

Book Reviews

New Drugs for Asthma. Edited by P. J. Barnes, VCH, New York, 1989, 199 pages, ISBN 1-56081-030-0, \$95.00.

This volume is composed of 17 chapters, each of which addresses a drug category or approach to asthma therapy. Pharmaceutical scientists will be interested in the sections on "problems in current asthma therapy" and the "need for improved asthma therapy," addressed in Chapter 1. The conclusion of Chapter 17 states clearly the considerable success of previous and current approaches to the treatment of asthma. It is suggested that the remaining opportunities for treatment are diminishing.

The texts describing the rationale for approaches to asthma therapy requiring the use of beta-adrenergic agonists, xanthines, anticholinergics, and glucocorticosteroids are followed by a review of new approaches or compounds. Arachidonic acid metabolism gives rise to a number of inflammatory mediators. The cyclooxygenase pathway is discussed in chapter 8. Chapter 9 considers the products of the lipoxygenase pathway. Chapter 10 describes platelet aggregating factor (PAF), which is derived from arachidonic acid by an intermediary compound, lyso-PAF. Chapters 13 and 15 consider neural and humoral control of airway resistance. The nonadrenergic, noncholinergic control of airway tone may be brought about by peptides which act in opposition to the cholinergic system. Inflammatory cells produce peptidases which degrade neuropeptides resulting in unopposed cholinergic bronchoconstriction. Immunosuppressive agents may therefore be active in the treatment of asthma. It is also suggested that a fish oil-enriched diet may modulate the humoral and inflammatory components of the allergic response. Calcium ions are involved in stimulating secretions and contraction of smooth muscle. The biochemical pathways governing calcium homeostasis are described in Chapter 5. Potassium channel activators relax bronchial, vascular, and other smooth muscle. These agents have been considered particularly appropriate for the treatment of nocturnal asthma. The pathway governing cyclic nucleotide hydrolysis is mediated by phosphodiesterase isozymes. The possibility of targeting these enzymes using novel antiasthmatic agents and increasing the cellular content of cyclic adenosine monophosphate is discussed in Chapter 7. Chapter 16 focuses on novel delivery systems and highlights progress in the fields of improved delivery from metered-dose, pressure-packaged aerosols and new dry powder generators. The authors of each of the chapters are noted authorities in their respective fields. Each chapter has a list of references which range in number from approximately 30 to over 120. These are contemporary to the publication date of the book and therefore a useful source for the reader.

The growth of the literature addressing the mechanisms of asthma have led to a redefining of the disease state. These circumstances have necessitated a review of drug treatment and the development of new approaches to therapy. As this

is likely to be a burgeoning field in the foreseeable future, this book is recommended to all who are interested in a reference text on asthma therapy.

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Skin Pharmacology and Toxicology—Recent Advances. Edited by Corrado L. Galli, Christopher N. Hensby, and Marina Marinovich. Plenum, New York and London, 1990, ISBN 0-306-43404-0, 318 pp., \$75.00.

This book is the result of the Proceedings of a NATO Advanced Study Institute on Recent Advances in Skin Pharmacology and Toxicology, held on April 9–19, 1989, in Riva del Garda, Italy. It reviews in detail the major scientific areas of interest for research and clinical scientists working in dermatopharmacology and dermatotoxicology.

Excellent chapters are included on dermatological drug development, xenobiotic metabolism, and animal models used in cutaneous pharmacology and toxicology. The first chapter contains a variety of issues pertinent to dermatological therapeutics from a drug developer's perspective. The second chapter reviews in detail the carbohydrate, protein, and lipid metabolism in the skin. In the third chapter, a brief review is presented on the presence of hormones and their receptors in the skin. Among the topics discussed in the chapter titled "Skin Permeability and Models of Percutaneous Absorption" are skin structure, factors affecting skin absorption, and methods used in cutaneous pharmacokinetics.

Topics such as the response of the skin to irritation and injury, the evaluation of cutaneous toxicity, *in vitro* biochemical markers of skin toxicity and proinflammatory mediators, and human skin disease are well covered. Issues such as photoaging and the possible mechanistic role of cellular oncogene activation and the inhibition of intercellular communication in multistage carcinogenesis are also reviewed. Mechanisms and clinical aspects of photosensitization, contact and atopic dermatitis, and studies with cultured human keratinocytes are described very well. Further, a new evaluation method of skin plastoelasticity and an interspecies comparison of skin structure and skin permeability are presented.

The subject index at the end of the book is fairly complete. The references at the end of each chapter are current. The primary criticism of the book is that it is published in original manuscript type, and the content, length, and style varies considerably among authors. A number of typographical errors were not corrected before publication. Sections seem to be organized in random fashion, not grouped together. Specialists in skin tissue methods and percutaneous drug delivery may desire more, but in general, *Skin Pharmacology and Toxicology—Recent Advances* should be ben-

eficial as a handy reference source. It offers what is probably the most complete coverage of the topic by recognized authorities to date.

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Nitration, Methods and Mechanisms. By George A. Ohla, R. Malhotra, and S. C. Narang. VCH Verlagsgesellschaft, Weinheim, 1989, xii + 325 pp., ISBN 0-89573-144-4, \$65.00 (hardback).

After an ultrabrief (first) chapter (all of 7 pages) addressed loosely to "Definitions, Historical, Scope, Mechanistic Classification and Industrial Use and Research Significance," the authors plunge into a tedious second chapter (96 pages) on "Reagents and Methods of Aromatic Nitration." Then comes an interesting third chapter (90 pages) on "Mechanisms of Aromatic Nitration," followed by the fourth and concluding chapter (67 pages) on "Aliphatic Nitration".

The third chapter, on the mechanisms of aromatic nitration, is very interesting and really is the "meat" of the book. The second chapter is descriptive and, at best, tedious and impossible to read. Chapter 2 laboriously describes every conceivable reagent and method used in aromatic nitrations. A comprehensive list of reagents, as, for example, compiled in Table 41 of Chapter 3, is much more useful. Furthermore, many of the reagents and methods are repeated when the mechanisms are discussed in the next chapter.

Chapter 4 contains a hodge-podge of various "aliphatic" nitrations. While this category would certainly include nitration of alkanes and cycloalkanes, also discussed are active methylene nitration by means of alkyl nitrites, nitrodesilylation and nitrodestannylation, nitration of alkenes, nitromercuration and nitroselenation, and nitration at heteroatoms. This reviewer always thought of the formation of alkyl nitrates as an esterification rather than a nitration on oxygen. It is true that alkyl nitrates can be formed by several methods, but why not entitle the section as one on alkyl nitrates rather than nitration on oxygen? In terms of various mechanisms, the last set of topics drifts into many different mechanistic territories, such as an S_N reaction of an alkyl halide with nitrite ion, which can hardly be labeled as nucleophilic aliphatic nitration.

While the book has abundant examples on how to introduce nitro groups into organic molecules, a researcher (or teacher) will have to hunt around to find the information and is sometimes confronted with lesser-known name reactions

in organic chemistry. I am not at all sure how many are familiar with the ter Meer and Kaplan-Schechter reactions. One might as well look up the preparation of specific compounds in *Chemical Abstract* instead of chasing around in this book to find appropriate examples.

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Biomimetic Polymers. Edited by Charles G. Begelein. Plenum Press, New York, 1990, viii + 297 pp., \$75.00.

This book is a collection of 16 papers, 10 of which are based on the proceedings of the American Chemical Society Symposium on Enzyme Mimetic and Related Polymers, held at the Third Chemical Congress of North America, July 5-8, 1988, in Toronto, Ontario, Canada. The book primarily describes methods for creating synthetic polymers which imitate the activity of natural bioactive polymers. The individual papers are rich in experimental results and conclusions which may stimulate further thoughts and research interests. What is most noteworthy is the fact that the structural monomeric units of the naturally occurring bioactive polymers serve as the base for synthetic polymers. The book is well edited; however, a few typographical errors have been noted (e.g., 31 instead of 51 amino acids for insulin, Chap. 16, p. 282, paragraph 4, line 3).

Several classes of important biopolymers have been considered. The first seven papers describe studies involving polymers which mimic the catalytic activity of enzymes. Some of these polymers can find their use as catalysts in stereoselective synthesis and in chiral preparative chromatography. In the first chapter, utilization of polymers with chiral cavities in organic synthesis is nicely described by Wolff. Burdick and Schaeffer then describe the application of thin films of some biocatalysts, similar to photographic films, in the synthesis of some important biochemicals. The third chapter (Mathias *et al.*) illustrates enzyme-like activity of polymers based on 4-diallylaminopyridine that can catalyze hydrolytic and esterification reactions. All of these chapters are descriptive with good illustrations. In Chapter 4, Carraher *et al.*, detail the inclusion chemistry and unique biochemical reactions of potentially bioactive poly(amino acids) containing platinum or titanium atoms. Zeolites and inorganic analogues of biopolymers are described in Chapter 5 as potential biomimetics with various-sized cavities (Herron). The illustrations in Chapter 4 could have been improved, whereas those in Chapter 5 could have been minimized.

The sixth and seventh chapters describe the modification of natural polymers to introduce enzymic properties. Hilvert discusses the bioactivity of catalytic antibodies, and Keyes and Albert describe the structural modification of ordinary proteins to make them behave like regular enzymes. References to any recent review article in this area would have been helpful.