

Book Reviews

Characterization of Food — Emerging Methods. Ed. A. G. Gaonkar. Elsevier Science, Amsterdam, 1995. ISBN 0 44481 499 X. Dfl450.00, US\$264.75.

A wide range of physical methods have been applied to studies of the structure and properties of food systems in recent years. In many cases, the complexity of foods has presented a challenge that has only been met and overcome by methods that have been developed far beyond the state in which they are initially used for studying model systems. Advances in electronics, optics, computing, spectroscopy and other measurement techniques have allowed the rapid expansion in applications of physical methods in recent years. This book comprises 17 chapters that describe some of the modern techniques that have been developed and applied to food systems.

The methods covered include techniques for the study of interfaces in emulsions, foams and dispersions; fluorescence; ultrasonics; nuclear magnetic resonance; electron spin resonance; Fourier-transform infrared and near infrared spectroscopy; small angle neutron scattering; dielectric measurements; microscopy; rheology; sensors; antibodies; texture, flavour and aroma analysis.

The collection of methods described covers a wide range of techniques, and most research scientists interested in the structure and properties of food will find much to interest them. It is difficult to select particular highlights because the level of the scientific coverage is high throughout. Each chapter is well illustrated and information is well explained, with a list of references that includes many references from the 1990s up to 1993. The price of the book is rather high, but purchase is strongly recommended for libraries and companies serving the needs of the scientific community involved in food research.

M. H. Gordon

Handbook of Fruit Science and Technology. Eds D. K. Salunkhe & S. S. Kadam. Marcel Dekker, New York, 1995. ISBN 0 82479 643 8. 611 + xii pp. US\$195.00.

This book covers, in 30 chapters, the production, composition, storage and processing of fruits. Separate chapters are devoted to each of the major fruits, taken in order of commercial importance, the main ones being grape, citrus, banana, apple, mango and pineapple. Other important fruits covered are pear, plum, peach and nectarine papaya and avocado. There was a collec-

tive chapter on berry fruits. Minor but important fruits are covered in two chapters — other subtropical fruits and tropical fruits. It may disappoint some readers that some very important fruit, such as durian, carambola, mangostein and rambatan were each covered in less than one page. Others included are olives, coconut, cashew and other nuts. The book concludes with a chapter on fruits in human nutrition.

Most chapters are multi-authored, well referenced and follow a common layout. The main chapter-headings are botany, production, harvesting grading and packaging, chemical composition, storage, transportation, processing and waste utilisation.

The book is well laid out. For those wishing to learn about a new fruit or fruits, it provides a useful and informative introduction; however, I feel that its use for seeking solutions to specific problems may be limited and for more detailed information one would have to resort to other sources. I was generally disappointed with the lack of detail in many of the sections dealing with fruit processing. I would expect more information than was provided here from undergraduate students on topics such as control of browning, clarification of apple juice and processing conditions for blanching and retorting of fruit. The sections on fruit composition covered gross composition, carbohydrates, acids, proteins and amino acids, minerals and (sometimes) flavour and volatile components. However, in general, there was very little information about acidity and pH, one exception being the chapter on mangoes. This is a crucial factor for preservation and the balance of acid and sugar is an important determinant of quality for many fruit. There was very little information on the types of acid and acidity values of different varieties and no mention of one of the tastiest and tartest apples in the world — the Bramley. Also under apples (in the index), citric acid was listed, but specifically not malic. To my surprise, detailed information on the amino acid contents for apples and many other fruits (which I had not regarded as a major protein source) was provided. Other minor criticisms include several tables without units. I noticed that the grape varieties listed for winemaking were selective and nowhere near exhaustive.

The index was quite comprehensive and, as expected, based mainly on the fruits. I tested it by searching for fruit irradiation and found three entries — mangoes (p. 148), pineapple (p. 179) and pears (p. 197); information on plums (p. 227) and perhaps others was omitted.

Overall, it provides a good introduction and overview to all aspects of fruit production and processing. However those involved with the chemistry and pro-

cessing of specific fruits may not find what they are looking for.

Mike Lewis

Biomarkers in Food Chemical Risk Assessment. Eds H. M. Crews & A. Bryan Hanley. Royal Society of Chemistry, Cambridge, UK, 1995. 138 pp.

Epidemiological and animal studies have established unequivocally that diet can influence the incidence and progress of major human diseases, such as cardiovascular disease and cancer. It is now recognised that chemicals present in the diet, being inherent to food, storage or industrial process contaminants, food additives or generated during the cooking process may play a principle role in the aetiology of these diseases or afford effective protection. The use of biomarkers to assess exposure to, and the biological effects of dietary chemicals in humans is a relatively new discipline and any new publication concerned with this subject of major current interest can only be welcome.

The book comprises 13 papers of some 10 pages each, emanating from a homonymous symposium held

at Norwich in March 1995. Some of the contributions are of review type, dealing with general concepts, whereas others describe experimental data where a particular biomarker had been evaluated e.g. the COMET assay and ethane exhalation. My only criticism, and it is a minor one, is that the order of the papers appears to be random with no attempt being made to bring together contributions dealing with similar aspects. The authors, largely UK based, are all actively engaged in this field working in research institutes or in academia. Regrettably the food industry is not represented.

In reading this book one realises that there is still a long way to go before suitable biomarkers are developed which are sufficiently sensitive to be applied to dietary chemicals whose intake is generally low. Even the term 'biomarker' appears to imply different things to different scientists. The book is up-to-date, dealing with the latest concepts in this area and as such it can be recommended not only to those researching in this field, but also to those involved in food safety. The editors are to be congratulated for getting under a single cover all the current concepts and for ensuring the publication of the book so promptly after the meeting.

C. Ioannides