BOOK REVIEWS

Synthetic Aspects of Biologically Active Cyclic Peptides—Gramicidin S and Tyrocidines, N. IZUMIYA, T. KATO, H. AOYAGI, M. WAKI, Laboratory of Biochemistry, Kyushu University, and M. KONDO, Department of Chemistry, Saga University. Kodansha Ltd., Tokyo, and Halsted Press, John Wiley & Sons, 605 Third Avenue, New York, NY 10016. 1979. xii+166 pp. 16 x 23 cm. $24.95.

Gramicidin S and the tyrocidines are closely related cyclic decapeptide antibiotics produced by *Bacillus brevis*. The core of this monograph is a review of the isolation, structure determination and biosynthesis of these substances, their chemical synthesis and the synthesis of analogs, their conformational analysis by physical methods, and the structure activity relationships in the series. The authors have done a large part of the synthetic work in the gramicidin S field; they conclude their text with a chapter of similar broad range about some other peptides to which they have directed their attention, cyclic tetradepsipeptide toxins (AM-toxins) that are produced by a fungal disease of apples.

The study of gramicidin S (a molecule different from the linear ionophoric peptides gramicidins A, B and C, also produced by *B. brevis*) has had a seminal role in the development of methods for the synthesis of cyclic peptides, and in the development of methods for the conformational analysis of peptides in solution, especially those using nuclear magnetic resonance. This clearly written review is especially strong as a source of basic information for chemists who need background in peptide cyclization for work on other peptides of physiological importance. It also provides a clear summary of the physical methods of peptide conformation study as applied to gramicidin S, and it seems likely that a reader concerned with chain folding of linear peptides could usefully mine the cyclization data collected in this one place.

Although the report (Nature, (1978), *175*, 206–7.) appeared too late for inclusion, it is good to know that there is finally a crystal structure of gramicidin S, and that in the main it agrees with the conformation deduced by other methods.

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Encyclopedia of Antibiotics, 2nd edition, JOHN S. GLASBY, ICI (Organics) Ltd., Wiley-Interscience, 605 Third Avenue, New York, NY 10016. 1979. 467 pp. 25.5 x 18.5 cm. $66.00.

The number of substances known to possess antibiotic activity continues to increase at a rapid rate, and it is very difficult for any individual to keep up with the literature in this area. The publication of the first edition of the Encyclopaedia of Antibiotics provided a convenient summary of the literature in this area, and this revised second edition brings the earlier compilation to date through 1977.

The major strength of the Encyclopedia is that it brings together in one convenient format information on approximately 2000 antibiotic substances. The data for each antibiotic of known structure include composition, some physical constants, and structure; spectroscopic data are not given. A brief discussion of the biological activity of the antibiotic is followed by a list of from one to more than 40 references.

As with any compilation of this sort, various errors and omissions are inevitable. Thus the antibiotic thiogriseofulvin is not included, and although lincomycin does receive an entry related antibiotics such as 4'-depropyl-4'-ethyllincomycin and 1'-demethyllincomycin are not included (the latter name occurs in the Encyclopedia, but only as a cross-reference to a nonexistent entry). On the other hand, the antibiotic virginiamycin M_1 occurs with an incorrect structure (two double bonds missing) on p. 458, and again, this time with a correct structure, as ostreogrycin A on p. 338. Neither entry includes a reference to the x-ray single crystal structure of this antibiotic that was published in 1974.

Most potential users of this book will also have access to a copy of the Merck Index, and a comparison between the two volumes is thus a helpful point of reference. A spot check of the two volumes indicated that the Merck Index has entries for approximately one third of the antibiotics listed in the Encyclopedia. The Encyclopedia thus serves as a useful extension of the Merck Index in the area of antibiotics. Users should be aware that it is not comprehensive, even up to its preface date of 1978, and that it does contain certain errors and omissions. Nevertheless, it will undoubtedly prove a useful reference work for these scientists actively working on antibiotic substances.

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Pharmacognosy, 11th Edition, GEORGE EDWARD TREASE and WILLIAM CHARLES EVANS, Dept. of Pharmacy, University of Nottingham, Balliere Tindall, 35 Red Lion Square, London WC1R 4SG. 1978. vii+784 pp. 16.5 x 24 cm. £35.00.

This book is perhaps not as well known in the United States as it should be although, now in its 11th edition, it has currency in many other areas of the Western World. It is undoubtedly true, as Farnsworth and others have pointed out, that in this country at least, pharmacognosy has been unable to maintain its place of primacy as one of the classical disciplines of pharmacy. Nor is it likely to regain this place in the foreseeable future. Nonetheless, with current emphasis on natural foods and drugs, herbal remedies, toxic plants, environmental problems, and the presumed equivalence of pharmacognosy and phytochemistry, there is place for a comprehensive book which reflects these transitions. Further, the international character of many meetings of societies dealing with plant study, including our own, would seem to suggest the desirability of a ready reference to the common knowledge of pharmacognosists of all persuasions.

Trease and Evans' revised text includes techniques appropriate to the natural drugs of the European Pharmacopoeia, the U.S.P. and the B.P. along with classical monographs on plant drugs reminiscent of our older texts (e.g., Youngken). Chapters on Phytochemistry and Genetics cover modern concepts such as biogenesis, chemotaxonomy, metabolic pathways and microbiological conversions. Literature references to the chemistry of the important plant families covers the period 1971–1976. Of passing interest is the exceptionally light treatment given to the antibiotics, and the absence of reference to biologicals which are usually included in American texts on the subject. From its almost 800 pages, an instructor might select from a variety of approaches to the subject depending on his personal interests and emphasis.

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