

## Book reviews

*Synthetic Oligosaccharides: Indispensable Probes for the Life Sciences*, Edited by P. Kováč, ACS Symposium Series 560, American Chemical Society, Washington, DC, 1994. Indexed. ISBN 0-8412-2930-9, 306 pp.

This book was developed from the symposium sponsored by the Division of Carbohydrate Chemistry at the Southeast Regional Meeting of the American Chemical Society held October 17–20, in Johnson City, Tennessee.

After a preface by the Editor, this new volume is divided in two sections.

The first one includes five “reviews” ranging from general topics such as an overview on synthetic oligosaccharides in glycobiology (Y.C. Lee), drugs based on carbohydrates (M. Petitou), and flexibility of oligosaccharides and other biomolecules (L. Lerner), to more specialized reports: sugar cyanoethylidene derivatives (L.V. Backinowsky), stannyl and stannylene derivatives in oligosaccharide synthesis (T.B. Grindley).

The second section entitled “Synthetic oligosaccharides as tools for the life sciences” contains eleven chapters. Chapter 6 by M. Petitou is devoted to the study of the binding of heparin and antithrombin III using synthetic oligosaccharides. Chapter 8 by K.L. Matta describes the synthesis of oligosaccharides, synthetic acceptors for  $\alpha$ -L-fucosyltransferases. Chapter 9 by A. Ya. Cherniak reports the preparation of oligosaccharide–polyacrylamide conjugates, and their applications in immunological studies. Chapter 10 by C.P.J. Glaudemans and P. Kováč discusses the preparation of isomaltose-related oligosaccharides, and their interaction with monoclonal antibodies. Chapter 12 by J. Lehmann deals with photolabile, spacer-modified oligosaccharides (SMOs) for probing of receptors binding sites.

The six other chapters deal with sialic acid derivatives. Chapter 7 by R. Roy is devoted to the synthesis and antigenic properties of dendritic  $\alpha$ -thiosialosides. Chapter 11 by A. Hasegawa mainly deals with the synthesis of sialyl-Le<sup>x</sup> oligosaccharides and their ceramide derivatives. Chapter 13 by G. Magnusson reports the synthesis and the conformation of ganglioside lactams. Chapter 14 by T. Ogawa described the synthesis of poly-*O*-glycosylated fragments of glycophorin A, a sialoglycoprotein. Chapter 15 by N.E. Nifant'ev is dealing with the preparation of sialyl-Le<sup>a</sup> tetrasaccharide and biotin-containing glycoconjugates. Finally, chapter 15 by R.R. Schmidt is devoted to the chemical synthesis of sialylated glycoconjugates (sialyl-Le<sup>x</sup> glyco-sphingolipids) using sialyl phosphites as glycosyl donors in combination with the “nitrile effect”.

My major criticism remains that this book does not completely cover the recent state-of-art in oligosaccharide syntheses. As mentioned by the Editor, this is mainly due to the fact that the organizing committee could not invite all the chemists active in the preparation and use of synthetic oligosaccharides. However, this new volume will be of interest for carbohydrate chemists since the topics covered, if not exhaustive, represent the major facets of carbohydrate chemistry.

In conclusion, this timely book is a worthwhile acquisition for anyone, experts and novices alike, interested by oligosaccharide synthesis.

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*Flavor Science: Sensible Principles and Techniques*, Edited by Terry E. Acree and Roy Teranishi, ACS Professional Reference Book, American Chemical Society, Washington, DC, 1993, pp 351 + xvi, \$79.95 or £64.00.

The editors, both world renowned for their research, have recruited 14 authors, including five non-US ones, to contribute 10 chapters: bioassays for flavor (T.E. Acree, 20 pp, 40 refs.), common chemical sense in food flavor (H.T. Lawless and C.B. Lee, 45 pp, 200 refs.), sweet and bitter tastes (A. van der Heijden, 49 pp, 140 refs.), sweetness antagonists (M.G. Lindley, 17 pp, 40 refs.), sample preparation (R. Teranishi and S. Kint, 31 pp, 72 refs.), instrumental analysis in the flavor industry (C.J. Mussinan, 56 pp, 73 refs.), biotechnology: challenge for the flavor industry (P. Winterhalter and P. Schreier, 34 pp, 240 refs.), quantitative and sensory aspects of flavor of tomato and other vegetables and fruits (R.G. Buttery, 28 pp, 50 refs.), hydrolytic flavor release in fruit and wines through hydrolysis of nonvolatile precursors (P.J. Williams, 22 pp, 101 refs.), and key flavors from heat reactions of food ingredients (R. Scarpellino and R.J. Soukup, 28 pp, 46 refs.). There is a subject index (15 pp).

As stated in the preface, our lack of knowledge concerning the mechanisms by which we perceive tastes and odours contrasts vividly with our understanding of the processes by which we perceive sights and sounds. We can record, store, retrieve, amplify, transmit, duplicate, and describe objectively the sights we see and the sounds we hear. Incredibly, none of these operations can be duplicated for a single taste or single odour. As also stated, the book represents the state-of-the-art discussions presented by speakers at a workshop. Its purpose is to present some answers to the question, "What are the chemicals responsible for flavour?", and the tools currently used to answer it. On the other hand, answers to the question, "How do flavor chemicals work?", are deliberately not sought. Thus, the volume is not really a reference book, since it does not attempt to be comprehensive or exhaustive and presents few detailed tables of data. Nevertheless, all the chapters are of interest and between them they cover a very wide area, ranging