

Reviews

Carbohydrate Biochemistry and Metabolism. By Karla L. Roehrig. AVI Publishing Company Inc., Westport, Connecticut. 1984. xiii + 205 pp. Price: US \$45.00.

This book is intended for advanced undergraduate and graduate students and researchers whose area of expertise may not be carbohydrate chemistry. It contains chapters on Carbohydrate Monomers, Types of Simple Carbohydrates, Types of Complex Carbohydrates, Digestion of Simple Carbohydrates, Digestion of More Complex Carbohydrates, High Fiber Diets, Relationship of Digestive Processes to Regulation of Metabolic Events, The Metabolic Fate of Glucose, Synthesis of Glucose and Some Other Major Mono and Disaccharides, Metabolism of Complex Carbohydrates, Hormonal Effects on Carbohydrate Metabolism, Diabetes, Glycogen Storage Diseases, Lactose and Galactose Errors, Other Errors of Carbohydrate Metabolism, Sucrose Metabolism and Disease, Sweeteners, Alcohol, and Specialised Uses of Carbohydrates.

This list of headings indicates the main emphasis of the book, which is clearly set out and very readable. What is wrong with the book, however, is the abundance of fundamental and important errors that will mislead rather than assist the students for whom it is intended. Thus, on p. 4, the structure depicted for L-glucose is wrong and, on p. 7, hydrogen atoms are omitted from the structures of D-sorbose and D-tagatose. The statement at the foot of p. 7 that 'All aldoses with at least five carbons can form stable pyranose rings', is too strong and ignores instability caused by non-bonded interaction of axial substituents. Again Fig. 1.7 on p. 8 is badly drawn because the axial substituents could not all be below the plane of

the ring. In Fig. 1.10 '1-axial' should be '2-axial' and '1-equatorial' should be 'axial'. The nomenclature of Fig. 2.7 on p. 16 is wrong because reducing oligosaccharides should have the suffix 'OSE' (not 'oside'). In Fig. 3.1 on p. 20 the author appears to suggest that amylopectin is composed of a polymerised trisaccharide.

By contrast, the chapter on digestion and absorption is good and concise, pointing out the interesting differences in gastric emptying rate exhibited by the different sugars and the postulate that sweet taste pre-primes the body for carbohydrate metabolism. However, neither the work of Dahlqvist or Crane is alluded to in the bibliography which, as in other chapters, is inadequate.

On p. 40 the author mistakenly asserts that β -amylase cleaves off monomers starting at the terminal nonreducing end. Presumably this is a slip as she correctly indicates that maltose is the main product later in the book. However, the structure depicted for lignin in Fig. 5.1 (p. 41) is naive and there is no mention of uronic acids as components of dietary fibre. Again, however, although the chapter on High Fiber Diets is nicely concise, there is no mention of the works of Southgate, Selvendran, Theander, Burkitt, Trowell, Cummings, Painter, Eastwood, Van Soest, Leeds, Jenkins and others. Unfortunately this typifies the author's background information throughout the book. Phosphate bonds are missing from the glyceraldehyde 3-phosphate structure on p. 65 and ribulose 5-phosphate on p. 81. On pp. 179 and 180 pullulanase and amylase are misspelt.

Further background omissions are indicated by the statements on p. 181. 'Rather than to embark on expensive and possibly inconclusive studies to prove its safety manufacturers have ceased using xylitol as a nutritive sweetener' and on p. 183, 'The compound (aspartame) is unstable in aqueous solution, so its use will likely be restricted to dehydrated foods'. Although the book is dated 1984 the author seems unaware of the UK (1983) Sweeteners in Foods Regulations, and the current use of these substances commercially.

This book would benefit from a re-editing, for in its current form, students would do well to avoid it. Its readable style and informative chapters on metabolism are vitiated by its inattention to accuracy of detail and one is left with an inherent sense of unreliability. Hopefully the author will correct these details before the next edition.

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