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BOOK REVIEW

Free Radicals and Antioxidants in Nutrition
Edited by F. Corongiu, S. Banni, M.A. Dessi and C. Rice-Evans, Richelieu Press, 1993

This volume, volume VII in the valuable Richelieu "free radical" series, is based on the proceedings of a meeting on "Free Radicals in Nutrition", held in Cagliari during 1992. Presumably, authors had the opportunity to submit camera-ready typescripts for publication. The chapters have all been reproduced well, although the variations in typeface mean that a camera-ready work can never look as elegant as a typeset volume.

The book begins with a topical section on "coenzyme Q". The excellent chapters of Niki and of Kagan and Packer summarize the *in vitro* antioxidant properties of ubiquinol, although I felt that the assertion "vitamin E and ubiquinol are the major lipophilic radical scavenging antioxidants *in vivo*" is premature, especially as no good evidence for *in vivo* scavenging by ubiquinol was presented.

Section two was devoted to "Micro/macro nutrients and free radical reactions *in vivo*". Apart from the excellent paper by Burkitt *et al*, I did not find this section very inspiring, especially as most of the papers did not deal with *in vivo* studies.

Section 3, devoted to "endogenous and exogenous antioxidants", was much better. Muggli wrote a good introductory chapter, which was followed by an excellent account of food antioxidants (Eriksson and Na). Other good papers were those of Cheeseman *et al.* (tissue status of tocopherol in the perinatal period), Carini *et al.* (variations in the antioxidant activity of tocopherol depending on how it is added to membranes) and Samiec *et al* (bioavailability of dietary GSH).

The last section of the book is devoted to "Oxidative damage, cell modification and disease". Most papers were in fact devoted to fatty acids and lipid peroxidation, and the quality varied markedly. I found the paper of Banni *et al.* (on conjugated dienes) to be especially good but some others were of much lower standard.

Overall, this is a useful volume and I am pleased to have it on my bookshelf. Like most books derived from meetings, however, the standard of the chapters is very variable.

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ATMOSPHERIC OXIDATION AND ANTIOXIDANTS

Vols 1 and 2, ed. G. SCOTT

Elsevier, Amsterdam, 1993

Free radical generation and oxidation reactions are processes important not only in Biology and Medicine, but also in polymer science, the rubber industry and food technology. It is therefore timely to review all these processes in one place. The present two volumes succeed admirably, and a third volume in the series (not reviewed here) is devoted to antioxidants in biological systems.

Volume 1 consists of 5 chapters on the basic chemistry of free radical reactions, autoxidation and antioxidants. It seems surprising that all 5 chapters are written either by Scott or Al-Malaika, both at the same institution in the UK. However, this does not detract from the high quality of the writing. Chapter 1 gives an interesting historical account of the use of antioxidants in rubber preservation; I also enjoyed the detailed history of the proposals of a vitamin E-vitamin C synergism (pages 33,34), a suggestion often attributed erroneously to the much later work of Slater *et al.* Chapter 2 discusses the mechanistics of autoxidation, including the role of metal ions in peroxide decomposition. Chapter 3 is devoted to initiators, pro-oxidants and sensitisers, including singlet O_2, O_3 and NO_2. Chapter 4 discusses chain-breaking antioxidants and leads naturally on to chapter 5 (preventive antioxidant mechanisms). There is an interesting discussion on the pro- and antioxidant effects of SO_2.

Overall, I enjoyed reading Volume I and had no significant criticisms of it. I also recommend Volume II highly. Eleven well written chapters discuss oxidation and antioxidants in a wide range of chemical systems, including lubricating oils (chapter 1 by Colclough, including an interesting discussion of engine oil sludge formation and the role of oxides of nitrogen and of copper as both anti-and pro-oxidant), deterioration of dietary fats (chapter 2 by Kocchar; I particularly appreciated the Table on page 97 listing the odours produced by different aldehydes resulting from peroxide decomposition and the tabulation of chemical structures in the Appendix), polymer stabilisation (chapters 3, 4 and 5), metal-catalysed oxidation (chapter 6, by Osawa), O_3-dependent polymer degradation and its prevention (chapter 7, by Lattimer *et al.*), protection against light-induced polymer degradation, synergism and antagonism of antioxidants, fire retardants (chapter 10, by Camino, again with a useful appendix of chemical structures) and protection of polymers against damage by ionising radiation (chapter 11, by Carlsson).

Overall, these two volumes are a valuable compendium of chemical aspects of oxidative damage and antioxidant action. I recommend them highly.

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