

## Book Reviews

**Colonic Drug Absorption and Metabolism.** Edited by P. R. Bieck. Marcel Dekker, Inc., 270 Madison Avenue, New York. 1993. viii + 224 pp. 15.5 × 23 cm. ISBN 0-8247-9013-8. \$110.00.

In recent years, colonic drug delivery has gained popularity due to potential use in treating local diseases of the colon, such as ulcerative colitis, with potential absorption of drugs from the colon justifying the development of once-a-day extended-release formulations and systemic delivery of peptide and protein drugs.

The book provides a good foundation in colonic drug absorption and metabolism. The chapters are (1) Anatomical and Physiological Basis: Physiological Factors Influencing Drug Absorption (C. A. Edwards), (2) Drug Metabolism in the Colon Wall and Lumen (J. W. Faigle), (3) In Vitro Studies with Colonic Tissue, Cellular, and Subcellular Preparations (P. Dechelotte and M. F. Schwenk), (4) Scintigraphic Techniques in Studying Colonic Drug Absorption (J. G. Hardy), (5) Other Methods in Studying Colonic Drug Absorption (K.-H. Antonin), (6) Comparison of In Vitro and In Vivo Dissolution for the Study of Colonic Drug Absorption (D. Brockmeier), (7) Osmotic Systems for Colon-Targeted Drug Delivery (F. Theeuwes, P. L. Wong, T. L. Burkoth, and D. A. Fox), (8) Colonic Delivery of Therapeutic Peptides and Proteins (M. Mackay and E. Tomlinson), (9) Influence of Disease on Colonic Drug Absorption (S. A. Riley), and (10) Luminal Side Effects of Drugs in the Colon (C. H. Gleiter).

The book does not have an extended discussion on polymeric and prodrug formulation approaches which have been explored more recently. However, these latter topics were discussed extensively in another recent book (*Oral Colon Specific Drug Delivery*; Friend, D. R., Ed.; CRC Press: Boca Raton, 1993). The book has some redundancies on the topic of intestinal transit times. There is also no discussion on the differences between species in the anatomical and physiological factors that affect drug absorption/metabolism in the colon.

Overall, this book is recommended for scientists and students who want to learn about colonic drug delivery/absorption/metabolism. The book provides most of the literature in the field.

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**The Organic Chemistry of  $\beta$ -Lactams.** Edited by G. I. Georg. VCH Publishers, Inc., New York. 1993. xi + 381 pp. 16 × 23 cm. ISBN 1-5608-083-1. \$115.00.

The continued interest in the total synthesis of new bicyclic  $\beta$ -lactams related to the penicillin and cephalosporin class of antibiotics as well as the use of  $\beta$ -lactams as synthons for the asymmetric synthesis of unusual amino acids led to the publication of this book which reviews chemical advances in the last decade since the 1982, three-

volume treatise titled *Chemistry and Biology of  $\beta$ -Lactam Antibiotics*, edited by Morin and Gorman.

The book contains six major chapters which are divided and subdivided into sections whose titles provide easy access to specific subject matter within the chapters. There is also a complete subject index at the end of the volume. Each chapter has a brief introduction, a list of abbreviations, and literature references. The references are reasonably current, being complete through 1990 with occasional 1991 citations. Documentation is quite extensive with over 1100 references, a fair portion of which contain multiple citations.

The first two chapters deal with protective groups used in  $\beta$ -lactam chemistry and the introduction and transformation of functional groups. While these topics will be of interest to most organic chemists, they are particularly relevant to those working with  $\beta$ -lactams because of the special sensitivity of the  $\beta$ -lactam ring, especially in highly strained bicyclic systems. These two chapters contain a wealth of information which is conveniently summarized in 61 tables. Chapter 3 covers methods for the conversion of monocyclic  $\beta$ -lactams into bicyclic structures that resemble the naturally occurring antibiotics. Chapters 4-6 are concerned with methods for the formation of monocyclic  $\beta$ -lactams. Chapter 4, which reviews their preparation and use as synthons, will be of particular interest to peptide chemists and others who are concerned with the enantioselective preparation of unusual amino acids as components of modified biologically active peptides, as potential enzyme inhibitors, or for the synthesis of natural products (e.g., the side chain of taxol). The major focus of chapter 5 is novel methods for  $\beta$ -lactam ring formation that are different from the more usual [2 + 2] cycloaddition reactions of ketenes or enolates with imines, which are covered in chapters 4 and 6. Chapter 6 is devoted to an in-depth review of the ketene-imine cycloaddition known as the Staudinger reaction. Current knowledge about the mechanism is presented along with suggested rules for predicting the stereochemical outcome of the reaction (*cis* or *trans* at C-3 and C-4). Methods for stereocontrol and asymmetric induction are also discussed.

Overall, this volume is an excellent addition to the still growing literature on the chemistry of  $\beta$ -lactams and should be readily available to anyone working in the field. In spite of its relatively high price, a personal copy may be well worthwhile. In addition, those interested in mild conditions for the introduction and removal of protective groups as well as the asymmetric synthesis of unusual amino acids and related structures will find this book quite useful.

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**Progress in Medicinal Chemistry. Volume 30.** Edited by G. P. Ellis and D. K. Luscombe. Elsevier, Amsterdam. 1993. viii + 396 pp. 14.5 × 21 cm. ISBN 0-444-89989-8. \$185.75.

This latest volume of the well-known and popular series contains chapters on recent advances in the chemistry and biology of retinoids, by J. B. Gale; semisynthetic derivatives of erythromycin, by H. A. Kirst; biological significance of manganese in mammalian systems, by F. C. Wedler; approach to the chemotopography of the digitalis recognition matrix in Na<sup>+</sup>/K<sup>+</sup>-transporting ATPase as a step in the rational design of new inotropic steroids, by K. R. H. Repke, J. Weiland, R. Megges, and R. Schön; amidines and guanidines in medicinal chemistry, by J. V. Greenhill and Ping Lue; and inhibitors of enkephalin-degrading enzymes as potential therapeutic agents, by A. Patel, H. J. Smith, and R. D. E. Sewell. All chapters are well-written and seem to have been carefully proof-read. Chemical structures and diagrams are well and clearly done. Chapters contain references from the 1991 literature, and some contain 1992 and early 1993 citations.

Some of the topics are especially noteworthy. The chapter on manganese in mammalian systems provides a readable, useful, and well-referenced summation of the contemporary state of knowledge on this intriguing metal. The thoughtful and extensive exposition of the chemotopography of the digitalis recognition matrix provides information and speculation that this reviewer has not seen in print before, and it should provide the chemist with inspiration for design of new inotropic agents, steroidal (as suggested in the monograph), and perhaps nonsteroidal as well. The chapter on enkephalin-degrading enzymes brings together chemical/biochemical/physiological aspects of the enkephalins and points to exciting possibilities for new therapeutic strategies in analgesia, clinical depression, cardiovascular diseases, and the inflammatory diseases.

The lengthy monograph on amidines in medicinal chemistry seems a peculiar choice for inclusion. The chapter lists pharmacological categories in which are found drug molecules containing amidine or guanidine moieties; the heterogeneous populations of amidine drugs cited have nothing in common pharmacologically or therapeutically. In many instances, it seems unlikely that the amidine moiety represents the pharmacophore of the molecule. It is noted that the authors did not include the amidine-derived local/topical anesthetics, typified by phenacaine. Synthetic procedures for many of the amidine drugs are presented, but these tend to be duplicative, and most of the chemistry has been described in older reviews. The authors' speculations about guanidine drugs as an *in vivo* source of nitric oxide are intriguing.

This volume is recommended as a ready source of useful, timely chemical and pharmacological information on the subjects reviewed. However, its high cost may place it out of the reach of many researchers, and of many libraries as well.

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**New Pharmacological Approaches to the Therapy of Depressive Disorders.** Edited by Julien Mendelwicz, Nicoletta Brunello, Salomon Z. Langer, and Giorgio Racagni. Karger AG, Basel, Switzerland. vi + 195 pp. 17.5 × 24.5 cm. ISBN 3-8055-5476-9. \$178.50.

This is Volume 5 of the *International Academy for Biomedical and Drug Research*. In it are reported the proceedings of the inaugural workshop and the inaugural session of the European Decade of Brain Research, Brussels, September 21–23, 1992. This book is divided into two parts. Part I focuses on experimental and clinical advances in the understanding of affective disorders. The main pharmacological and physiological approaches to the treatment of depression, e.g., classical and novel antidepressants, serotonin uptake blockers, and modulation of  $\alpha$ -2 adrenergic receptors, along with clinical reports of long term prophylactic treatments of depressive disorders, risk-benefit assessment, and cost-benefit implications, are among the topics addressed. In Part II various plans and projections for future CNS research are presented. The first section is the inauguration of the European Decade of Brain Research by F. M. Pandolfi of the Commission of European Communities. Other sections consider the prospects for international cooperation in brain research, the Decade of the Brain in the United States, the impact of molecular biology on neuropharmacological research, hormones and brain function, brain imaging and the treatment of mental disorders, and a round-table discussion of regulatory issues on drug development for the CNS.

This book presents a useful update of the treatment of depression that will be of interest to CNS researchers, clinicians, health regulatory authorities, and marketing and medical representatives. Its inclusion in appropriate libraries is recommended.

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