

BOOK REVIEW

The Chemistry and Biology of Antibiotics. VLADIMIR BETINA. Elsevier Scientific Publishing Company, 52 Vanderbilt Ave., New York, NY 10017 (and P.O. Box 330, 1000 AH Amsterdam, The Netherlands), 1983. 574 pp., 18 x 24 cm, DFI 295 (\$125.50).

This is an excellent textbook by Professor Betina on the chemistry and biology of antibiotics. Chapter 1 presents an outline of the history of antibiosis and antibiotics. Chapter 2 describes the distribution of antibiotic-producing organisms both in nature and in their taxonomic groups. It also points out problems of nomenclature of antibiotics. Chapter 3 is devoted to methods of screening, identification, and determination of antibiotics. Chapter 4 describes the development of the chemical classification of antibiotics and shows the best known representatives of a present classification system. Chapter 5 shows antibiotics as secondary metabolites. In addition, physiological and genetic regulation of their metabolic pathways is discussed. In Chapter 6, older and more recent ideas concerning the *raison d'être* of antibiotic formation are confronted. Chapter 7 deals with principal biosynthetic studies of the best-known families of antibiotics. Ways of preparation of semisynthetic and synthetic antibiotics are described in Chapter 8. Structure-activity relationships among antibiotics are discussed in Chapter 9. Practical applications are presented in a condensed form in Chapter 10. In Chapter 11, the strategy and tactics of the mode of action studies are presented, followed by data about antibiotics interfering with cell-wall formation, membrane functions, energy metabolism, intermediary metabolism, and nucleic acid and protein biosynthesis. Chapter 12 is devoted to biochemical and genetic aspects of resistance to antibiotics. Biotransformations of antibiotics and their pharmacological aspects are discussed in Chapter 13. Chapter 14 describes antibiotics as tools in molecular biology and genetics. Chapter 15 covers uses of antibiotics in studying life cycles of viruses, bacteria, and other organisms as well as in elucidating morphogenesis and functions of mitochondria and plasmids. Selected data about antibiotics used as inhibitors of mitosis and other aspects of differentiation are also presented. Perspectives of future developments are sketched in the Epilogue.

I would recommend this textbook for an advanced undergraduate course in antibiotics or as an introductory text for graduate students. For specialist courses in, for example, biosynthesis or mechanism of action, this text would only be useful as background material (although this is not to be meant a criticism of the book because this is not its stated purpose). For the researcher who is interested primarily in one or other aspects of antibiotics this is an excellent source of information on ancillary areas.

Considerable thought and more than 20 years' experience working in the antibiotic area were necessary to put together this book. Unlike many general textbooks prepared by a single author based upon teaching courses over many years, this book is not hopelessly out of date and spotty in its coverage of some aspects. Most of the references are from the late 1970s and some date from 1981-82. The illustrations are of high quality, structures are correctly drawn, and a spot-check on references did not pick up any errors.

In summary, I highly recommend this book for students and researchers in biochemistry, microbiology, pharmaceutical chemistry, biochemical engineering, fermentation industry, and medicinal chemistry. The cost is high, but it is well worth the investment.

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