

BOOK REVIEWS

OXY-RADICALS IN MOLECULAR BIOLOGY AND PATHOLOGY

ED. by P.A. CERUTTI, I. FRIDOVICH and J.M. McCORD

Alan R Liss Inc, New York, 1988

This volume, the latest (Vol. 82) in the New Series of the University of California, Los Angeles Symposia on Molecular Biology and Cellular Biology, reports the proceedings of the 1988 Upjohn-UCLA Symposium on Oxy-Radicals in Molecular Biology and Pathology held at Park City, Utah, USA in January 1988. Eighteen months or so have elapsed since the Symposium was held and in some respects, as might be expected, knowledge in the field has moved on so that views expressed would not necessarily be held today. Despite this lapse of time, the volume is to be regarded as a singularly valuable one among the quite numerous reports in this subject area that are appearing at present, because it brings together the views of many of those who can be expected to give an authoritative or seminal view in their particular area of expertise. The book is an excellent mix of papers that review concisely the state of knowledge in the area concerned and of papers that report up-to-the moment details of ongoing research. As such it will provide a good background for those wishing to enter this field as well as providing something of interest for those already making a contribution in it.

The book is divided into eleven sections. Discussion of sources of and targets for the superoxide radical precedes a consideration of the role of oxidants in microbicidal phagocytosis and mechanisms of oxidant injury. The enzymes superoxide dismutase and glutathione peroxidase are next considered in some detail and there is a valuable section on the measurement *in situ* of free radicals that is largely concerned with direct ESR measurement and spin trapping ESR techniques. A short section on xenobiotics and photosensitizers is followed by useful sections on lipid oxidation and its inhibition by low molecular weight antioxidants and the volume ends with a section on oxy-radicals and cancer and a single paper on viral diseases.

There is much to interest the specialist and the novice and, despite the fact that some time has elapsed since the meeting on which it is based was held, it can be recommended.

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BAILLIÈRE'S CLINICAL HAEMATOLOGY

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Guest Editor

IRON CHELATING THERAPY

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This volume constitutes an extremely thorough and readable exposé to iron chelators, their use and assessment in clinical conditions and experimental models of iron overload. Information is provided on the evaluation of new, potentially therapeutic drugs, their pharmacology and the screening of their chelating efficacy and ability to prevent or reverse toxicity. These reviews are set on the platform of the availability of body iron for chelation and the pathogenesis of iron-induced tissue damage. The chapters range from descriptions of mechanism of action in clinical and pathological contexts to detailed accounts of usage in the clinic in the patient, sometimes case-report style.

The wealth of experience, accumulated since the 1960's, with desferrioxamine in the research laboratory and in the patient is the yardstick for this volume. In this context certain paradoxes emerge as one absorbs the variety of contribution ranging from chemists, biochemists, pharmacologists to pathologists, haematologists, paediatricians and physicians. One in particular is the "state-of-thinking" in the accessibility of desferrioxamine to the intracellular milieu. Various views expressed are: categorical statements that desferrioxamine can "penetrate" hepatocytes but may penetrate hepatic lysosomes "only slowly"; "speculation" that desferrioxamine gains access to endothelial cells; the inability of desferrioxamine to prevent lung toxicity in rats related to its failure to penetrate relevant effector cells; desferrioxamine can inhibit parasite growth when presented to parasitised red cells but on extensive pretreatment and discontinuation prior to infection, desferrioxamine is totally ineffective – the implication being that desferrioxamine gains access to parasitised red cells but not normal erythrocytes; in a cultured myocyte system after iron loading, desferrioxamine appears to be active not only on the cytosolic compartment but also can recruit iron from lysosomes as well "inverting the usual pathway of cytosolic ferritin → lysosomal ferritin + haemosiderin".

The issue of ascorbate supplementation during chelation therapy with desferrioxamine is still under debate; this is no longer recommended in one article whilst reportedly adequately controlled by others. Yet another example relates to the reported half-life of desferrioxamine in plasma (5–10 mins in one report, 60 mins in another), leaving the reader wishing that some comment had been made on these diversities of information.

Most of the contributors to this collection of reviews carefully emphasise what advances have been made in the field *recently*. For example, the chapters by Porter *et al.* present clearly and carefully their critical approach to the mechanism and development of oral iron chelators, whilst bringing together many of the reports on the toxicity of desferrioxamine in a very useful account.

The foreword tells us that a great deal of new knowledge on the relationship between iron, free radicals and damage to cellular structures has been made available and many of the chapters refer to the involvement of iron-induced radical formation in tissue and cellular damage. However, the nature, origin and location of the radicals involved, and the mechanism of formation of the initiating species still remain elusive, demonstrating that, in spite of intensive efforts, the solution is still beyond our grasp.

The intention of the guest editor that this volume may be useful to the practising

physician and for the clinical investigator interested in the mechanism of iron toxicity and chelation will undoubtedly be successful. In addition, there are many researchers in the field not identified by this description who will benefit enormously from the content and emphases of this collection of reviews.

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IRON IN IMMUNITY, CANCER AND INFLAMMATION
edited by **MARIA DE SOUSA** and **JEREMY H. BROCK**
John Wiley and Sons, Chichester, England. xviii + 415 pages. £51.

This attractive book aims to bring together the work done in the past two decades on the interaction between iron and its binding proteins with the lymphomyeloid system, and to highlight the potential for future research. It succeeds admirably. Firstly, there are detailed accounts of recent advances in our understanding of the structure, function and genetic control of the iron storage and transport proteins, although no consensus on the function of lactoferrin has yet emerged. Interaction between iron and cells of the immune system, particularly lymphocytes, neutrophils and macrophages, is well-described, as is the mechanism by which senescent erythrocytes (about 360 billion per day) are removed from the circulation. Ample consideration is given by Broxmeyer (Chapter 9) and others to the role of iron-containing proteins in the regulation of haemopoietic cell proliferation and differentiation.

Other chapters deal with the anaemia of chronic disease, malaria, the role of iron in promoting inflammation, iron overload, iron and cancer and the use of iron chelators in treating iron overload disease and, possibly, in other disease states. The proposed use of ferritin as a marker of malignancy is thoroughly reviewed, and some interesting speculative proposals on the potential clinical use of antibodies directed against iron-binding proteins are presented. The book has a thoughtful preface by de Sousa on recent advances (late 1988/early 1989) in our knowledge, and an equally thoughtful conclusion by Jacobs. Since so much of the work described in the book has been performed with cells in culture, the Appendix by Brock is particularly appropriate in that it deals with some technical problems in the provision of iron to cultured cells.

Overall I enjoyed reading this book. The authors have all made significant contributions to the field, and in general the chapters are well-written. I therefore recommend the book highly.

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