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## Journal of Carbohydrate Chemistry

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**C-Glycoside Synthesis.** By Maarten H. D. Postema, (Scripps Research Institute, La Jolla, California), CRC Press Inc. Boca Raton. 1995, 379pp. \$ 99.50 in USA/Outside U.S. \$119.00. ISBN 0-8413-9150-4.

Zbigniew J. Witczak<sup>a</sup>

<sup>a</sup> School of Pharmacy, U-92 University of Connecticut, Storrs, CT, U.S.A.

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*BOOK REVIEW*

**C-Glycoside Synthesis.** By Maarten H. D. Postema, (Scripps Research Institute, La Jolla, California), CRC Press Inc, Boca Raton. 1995, 379pp. \$ 99.50 in USA/Outside U.S. \$119.00. ISBN 0-8413-9150-4.

This book on C-glycosides, consisting of twelve chapters, is an extensive compilation of new developments in the growing field of synthetic C-glycoside chemistry. The author is to be congratulated for drawing together these new developments in an extremely comprehensive way.

The first two chapters deal with "Electrophilic Sugars in C-Glycoside Synthesis" by compiling extensive and detailed methodologies for the formation of the C-C bond at the anomeric center. A wide variety of electrophilic sugars have been discussed in these two chapters including glycosyl halides, trichloroacetimidates, alkyl glycosides and lactols. Chapter 3 describes "C-1-Nucleophiles in C-Glycoside Preparation" especially, C-1 stabilized anions, anomeric anions and anomeric complexes as excellent precursors for the formation of the C-C bond. Chapter 4 deals with "Wittig Approaches to C-Glycoside Formation" describing the use of stabilized phosphoranes, olefination followed by electrophilic cyclization such as mercuriocyclusation halo- and selenocyclusation. Chapter 5, describes "Palladium Mediated Approaches to C-Glycosides Preparation" utilizing glycals and anomeric stannanes as convenient starting materials. Chapter 6 as one of the most important, deals with "Concerted Reactions Applied to C-Glycoside Preparation" describing various types of sigmatropic rearrangements (Claisen, Ireland-Claisen and Wittig rearrangements) as well as [4+2] and [2+2] cycloadditions.

Chapter 7 describes "Free Radical Approaches to C-Glycosides" through intermolecular additions. Common radical precursors such as halides, selenides, acids, tertiary nitro compounds and thiocarbonyl derivatives are discussed here.

Chapter 8 of the book is concerned primarily with strategies for the "C-Disaccharide Synthesis" through anionic, free radical, cycloaddition, cationic and Wittig approaches. A subchapter dealing with the synthesis of C-trisaccharides is also included. Chapter 9 describes "Synthesis of Alkyl C-Glycoside of Natural Products" and reviews alkyl C-pyranoside natural products, as well as alkyl C-furanoside natural products.

Chapter 10, deals with one of the most important topics currently: "Synthesis of Naturally Occurring Aryl C-Glycosides." Extensive citations of synthetic approaches to Nogalamycin, Chaetiacandin and Papulacandins are also included. The approaches to Vineomycin, Fridamycin, and Gilvocarvin antibiotics are presented in detail.

Chapter 11 describes "C-Nucleoside Synthesis" through free radical, Wittig and Friedel-Crafts approaches. Methods presented here also deal with nucleophilic additions and one carbon chain elongation *via* aldehydes, nitriles.

The final chapter (Chapter 12) is an introductory review on preliminary biological and practical applications of C-glycosides and serves as a fundamental introduction to the biochemistry of this fascinating group of carbohydrates.

The book concludes with an extensive (13 pages) subject index. Some chapters show too many typographical errors and it is unfortunate that a final editing was unable to correct some mistakes, such as repetition of one starting compound under many different numbers. For example, in Chapter 3, page 76, Scheme 17, compound **102** is the same as compound **111** on page 77, Scheme 19. Compound **166**, Chapter 4, page 76, Scheme 27, is the same as compound **200**, Scheme 33 on page 113. Chapter 5, page 155, compound **107** - has no ring oxygen. Chapter 7, page 187, Scheme 38 compound **184** should be methyl glycoside instead of phenylselenyl glycoside. Chapter 8 page 198, Scheme 6, compound **41**, is the same as compound **45** in Scheme 7.

In spite of these typographical shortcomings, this book will provide a highly valuable and essential addition to institutional, as well as personal libraries of scientists engaged in research on the chemistry and biochemistry of carbohydrates, especially in the emerging field of C-glycosides.

Zbigniew J. Witezak  
School of Pharmacy, U-92  
University of Connecticut,  
Storrs, CT 06269, U.S.A.