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Book Reviews

Agri-food Quality an Interdisciplinary Approach. Edited by G. R. Fenwick, C. Hedley, R. L. Richards & S. Khokhar. RSC, 1996. ISBN 0 85404 711 5. xiv + 479 pp. £79.50

In a world increasingly dominated by concerns of food safety and quality, it is hard to argue against literature and conferences aimed at bringing together experts to link the different disciplines relevant to the food chain. The preface to these proceedings of the international conference 'Agri-Food Quality', organised by the Royal Society of Chemistry and held 25-29 June 1995, rightly states that the issue of food quality could be "most effectively addressed by considering the totality of that integrated chain".

The aims of these proceedings are worthy, but also ambitious — especially considering that, in a publication containing 90 separate contributions, 34 crops are covered as principal subjects of papers, ranging from mushrooms to passion fruit. Sections deal with plant molecular biology, pre-harvest treatments, manipulation of cell components, assessment methods, post-harvest effects, and functional and nutritional quality. Although the breadth is impressive, therefore, the integration of the food chain is not well served for any one crop. Not surprisingly, the cereals and legumes are best represented, but there are only four papers specifically concerned with wheat and hence large amounts of contemporary, relevant work are missing.

The majority of papers are only four pages long, but the sections start with more substantial keynote contributions which are likely to appeal to the generalist. I. Knudson brings the reader's attention to the rapid increase in the number of food plants being modified by modern biotechnology, raising issues of food *wholesomeness* and *equivalence* between a new food and a traditional counterpart. The section also includes papers concerned with consumer perception of genetically engineered food plant products and the safety of the expression of particular genes. It is ironic, then, that little is said about the present issues concerned with the inclusion of marker genes conferring resistance to antibiotics.

The section on the effects of pre-harvest treatments includes papers on the impact of production methods, predicting optimum harvest times, variety selection, improving stress tolerance, nutrition and manipulation of plant hormones on particular crops. There is information here for researchers concerned with improving quality. This is often aimed at more experimental techniques but the information does offer the possibility of transfer of some approaches to different crops and is therefore of broader relevance. Again, however, the reader is left with a feeling that here are only a few limited papers on diverse crops representing a very large subject area.

The section on manipulation of protein, starch and lipid does contain significant papers, such as those on protein quality in cereals by P. R. Shewry *et al.* Here, there appears to be real potential to impact upon both production and utilization. If yields are to be maintained whilst pressures to reduce the amount of inorganic nitrogen fertilizer used in crop production persist, it is imperative that the nitrogen within the grain is in a form closely suited to the end-use requirements. Relative to other topics, this section also gives considerable attention to seed components of legumes with a total of nine papers. Four of these concern carbohydrates and include a substantial contribution from C. L. Hedley *et al.* on the manipulation of starch composition in peas. The following section on texture and cell wall components is begun with an easily-read paper by C. L. A. Leakey and C. A. J. Harbach on flatulence caused by beans — tackling an issue immediately relevant to, and identified by all (I presume), consumers. Other papers deal with texture and fibre in potatoes, cereals, cucumbers, apples, carrots, pears, and water chestnuts.

The section on analytical methods for assessment of food quality includes papers on immunologic, genetic, chromatographic and biochemical techniques as well as a paper on risk assessment analysis of pesticide residues. The following section on post-harvest effects on quality determinants is the largest with 19 papers. Again, the breadth of topics covered is large, including subject matter as diverse as mechanical effects such as milling cereals and extruding beans, biochemical pathways in potatoes and mushrooms, and the effects of packaging on consumer expectations.

The section on anti-oxidants in food plants is more focused and starts with valuable papers by K. Okubo and by Y. Yoshiki *et al.* using chemiluminescence to assess the ability of food constituents to *scavenge* oxygen radicals. Antioxidants in food are thought to be beneficial in reducing oxidative stress and, therefore, damage to DNA. In further papers, this potential *functional* property was investigated for extracts of beans and onions (flavonoids), culinary herbs, legumes and *Brassica* spp. The health theme is continued in the section on nutrients and nutritional quality. The first paper, by J. G. A. J. Hautvast, reviews three research projects and emphasizes the need for interaction between food and nutrition scientists. The subsequent papers look at

different nutritional aspects of legumes, cereals, okra, khesari dhal, and a range of green vegetables.

This book will be of use to the food chemist if only to be inspired by the range of crops and foods to be studied. The conference format also ensures that a high proportion of the work is contemporary. The quality of the individual papers varies considerably in scientific merit, relevance to the subject area, and reproduction. As a book hoping to *integrate* the sciences of the food chain it largely fails. The short nature of the majority of the papers does not allow the authors to fully introduce the topic of their contributions for readers from other subject areas. The editors could possibly have arranged the papers by crop family, rather than subject, and provided some commentary to link the various aspects.

M. J. Gooding

Food Authentication. Edited by P. R. Ashurst & M. J. Dennis. Blackie Academic and Professional, London, 1996. ISBN 0 7514 03415. xiv + 399 pp. £69.00

Food authentication is becoming ever more important as legislation governing food composition and requirements for food labelling become more extensive. In the trade of many foods, including wines, fruit juices and vegetable oils, there are strong financial incentives for disreputable producers to use illegal admixtures or misrepresent food products since these illegal practices can still yield products that have acceptable sensory characteristics. This book includes twelve chapters that discuss approaches available to analysts for the authentication of important food commodities. The authentication of fruit juices, jams, wine, meat, fish, cereals, vegetable oils, honey, coffee, egg products, milk products and other commodities is discussed by representatives from leading analytical laboratories. Each chapter contains an extensive list of references, and the book represents a useful starting point for analysts becoming involved in food authenticity studies. References up to 1994 are covered in most chapters, with very few references after this date being included. It is encouraging to read this book and find that methods for detecting adulteration of food commodities are developing rapidly in order to keep pace with the increasing sophistication of fraudsters. A wide range of analytical approaches to the detection of adulteration is covered, including HPLC, GC and other chromatographic procedures; immunoassay procedures for proteins in meat, fish, milk and cereals; analysis of minerals in wine; and stable carbon isotope ratio analysis for vegetable oils, coffee, tea and wine. This book is recommended for purchase by all analysts involved in the authentication of food commodites. With the rapid development of new analytical procedures, regular updating of this text will be required.

M. H. Gordon

Synthesis in Lipid Chemistry.Edited by J. H. P. Tyman. The Royal Society of Chemistry, Cambridge, 1996. ISBN 0 85404 716 6. x + 232 pp. £59.50

Lipids are classified by their solubility characteristics and therefore this class of compounds includes molecules with a wide range of chemical structures. This book is based on papers presented at a meeting of the Lipid Group of the Royal Society of Chemistry held at the University of Wales, Bangor in September 1994, and it includes contributions from several leading lipid chemistry groups. The book is divided into three sections that describe the synthesis of glycerides and fatty acids; phospholipids and glycolipids; and biological or biotechnological transformations and pheromones. The synthesis of cyclopropene fatty acids that act as inhibitors of fatty acid desaturases; pyrylium-based routes to polyunsaturated products including retinal; synthesis of plant fatty acids labelled with carbon or hydrogen isotopes; and the synthesis of long chain fatty acid derivatives are described in the first section. The synthesis of phosphatidylinositol phosphates, sphingolipids and acyl trehaloses are discussed in the second section. Herbicides that affect lipid biosynthesis, lipid biotransformations by hydrolase and oxidase enzymes, and developments in the synthesis of pheromones complete the book.

There is much interesting synthetic chemistry in this book. Nucleophilic addition reactions of pyrylium salts to yield E, Z dienals and acetylene chemistry for isotopic labelling, in particular, are ideas that are likely to be used widely for lipid synthesis. This, therefore, will be a useful book for the libraries of all chemists involved in lipid synthesis.

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