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Book Reviews

Critical Reviews of Oxidative Stress and Ageing

R.G. Cutler and H. Rodriguez, (Eds), Advances in Basic Science, Diagnostics and Intervention, Vols. 1 and 2, World Scientific Press, New Jersey/London/Singapore/Hong Kong

This hefty two-volume set aims to provide "the most up to date information pertaining to the translational research field of oxidative stress and aging." It is aimed at both scientists and physicians as well as the health-conscious lay public (although I think the latter would find much of its heavy going). There is a strong focus throughout the book on the free radical theory of ageing. The editors are to be congratulated on drawing together a top-class selection of authors to provide state-of-the-art reviews. Each chapter has a lengthy reference list with full reference titles.

Volume 1 begins with a chapter on "Metabolic rate, free radicals and aging". This is followed by sections on free radical chemistry and biology, redox regulation and cell signaling, measurement of oxidative damage to DNA, proteins and lipids, dietary antioxidants, and endogenous antioxidants/repair processes. All the chapters are well written, so I will just highlight a few that I particularly enjoyed. John Termini gives a useful account of how $RO^{\bullet}$ and $RO_2^{\bullet}$ radicals might damage DNA. Beckman presents a well written essay on $ONOO^-$ and distinguishes carefully between nitration, nitrosylation and nitrosation (terms frequently confused in the biomedical literature). He also cogently argues the importance of nitration of tyrosine residues in structural proteins. Poulsen *et al.* carefully review techniques for the measurement of oxidative DNA damage products in urine, and O'Connor *et al.* discuss how oxidative DNA damage can be mapped at nucleotide resolution. Morrow *et al.* give an excellent account of the isoprostanes, with a particular discussion of how their levels may (or may not) be changed in body fluids of patients with Alzheimer's disease. De Gray gives a thoughtful account of the role (or lack of a role) of mtDNA mutations in the ageing process. Shukitt-Hale *et al.* address the question of whether, and if so how, diets rich in fruits and vegetables are neuroprotective. Jiang *et al.* summarise our current knowledge of γ-tocopherol, the long-neglected structural isomer of α-tocopherol. Osawa gives a useful explanation of the FOSHU category of functional foods, as applied in Japan.

A few chapters have minor points with which I would take issue. Thus on p137 it is claimed that urine contains 5.1–15.1 μM *lipid* hydroperoxides, which seems strange to me. Page 143 states that manganese participates in the Fenton reaction, which is controversial. Overall, however, volume 1 is excellent.

Volume 2 is equally good. It contains sections on epidemiology and intervention studies, oxidative stress and disease, non-invasive assessment of oxidative stress and therapeutic intervention, future trends in health care, and not less than four sections on ageing. Again, I will highlight just a few of the many good chapters. Coles provides thoughtful comments on the difficulties of setting RDA values and Van Remmen *et al.* provide a useful summary of studies of transgenic mice over- or under-expressing antioxidant defense enzymes, with a particular emphasis on the effect of genetic background. Brown-Borg and Harman discuss the influence of hormones on oxidative stress. Arking gives an intriguing account of the relationship between oxidative stress and longevity in *Drosophila*.

Overall, this a useful-two volume set, with an adequate index. I recommend it.

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