

Book reviews

***Tropical and Sub-tropical Fruits*; P.E. Shaw, H.T. Chan Jr., S. Nagy; Agriculture Science, 1998, x + 569 pages, ISBN 0-963-1397-6-2, hardback \$89.00**

As a consumer with more than an avid gastronomical interest in tropical fruits, I am very pleased to have the new book by Shaw, Chan and Nagy on my desk. Steve Nagy has been on the Editorial Board of *Food Chemistry* for several years and he and his colleagues have produced yet another authoritative volume on tropical fruits. It covers many of the most important types, leading off with mangoes that many believe is the most delicious. Each fruit is dealt with, on a chapter basis, in terms of botany, processing and chemical composition and chapters are well referenced with up-to-date literature. The book is also illustrated with black and white photographs as well as 27 of the most beautiful colour plates. Whilst mango may be globally appreciated as the most delicious flavour, durian is still regarded as “the king of fruits” by many ethnic groups. It differs characteristically from many other fruits in its thiol content and unique texture.

It is possible to use a compilation of scientific data, as in this book, to aid conjecture about why fruits resemble one another or differ characteristically. Some aspects of chemical composition may be more helpful than others. Ubiquitously, fruits seem to contain sucrose, glucose and fructose as major sugars but their relative proportions may differ more between stages of maturity than between species. On the other hand, although acid content also varies with maturity, type of acid may be characteristic of a species. Thus, while citric and tartaric acids are common in many fruits, the main types in

lychee can be succinic and malic. In Kiwi fruit the main type may be quinic. Mango pulp contains 18–22% sugars, which is almost twice the content of oranges, for example. The book also refers to interesting side-products, such as “mango leather”, which is prepared by drying layer-upon-layer of mango pulp and is consumed as a confection (in the USA as well as the Orient).

Perhaps the most interesting compositional factor of tropical fruits is the profile of flavour volatiles. In the chapter on mangoes, this is presented quantitatively but, as a novice in this area, I found Table 1.14 (p. 44) confusing because it is not clear what the relative amounts of volatile compounds are relative to. Also, some of the listed volatiles may be sub-headings of mono terpene hydrocarbons. In any case, although 3-carene seems to be a notably abundant volatile, the characteristic combination of volatiles for mango flavour probably remains elusive. The authors provide volatile profiles for other fruits but these are usually not quantitative.

Besides its importance in terms of food chemistry, this book contains much information about fertilization, post-harvest treatment and fruit diseases (e.g. anthracnose caused by *Colletotrichum gloeosporoides*, causing spots). It also contains nutritional information, such as the use of many fruits to prevent or cure human disease (e.g. lychee for treating gland enlargement and tumours). Overall the book is well written and anyone interested in the subject of tropical fruits cannot afford to be without it. I strongly recommend it.

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***Amino Acids and Peptides*; G.C. Barrett, D.T. Elmore; Cambridge University Press, Cambridge, UK, xv + 244 pages, hardbound ISBN 0-521-46292-4, softbound 0-521-468-272, hardbound £55.00, softbound £19.95**

Any applied scientist who needs to know more about the underlying chemistry of amino acids and peptides need look no further than this concise little text. The authors

deal with such topics as conformation, physicochemical properties, reactions, primary structure, synthesis (both amino acids and peptides) and biological applications. As a carbohydrate chemist, I always find it disappointing that monochromatic polarimetry has not been applied to amino acid chemistry. Emphasis nowadays seems to be placed on circular dichroism and, in this respect this book is no exception. Nevertheless, the authors do

relate some interesting facts about chirality of amino acids, and the D-, L-ratio is now easily determinable by standard amino acid techniques. In forensic science it is much more accurate than ^{14}C dating for recently deceased corpses and can give an idea of the age of an organism. For example, D-aspartic acid increases (by racemisation) in the eye-lens protein at the rate of 0.14% per year, so that a 30 year old person has accumulated 4.2% D-aspartic acid in this particular protein. For food chemists the substantial amounts of D-amino acids in shellfish and yoghourts is worthy of note, as also is the tendency for low molecular weight D-enantiomers to be mainly sweet whereas their L-counterparts are mainly bitter. Only proline (which is actually an imino acid) contradicts this rule, which nevertheless emphasises the chiral nature of the sweet receptor. It is also fascinating that the permitted sweetener, aspartame, is a dipeptide made up of L-aspartyl and L-phenyl-alanine methyl ester units and, despite the unpleasant tastes of the two individual units after hydrolysis, the dipeptide itself provides one of the best quality intense sweeteners. It seems that peptides (as well as polypeptides and proteins) are of much more relevance than individual amino acids in any branch of applied biology. The

authors therefore give a detailed account of geometrical isomerism in relation to the peptide linkage. Evidently the peptide linkage has some double-bond character due to resonance but most peptides probably exist as equilibria containing several geometric isomers. This in turn leads to difficulties in explaining many biological effects. Overall food chemistry represents only a minor part of amino acid chemistry application. Far more important appear to be the applications in drug design, hormone action, enzyme specificity and genetic effects. Nevertheless, food chemists wishing to explain some of the more complex reactions in which they specialise (e.g. the Maillard reaction) may find this book extremely useful for a chemical insight. I wholeheartedly recommend it.

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