and general health-related professionals" and, certainly there is coverage of a wide range of topics. Beginning with an historical introduction, subsequent chapters examine the ways in which the eye responds to noxious substances and the methods

available for evaluating ocular toxicity, before discussing many specific instances of ophthalmic toxicity. As the Editor states, the book is probably unique in its comprehensive approach. The risk, however, of trying to be all things to all men is that of satisfying no one. To take on such a demanding brief in little more than 300 pages requires selectivity and a brevity that may preclude adequate discussion. To what extent then have the authors succeeded?

The opening chapter briefly describes the history of ophthalmic toxicology with emphasis on methods of assessing toxicity and speculates concerning the feasibility of *in vitro* methods. The next two chapters discuss the response of the individual parts of the eye to a range of pharmacological and toxic substances and identify some of the interspecies differences. So far so good but, having described the anatomy and pathophysiology in a very useful way, there are moderately extensive listings of specific drugs and other chemical agents with concise, referenced comments about their separate effects. Unfortunately, other than going through each of the lists it is impossible to locate an individual substance or even to know whether it is listed at all because the lists are selective and individual agents are not included in the general index. Moreover, much of the ground dealing with specific compounds is covered in subsequent chapters and could have been omitted here.

The following two chapters relate to *in vivo* and *in vitro* testing for ocular toxicity. The former states with a critique of the conventional Draize test, whereby the inflammatory response to topical application of the agent in question is assessed in a partially subjective manner, and proceeds to useful accounts of ways of measuring the reaction of intraocular structures to systemically administered substances. The discussion of *in vitro* methods of testing is of great potential interest. Beginning with techniques that are applicable to recently enucleated eyes and tissues extracted from such eyes, there are descriptions of the usefulness of cloned cell cultures and of alternatives to ocular tissues. In most instances the evaluations are supported by the author's personal experience and, although the applicability of many of the methods is likely to be extremely limited, the chapter is a valuable contribution.

The chapter relating to the untoward effects is concerned with side effects rather than true toxicity and looks at a limited number of drugs categorised according to their clinical usage. This allows for a more thorough account than would otherwise have been possible, even extending to patient management. On the debit side many drugs with ocular side effects are omitted. Possibly this does not matter since the next chapter, ostensibly headed "Ophthalmic toxicity by local agents", deals as much with systemically encountered substances. Several hundred individual agents are briefly mentioned and there are almost 700 accompanying references. But here again the agents are not indexed which reduced the value of the copious listings.

A chapter on the consequences for the eye of air pollution is relevant but would have benefitted from pruning: to be told that "one part in a million is equal to a volume of gas mixed in a million volume (sic) of air" should not be necessary. Final chapters describe some occupational hazards and the principles of treatment.

So, does the book achieve its broad purpose? Overall the contributors have provided a wealth of well-referenced information and there is something for each of the groups to whom it is addressed. An awareness of the breadth of the subject is conveyed and, used in conjunction with more specialised texts, the book provides an effecive introduction to the subject of ophthalmic toxicity.

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FREE RADICALS AND AGING by I. Emerit and B. Chance. Birkhaüser Verlag Basel, Switzerland.

In late 1991, a meeting on "Free Radicals in Aging" took place in Paris. The present volume is a distillation of the papers that were given. This reviewer must confess to having attended the meeting: there were many excellent presentations. Unfortunately, they were jumbled up with others of mediocre or low quality in a somewhat-unorganized programme. However, the selection of papers for the present volume has eliminated some of the variability and produced an interesting book.

Part 1 of the book is entitled "The Intrinsic Aging Process". Harman reviews the history of the free radical theory of aging and four other chapters expand on this theme. I particularly enjoyed the thoughtful contributions of Cutler ("Genetic Stability and Oxidaative Stress') and of Miquel *et al.* ("Oxygen-induced Mitochondrial Damage and Aging").

"Biochemical Marker of Aging" is the second theme of Part 2, explored in nine well-written chapters. I found the chapters on oxidative protein modification (Stadtman *et al.*) and lipofuscinogenesis (Brunk *et al.*) to be particularly interesting, and the use of transgenic animals to explore the metabolic role of antioxidant defence enzymes is well-described by Ceballos-Picot *et al.* The chapter by Barja de Quiroga sounds a welcome warning note to those who accept the free radical theory of aging too enthusiastically: oxidative damage may well accompany the aging process (as it does other forms of tissue injury and degeneration), but is it a major causative factor or merely an epiphenomenon? This question, which is crucial (at least in the mind of the reviewer), has not yet been answered.

Part 2 of the book is devoted to age-related diseases. Three chapters deal with atherosclerosis, all interesting and well-written. Brain damage is covered in five chapters, although I felt that none of them got to grips with the question "How important is oxidaative damage in human neurodegenerative disease"?

Cancer is covered in five chapters. I particularly enjoyed that of Krinsky (on caarotenoids), but all the chapters were well-presented. The eye is covered in three chapters: I found the discussions of cataract (Taylor) and of retinal carotenoids (Schalch) to be particularly good. The next three chapters are devoted to connective tissue: damage to collagen and proteolycans by oxygen-derived species and its possible relevance to aging of the skin. It is clear that our knowledge of this area is at a very preliminary stage. At the end of Section 2 Sinclair *et al.* gave an excellent account of ascorbic acid metablism in diabetes.

Part 3 of the book is devoted to "Epidemiological studies, nutrition and antioxidant supplementation". The excellent work of Gey *et al.* is well-reviewed, but the other six chapters did not, I feel, reach the same standard. In particular, the presentation of uncontrolled clinical data using an "antioxidant" cocktail in a wide range of human diseases might well have been deferred until better clinical information is available.

Overall, I enjoyed the book. The quality of the chapters is uneven, but many are excellent. Certainly, the selection of papers has reduced the "junk factor" to a level far below that evident in the conference presentations.

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