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Book review

Oxidative Stress and Inflammatory Mechanisms in Obesity, Diabetes and the Metabolic Syndrome. Edited by L. Packer and H. Sies (Boca Raton, FL: CRC Press, 2008). ISBN-13: 978-1-4200-4378-5. Xii + 322 pp.

Metabolic syndrome, obesity (one of its manifestations) and type 2 diabetes are scourges of the modern world, related in part to excessive caloric intake and lack of exercise. Indeed, in chapter 7, Heber uses the term 'diabesity'. In all of these conditions, oxidative stress is demonstrable, but what part does it play in their origin and progression? Can it be modulated by antioxidant (or other) nutrients, with resultant health benefits? This very timely book explores these issues.

Section one defines the metabolic syndrome (not an easy task) and explores the role of inflammation (especially TNFα), oxidative stress and nutrition, the latter both in adulthood and in the perinatal period (adverse intrauterine conditions can promote development of metabolic syndrome in adulthood). The presence of oxidative stress in metabolic syndrome and diabetes is clear, best established by elevated levels of F_2-isoprostanes (Chapter 3, by Morrow et al.) and post-prandial hyperglycaemia is a major (but not the only) culprit in increasing ROS production (Chapter 8, by Ceriello). It is also clear from chapter 3 that losing weight or consuming more eicosapentaenoic acid can be more effective at decreasing F_2-isoprostane levels than consuming vitamin E supplements. Indeed, Goldstein et al. (Chapter 11) review the data that ROS probably play a role in the normal metabolic actions of insulin, possibly acting as second messengers, suggesting that too much 'antioxidant action' might be deleterious. Overall, section one is a very useful summary of our current state of knowledge.

Section two of the book deals with the 'influence of dietary factors, micronutrients and metabolism'. Jialal et al. (Chapter 14) emphasize the good effects produced by weight loss and increased consumption of plant products (whole grains, fruit, vegetables, nuts, olive oil), as well as by exercise. Data on the effectiveness of PUFA supplements, lipoic acid and other antioxidants in humans are less compelling. Indeed, the actions of lipoic acid on animal models of diabetes may be more related to effects on AMP-activated protein kinase activity than to antioxidant actions (Park and Chung, Chapter 18).

Overall, this is a good book on a topical subject, highly relevant to modern societies. I recommend it highly.

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