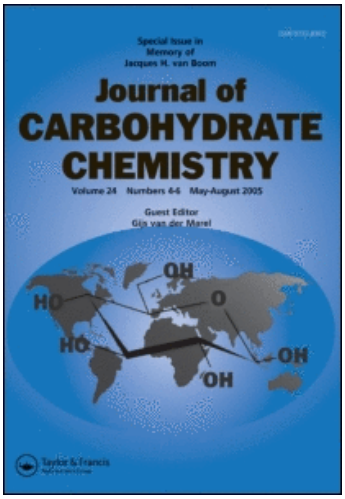

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Book Review

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Book Review

Synthetic Aspects of Aminodeoxy Sugars of Antibiotics by I. F. Pelyvás (Hungarian Academy of Sciences, Debrecen), C. Monneret (CNRS, Paris) and P. Herczegh (Hungarian Academy of Sciences, Debrecen). Springer-Verlag: Berlin, Heidelberg and New York, 988, 244 p. ISBN 3-540-188877-0 and 0-387-18877-0.

Since the beginning of the 1960s considerable research has been devoted to the synthesis of deoxy- and aminodeoxy sugars. These efforts were stimulated by the discovery of a number of medically important macrolide, aminocyclitol aminoglycoside, anticancer anthracycline and glycopeptide antibiotics having these deoxy- and aminodeoxy sugars as components. The chemical modification of the carbohydrate portion of these antibiotics has often contributed to the improvement of their biological properties. The present book is concerned, primarily, with the synthesis of the daunosamine type non-branched and branched-chain natural 3-amino-2,3,6-trideoxy-hexoses and their derivatives starting from both carbohydrate and non-sugar precursors.

Following the "Introduction", which briefly describes the antibiotics carrying the above mentioned aminodeoxy sugars, Chapter 2 is devoted to the "Synthesis of 3-Amino-2,3,6-Trideoxyhexoses from Carbohydrates". The authors systematically categorize the literature methods and offer a general outlook on the synthetic aspects of these sugars by critically discussing the syntheses in view of the methodological construction of the target molecules. The most important methods for the preparation of 2-deoxyhexoses are described first, followed by the strategies to introduce the C-3 amino group with the required stereochemistry. Very welcome separate sub-chapters deal with the simultaneous generation of the C-3 amino and C-2 deoxy functions, the C-2 halogeno analogues of 3-amino-3-deoxyhexoses, the 3-C-methyl branched chain 3-amino and 3-nitrosugars of antibiotics and with the strategies for the C-6 deoxygenation of aminodeoxyhexoses with or without concomitant inversion of the configuration at C-5. The last section of this chapter book gives an outstanding survey on the C-4 configurational interconversion of the aforementioned aminodeoxy sugars.

In Chapter 3, "Synthesis of 3-Amino-2,3,6-Trideoxyhexoses by Using Non-Carbohydrate Precursors", the synthetic procedures are classified according to a system which is based, principally, on the systematic construction of the six-carbon framework of the target aminodeoxy sugars with carbon-carbon bond formation reactions. A highly successful sub-classification of the methods according to the reaction-type of the key-step is also provided.

Chapter 4, "Miscellaneous Functionalized Derivatives of 3-Amino-3-Deoxy-hexoses of Antibiotics and Their Conversion into Other Organic Substrates", is divided into seven sections. Within this chapter is discussed the synthesis of thio-, nitrogen- and *C*-glycosides of 3-amino-2,3,6-trideoxyhexoses, *N*-substituted derivatives of daunos-amine-type aminodeoxy hexoses, 4-deoxy-and *C*-4 branched-chain 3-amino-2,3,6-tri-deoxyhexoses. The preparation of furanose ring analogs and the synthesis of uronic acid derivatives of 3-amino-di- and trideoxyhexoses are also described. At the end of this chapter are presented some results involving the conversion of 3-amino and 3-azido-2,3,6-trideoxyhexose derivatives into carbocyclic compounds.

The reader will notice that the multi-step reaction sequences are divided, in many cases, into individual reaction steps, or discussed, for methodological reasons in separate Chapters or sub-chapters. The closely related methods are presented in tabular form and the general clarity of the complete synthetic routes to the target aminohexoses is ensured

by providing cross-references throughout the volume. Such a separate treatment of the different reaction steps represents excellent organization of the literature data and offers a thorough inside view for comparing the applied and potential strategies. This kind of benefit has not been provided in previous review courses covering these aminosugars.

In the "Appendix", a unique supplementary collection of more than four-hundred functionalized 3-amino-2,3-dideoxy-and 2,3,6-trideoxyhexose derivatives is of great value and interest to those (including the reviewer) engaged in related research.

Completed with "Note Added in Proof" section, the book covers the literature of the aforementioned sugars up to the end of 1987 (651 references).

The nomenclature is correct throughout the book, the numerous formulae are clearly drawn and reproduced and there are only a few errors in the text and Schemes.

Finally, I must express my surprise that this extremely useful and comprehensive book, written in a very elegant manner and published in the fall of 1988 has not reached the *Journal of Carbohydrate Chemistry* for reviewing much earlier. The volume is recommended for specialists of carbohydrate and natural products research as well as for graduate students interested in advanced carbohydrate chemistry.

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