

The Chemistry and Biology of Antibiotics

by V. Betina

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590 pages. Dfl 295.00, \$125.50

This is an ambitious book, as its title boldly suggests. Immediately upon receiving it, I turned as usual to the Table of Contents to discover that it commences with the history of antibiosis and concludes with two chapters on the uses of antibiotics as probes in molecular biology, in genetics and in studies of morphogenesis and differentiation. Along the way, there are chapters dealing with antibiotic production (plus its *raison d'être* and its regulation) including details of biosynthetic pathways and biotransformations, the chemical classification of antibiotics, structure-activity relationships plus modes of action and also antibiotic-resistance mechanisms. The contributions of *Homo sapiens* to antibiosis are also discussed in a separate chapter on (semi) synthetic agents. Although I do not claim a thorough knowledge of the literature, I would be most surprised if many other single volumes have attempted to embrace such a field and therein lie the major attractions and limitations of this work.

I have learned a great deal from this book and I believe that most other people with any interest at all in antibiotics will, likewise, find something in here to broaden their horizons. On the other hands, 500 or so pages cannot conceivably contain an in-depth treatment of each of these subjects – perhaps not of any of them. To take two examples; the mechanism of protein synthesis and its inhibi-

tion by antibiotics are dealt with in 8 pages, and this includes 2 pages of figures and tables. Even briefer is the treatment of penicillin-binding proteins and penicillin-sensitive enzymes, which lacks any real depth. Perhaps inevitably in a work of such scope, the discussion tends to be limited in places to the results from a few selected groups, with a consequent lack of overall balance. To be fair, however, I found some of the chapters much more informative, notably those dealing with material unfamiliar to me (and there was much of that). Also, there are some unexpected and delightful passages as, for example, in a discussion of antibiotic resistance in the wild. My heart went out to the New Zealand hedgehogs which harbour β -lactamase-positive staphylococci in addition to (penicillin-producing) dermatophytic fungi.

In conclusion, this book is a mine of information and is likely to prove useful as a general reference source on many aspects of antibiosis. I cannot recommend it for students or for university courses, and there exist much more detailed works on several of the topics concerned. However, for one man to have written such a book is a considerable achievement and it has been a pleasure to share Dr. Betina's panoramic vision of this fascinating field.

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Břatina, V., 1983, *The Chemistry and Biology of Antibiotics*, Elsevier, Amsterdam. Google Scholar. Bycroft, B. W. (ed.), 1988, *Dictionary of Antibiotics and Related Substances*, Chapman and Hall, London. Google Scholar. Demain, A. L., and Solomon, N. A. (eds.), 1983, *Antibiotics Containing the (3-Lactam Structure*, Vols. 1 and 2, Springer-Verlag, Berlin. Google Scholar. Hlavka, J. J., and Boothe, J. H., 1985, *The Tetracyclines*, Springer-Verlag, Berlin. Kleinkauf, H., and von Dřren, H. (eds.), 1990, *Biochemistry of Peptide Antibiotics*, de Gruyter, Berlin. Google Scholar. Laskin, A. I., and Lechevalier, H... Ā Cite this chapter as: Lancini G., Parenti F., Gallo G.G. (1995) *The Antibiotics*. In: *Antibiotics*. Springer, Boston, MA. Antibiotics are very important compounds. The majority of all known antibiotics are produced by bacteria. Antibiotics were once regarded as miracle drugs. However, they are becoming less effective as bacteria develop resistance against them. The increasing occurrence of micro-organisms that are resistant to multiple antibiotics constitutes a serious threat to human health. Ā The course brings a comprehensive understanding of the biology and chemistry of antibiotics. It also provides insights about bacterial physiology as well as industrial and clinical aspects of antibiotics and about evolution of antibiotic resistance. Application and prerequisites at Lund University course database. Syllabus (pdf).