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Book review

The Chemistry of C-*Glycosides*, by Daniel E. Levy and Cho Tang. Tetrahedron Organic Chemistry Series, Vol. 13. Series Editors: J.E. Baldwin and P.D. Magnus, Pergamon, Oxford, 1995, 277 pp (including bibliography) plus index, ISBN 0-08-042080X (hard cover); 0-08-042081-8 (flexicover).

This book is the latest addition to the very successful *Tetrahedron Organic Chemistry Series* and presents a comprehensive overview of *C*-glycosides. This area has undergone a rapid evolution having gained impetus from both target-oriented (natural product) synthesis and, more recently, as a means of probing and mimicking the function of biologically significant *O*-glycosides and related glycoconjugates. As a consequence, the subject of *C*-glycosides spans 'mainstream' synthesis and carbohydrate chemistry and, as such, is both an appropriate and a timely contribution to the *Series*.

Careful thought has been given by the authors to the layout of the book, with the material being presented in eight chapters. The first of these deals with the general aspects of *C*-glycosides (nomenclature and occurrence in nature) and why we should consider this group of molecules important (the relationship between *O*- and *C*-glycosides). The two most important aspects of this relationship are highlighted: the similarity associated with the conformations of *O*- and *C*-glycosides and the successful application of *C*-glycoside analogues to inhibit, inter alia, enzyme and cell recognition pathways. The conformational analysis of these systems is not a trivial exercise but this topic was not, I felt, accorded sufficient coverage, particularly for the less experienced reader. Nevertheless, the case for significance of *C*-glycosides is made.

Chapters 2 through 7 present solutions to the problems associated with the synthesis of *C*-glycosides based on the strategy employed. While electrophilic substitution at *C*-1 (Ch 2) is most widely used for the synthesis of *C*-glycosides, the role of *C*-1 nucleophiles (Ch 3), transition metal-mediated processes (Ch 4) and the reactivity of anomeric radicals (Ch 5) are given comprehensive treatment. The omission of enolate reactivity associated with 2-ketosugars (via either reductive cleavage or deprotonation) is an oversight, but otherwise coverage is good. The role of cycloadditions (Ch 6) and sugar ring-forming reactions (Ch 7) for *C*-glycoside synthesis are also described. As a synthetic chemist, especially interesting to me was Chapter 8. Here the authors describe in chronological order developments in the synthesis of *C*-di- and tri-saccharides, which is an effective way to bring various themes together in an overview. Each chapter of the

book is referenced and there is a useful level of cross-referencing between different parts of the book. Additionally, where topics have not been covered in detail, the reader is pointed towards key literature sources.

Have the authors succeeded in their aim of providing a comprehensive guide to *C*-glycoside chemistry and will this book be of value to a broad readership? The answer to both these questions is firmly 'yes'. My fear, such as it is, is that the pace of progress in this expanding field will demand a second edition before too long. I have one negative observation which relates to the large number of errors that are present. These occur in the text, structure diagrams, and references and, though not material to my overall impression of the book, the frequency of errors is irritating. Perhaps this could also be addressed in a subsequent edition.

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