



Book Review

Essentials of carbohydrate chemistry and biochemistry, 2nd edition

Thisbe K. Lindhorst; WILEY-VCH, Weinheim, Germany, 2003, xiii + 219 pp, ISBN 3-527-30664-1, (€55.00)

Carbohydrates are the most abundant natural products, in line with their role as energy stores and structural building blocks in plants and algae. They are versatile enough to serve as encoders of biological information and, last but not least, they are involved in a variety of molecular recognition processes. This book successfully provides the basic knowledge of carbohydrate chemistry and biochemistry to the non-carbohydrate or aspiring carbohydrate chemist. It covers the main structure and reactions of carbohydrates in relation to their biological activity, and emphasises the more modern and frequently used research methods.

The introductory chapter provides the classification and functions of carbohydrates and the development of carbohydrate study. The second chapter describes the structure of saccharides, including monosaccharides, oligosaccharides and polysaccharides. The third chapter covers the different protecting group (e.g. esters, ethers, acetals) for carbohydrates. Regioselectivity is a prominent problem in carbohydrate chemistry as sugars contain several hydroxyl groups of different reactivity together with various other functionalities such as carbonyl and amino groups. Different protecting groups and protecting group strategies can be used for the synthesis of special mono- or oligosaccharide derivatives or glycoconjugates as well as for the preparation of selectively protected glycosyl acceptors for glycoside

synthesis. The fourth chapter discusses O-glycoside synthesis. Most oligosaccharide syntheses can be accomplished with the Koenigs–Knorr method and the trichloroacetimidate method.

The fifth chapter provides the important modifications and functionalisations of the sugar ring. Activation–substitution reactions, deoxygenation and epimerisation are described in this chapter. Chapters six and seven pay tribute to the interdisciplinary field of glycobiology. Information on structure and biosynthesis of glycoconjugates, carbohydrate–protein interaction, carbohydrate–selection interaction and glycomimetics are provided in these two chapters. The eighth chapter emphasises the purification and analysis of carbohydrates by three methods: chromatography, NMR and mass spectroscopy. The final chapter introduces the most notable journals, books and review articles in the field of carbohydrate chemistry which will open the door to the world of current carbohydrate research and those engaged in it.

This book provides a detailed introduction to carbohydrate chemistry and biochemistry. It is essential reading for students and postgraduate scientists in chemistry, biochemistry, pharmacy and biomedicine.

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