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Received December 3, 1981.
Accepted for Publication December 30, 1981.
The authors thank Vickie L. Cain for her technical assistance and Dr. B. Poulsen for his support and helpful comments.

BOOKS

REVIEWS

Antitumor Agents Based on Natural Product Models. Edited by JOHN M. CASSADY and JOHN D. DOUROS. Academic, 111 Fifth Ave., New York, NY 10003. 1980. 500 pp. 15 × 23 cm.

This text is volume 16 of *Medicinal Chemistry, A Series of Monographs*. The emphasis of the book is on lead or novel antineoplastic agents, structure–activity relationships, modes of action, and toxicology of natural products. The choice of agents which is discussed in the monograph is rational and appropriate for the scope of the text. The book serves the purpose of assimilating diverse topics on natural product antineoplastic agents of clinical importance. In general, the text is well-written, concise and well-referenced, and includes pertinent structures, synthetic schemes, and biological data. The text is written with emphasis on the current development or status of a given group of agents and states scientific areas where further development is required.

The book is divided in the following contributions by individual authors:

Chapter 1, "The Development of New Antitumor Anthracyclines" (F. Arcamone), details the basic chemical modifications at the C-9, C-13, and C-14 of the amino sugar residue and of the chromophore of anthraquinone comparing the antitumor activity against HeLa cell, L-1210, P-388, and gross leukemia growth.

Chapter 2, "Trichothecanes" (T. W. Doyle and W. T. Bradner), discusses the history, mechanism of action, toxicity, metabolism, bioassay, cytotoxicity, and structure–activity relationships for antitumor activity in the P-388, L-1210, and B-16 tumor models.

Chapter 3, "Nucleosides" (M. Ohno), summarizes the structure–activity relationships of C- and N-pyrimidine nucleosides required to block the growth of tumors, bacteria, and viruses as evaluated by several investigators.

Chapter 4, "Mitomycins" (W. A. Remers), relates the history, chemical properties, mode of action, and structure–activity relationships for antibacterial and antitumor activity in the L-1210 and P-388 tumors, and the newly synthetic analogues of mitomycin.

Chapter 5, "Recent Progress in Bleomycin Studies" (H. Umezawa), deals with the chemistry and biosynthesis of bleomycin and phleomycin, including a revised structure of bleomycin, copper and iron complexes of bleomycin, the mechanism of action against squamous cell carcinomas, and other therapeutic uses of the agents.

Chapter 6, "Streptozocin" (P. F. Wiley), reviews the fermentation and isolation processes of streptozocin from bacterial cultures, its pharmacology, toxicology, carcinogenicity, mutagenicity, antibacterial, and antineoplastic modes of action, chemical studies, and the structure–activity relationships of several analogues.

Chapter 7, "Terpenoid Antitumor Agents" (J. M. Cassady and M. Suffness), correlates the structures, possible modes of action, and structure–activity relationships in the KB cytotoxicity screen of NCI of mono- and sesquiterpenes, diterpenes, bufadienolides, cardenolides, with anolides, cucurbitacins, and quassinoids.

Chapter 8, "Dimeric Catharanthus Alkaloids" (K. Gerzon), surveys the history, clinical observations, assay methods, mode of action, toxicity, polarity, and structure–activity relationships of vinblastine and vincristine, including a discussion of chemical modification of vinblastine.

Chapter 9, "Podophyllotoxins" (I. Jardine), discusses the history, clinical aspects, structures and chemical synthesis, and modes of action of podophyllotoxins, VM26, VP16-213, and steganacin against the P-815 mastocytoma and L-1210 leukemia cell growth.

Chapter 10, "Maytansinoids" (Y. Komoda and T. Kishi), reviews the isolation of natural and chemical synthesis of novel derivatives of maytansinoids and antitumor activity, toxicity, and effects on cellular growth and biochemical parameters.

Chapter 11, "Harringtonine and Related Cephalotaxine Esters" (C. R. Smith, Jr., K. L. Mikolajczak, and R. G. Powell), relates the characteristics, configuration, and antineoplastic activity of cephalotaxine and its esters. Total synthesis of cephalotaxine, chemical conversion to its naturally occurring esters, biosynthesis of ester analogues and structure–activity relationship against P-388 and L-1210 tumor growth are reviewed.

Chapter 12, "Camptothecin" (M. E. Wall and M. C. Wani), covers the naturally occurring, total and semisynthesized camptothecin analogues, antitumor activity, effects on RNA and DNA components of the cell, and structure–activity relationships.

Chapter 13, "Microbial Transformation as an Approach to Analogue Development" (J. P. Rosazza), offers a general discussion of the use of microorganisms to transform metabolic compounds to new, highly active antitumor agents. Examples used for transformation include bacterial and plant natural products and miscellaneous agents.

Chapter 14, "Miscellaneous Natural Products With Antitumor Activity" (M. Suffness and J. Douros), surveys a series of antitumor agents

0022-3549/82/0400-0478$01.00/0
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from higher plants and microbial sources which were not covered elsewhere in the text but of sufficient scientific interest as possible new agents.

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Terpenoids and Steroids, Vol. 10. Senior Reporter, J. R. HANSON. The Royal Society of Chemistry, Burlington House, London W1V 0BN, England. 1981. 284 pp. 15 × 22 cm. (Available from: Special Issues Sales, American Chemical Society, 1155 16th Street, N.W., Washington, DC 20036.)

This is the 10th volume on terpenoids and steroids in the valuable series first published 11 years ago. The aim of the series is to provide systematic, comprehensive, and critical reviews of progress in the major areas of chemical research. This volume reviews literature published between September 1978 and August 1979.

Volume 10 does not contain a subject index but is organized in a systematic manner that facilitates the location of information. There is also an extensive author index which is helpful to those following the research of a given individual. The book contains 1700 chemical structures and is documented with 1900 references, conveniently listed on the page of each chapter where first noted.

Part I, which covers the terpenoids, is divided into chapters that include sesquiterpenoids, diterpenoids, triterpenoids, and carotenoids and polyterpenoids. Chapters on monoterpenoids and the biosynthesis of terpenoids and steroids, unlike many of the earlier volumes, are not included. The chapter on monoterpenoids will be included in the next volume.

Part II, which covers the steroids, is divided into two chapters. The chapter on physical methods includes sections on structure and conformation, NMR spectroscopy, chiroptical phenomenon, mass spectrometry, miscellaneous physical properties, and analytical methods. The chapter on steroid reactions and partial syntheses contains sections devoted to each of these topics.

The first section is divided topically according to the more common functional groups and such important subjects as molecular rearrangements, functionalization of nonactivated positions, and photochemical reactions. The second section on partial syntheses, covers cholestane derivatives, vitamin D and its metabolites, pregnanes, androstanes and oestranes, cardenolides, heterocyclic steroids, and microbiological oxidations.

An unusual variety of terpenoid structures, particularly from insect and marine sources, has been included in this volume. The sharp increase in the use of high-field ^{1}H-NMR and ^{13}C-NMR is evident in this review.

The six reporters who prepared this volume are to be commended for maintaining the high standards set by the previous volumes in this series. Everyone interested in the chemistry of terpenoids and/or steroids should have access to this volume and the others in the series.

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Lexikon der Hilfsstoffe für Pharmazie, Kosmetik und angrenzende Gebiete. By HERBERT P. FIEDLER, Editio Cantor Aulendorf, D-7960 Aulendorf, West Germany, 2 Volumes, 1081 pp., 17 × 24 cm., 1981, Price: 245 DM.

In view of the scarcity of textbooks dealing exclusively with excipients, the revised and expanded edition of the Lexikon der Hilfsstoffe is a timely contribution to the reference libraries of pharmaceutical companies, regulatory agencies, and schools of pharmacy. Comparison of the contents with the original one-volume edition published in 1970 demonstrates the evolution of a broader and more critical attitude toward available technical information on excipients.

The author has provided a series of tables listing specific physical properties of excipients, types of surfactants used in pharmaceutical or cosmetic preparations, HLB values, MAC (maximum workplace concentration) values, colorants suitable for cosmetic preparations, and a table of the German and English titles of selected excipients together with their Merck Index and Chemical Abstracts Registry Numbers where appropriate.

The main body of the text lists excipients in alphabetical order with information on their physical, chemical, and biological properties. There is considerable variation in coverage between excipients, which reflects the author's judgment or the extent of information available to him. It is clear that Dr. Fiedler has made a special effort to make these volumes useful to English-speaking pharmaceutical scientists. However, the construction of some of the interminable German sentences may create impatience in readers with a limited knowledge of the language.

As far as this reviewer knows, no similarly detailed encyclopedia of excipients has appeared in the English language. Until this gap is properly filled, the *Lexikon der Hilfsstoffe* will remain a valuable source book for pharmaceutical scientists engaged in dosage form design, production, and control.

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USAN and the USP Dictionary of Drug Names 1982. United States Pharmacopeial Convention, 12601 Twinbrook Parkway, Rockville, MD 20852. 1981. 614 pp. 21 × 28 cm. Price $25.00 (Foreign: $40.00 AO rate, $27.00 surface rate).

The 1982 edition of *USAN and the USP Dictionary of Drug Names* has been updated in some subtle but important ways. The entry format and familiar orange cover are the same but the book itself is 104 pages longer than last year. There are 96 new adopted names in this edition, inclusive to June 15, 1981. Many International Nonproprietary Names and graphic formulas from the World Health Organization's listings have been added as well as the molecular weights of compounds where appropriate.

There are over 17,000 entries and 2043 adopted names in this issue. The three appendixes and five lists that appear in the back of the book are the same as last year.

USAN is the officially recognized source of drug names for the USP, the National Formulary, and the major source used by the FDA in referring to drug substances. Consequently, this book is an invaluable reference to those in the drug trade and health professionals.

Staff Review

Synthesis with Stable Isotopes of Carbon, Nitrogen, and Oxygen. By DONALD G. OTT. Wiley, 605 Third Ave., New York, NY 10016. 1981. 224 pp. 16 × 24 cm. Price $28.50.

This book is designed for chemists who are confronted with the need to prepare a compound with a stable isotope of carbon, nitrogen, or oxygen. It is intended to be useful for individuals actively involved in labeled compound synthesis as well as for chemists just entering the field.

Although compounds are presented in chapters according to functional groups, not all compounds appear in designated chapters. However, the text contains an index that lists all labeled compounds. The compounds are cited in the index as a product of synthetic procedures or as a reactant. Unfortunately, the index does not indicate information other than the compounds.