

## Book review

*Antioxidants in Food: Practical Applications*. Jan Pokorny, Nedyalka Yanishlieva and Michael Gordon (editors). 2001. Cambridge: CRC Press, Woodhead Publishing Ltd. £115 ISBN 1 85573 463 X. CRC Press. \$180 ISBN 0-8493-1221-1.

The main emphasis of this book is to focus on 'natural' antioxidants, i.e. those substances which occur naturally in foods and have antioxidant properties; what they are, what they do and how to use them. The incorporation of the word 'practical' in the title suggests it is intended for the food technologist or at least the person whose prime interest is a better understanding of the factors governing the nature and use of natural antioxidants. There are advantages for the food technologist in using 'natural' antioxidants as there are often fewer restrictions placed on their use as preservatives in comparison with synthetic antioxidants. The public also believe that natural antioxidants are somewhat superior to synthetic antioxidants. However, being natural means also that there will be variable composition and different problems associated with extraction from different plant sources.

However, human and animal nutritionists will also find a lot of the valuable information in this book. Chapters 2 and 3, which deal with the basic mechanisms of oxidation and antioxidant function, are very informative and clearly written. They should be understood by anyone with a basic understanding of chemistry. Living tissues can adapt their antioxidant composition to some extent to cope with varying inputs from diets in ways that are not possible within a food, so the food technologist must adopt different approaches in preserving food. The book will assist the reader in obtaining a better understanding of the constraints placed on food technologists in their use of antioxidants for food preservation. Understanding how the food technologist approaches problems in preserving food might also have relevance to a better understanding of the nature of antioxidant function in living tissues.

The book comprises four parts: antioxidants and food stability; antioxidants and health; natural antioxidants; practical applications. In part 1, the authors describe the different types of oxidation or food spoilage, how antioxidants function and how antioxidant activity can be measured. Part 3 examines what is meant by natural antioxidants and their availability in different foods. Lastly, the practical applications considered in part 4 include chapters on regulations, the use of natural antioxidants to preserve products of animal and plant origin and methods of preparation and functionality of natural antioxidants. A wealth of information is reviewed in these chapters accompanied by extensive lists of references.

Part 2 deviates to some extent from the main theme of the book by examining the possible roles of some of the natural antioxidants in preventing cardiovascular disease and cancer and a somewhat hypothetical discussion on predicting antioxidant bioavailability using carotenoids as an example. The editors have undoubtedly included this section to acquaint their readers with current thinking on potential health benefits of the natural antioxidants. It has to be said, however, that much of the evidence is based on cellular studies and to put the information into context, it would have been desirable to have included a further chapter with information on the amounts of different natural antioxidants which can be measured in body fluids after feeding. It was also a little surprising to read that the author of Chapter 6 believed that attempts to prove that the protective actions of plant foods against cancer were due to their antioxidant properties had failed. Could it also not be that workers in this field do not properly understand the nature of antioxidant activity in human tissues? There is ample evidence in other chapters of the importance of optimal antioxidant concentrations in food for proper protection, and the dangers of pro-oxidant activity from excesses. It might be significant that to date, the 'failures' to demonstrate antioxidant activity from supplements have all been associated with intakes far in excess of normal dietary intakes? We still do not properly understand how antioxidants integrate their function within the tissues and adjust to physiological and pathological challenges. Overloading this delicate system with one antioxidant might not be the best method of approach.

In conclusion, this book will be an interesting and useful resource for anyone who has interests in natural antioxidants. The chapters are well written, easy to read and informative and will be a valuable for undergraduate and postgraduate students as well as those wishing to pursue more in-depth research. Fruits and vegetables are the primary source for most of the natural antioxidants of which there are more than 600 carotenoids and 10 000 flavonoids and polyphenols. These foods have repeatedly been shown to be beneficial for health. This book provides a valuable compilation of information on many of these antioxidants substances as well as both general information on mechanisms, the overall picture on current practice and future trends and will be a useful addition on many bookshelves.

David I. Thurnham

DOI: 10.1079/BJN2001510