

Book Reviews

Guanidino Compounds in Biology and Medicine. Edited by P. De Deyn, B. Mareseau, V. Stalon, and I. Qureshi. John Libbey & Company Limited, London. 1992. xi + 480 pp. 17 × 24 cm. ISBN 0-86196-330-X. £46.00.

This book contains selected papers from the 3rd International Symposium on "Guanidino Compounds in Biology and Medicine" held in Antwerp, Belgium in September 1991. Guanidine compounds, in general, comprise a rich field in the medicinal chemists armory, and there are abundant examples of guanidine-containing drugs and ligands, with their site of action at pharmacological receptors, enzymes, and ion channels. The focus of this book is on naturally occurring guanidines and their relevance to biology and medicine. An introductory section includes discussion of guanidine compounds occurring in microorganisms, plants, and invertebrates. There is also some discussion of the arginine-nitric oxide pathway, which has recently become a topic of major interest following the discovery of a neurotransmitter role of nitric oxide (EDRF) in brain and other tissues. This subject has been extensively discussed in other publications. However, of particular interest in this book, and perhaps less well-known, is the discussion of guanidine compounds in renal insufficiency and the phenomena of hyperarginemia and uremia. Included is a report from a multinational collaborative study of the diagnostic implications of guanidine compounds in hyperarginemia. The final section of the book discusses the activity of guanidine compounds in the brain and, in particular, the toxicity of guanidines derived from arginine and some related compounds that induce epileptic discharges and convulsions. Guanidines may be generated in excessive concentrations in uremic patients, and cognitive disfunctioning, which is well-known in these patients, may be linked to excess production of guanidines. Possible mechanisms of action of the chemoconvulsant effects of guanidines, including blockade of chloride channels, or the NMDA receptor ion-channel cluster, are discussed in these proceedings.

This book is a suitable addition to a chemical or biological library and well worth perusal, particularly by medicinal

chemists and others with an interest in the fascinating world of guanidines.

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Studies in Organic Chemistry. Volume 46. Biocatalysts in Organic Synthesis. By Ján Halgas. Elsevier Science Publishers B.V., Amsterdam. 1992. xiv + 334 pp. 17 × 24 cm. ISBN 0-444-98698-7. \$180.00.

In recent years drug researchers have become increasingly concerned with the relationship between stereoisomerism and biological activity. The advantages of single isomer drugs can be documented by many examples. The tragic consequences of clinical administration of racemic thalidomide are well-known. The pure enantiomer (*R*)-thalidomide is practically devoid of detrimental side effects whereas the *S* enantiomer is an exceptionally potent teratogen. Thus, preparation of pure enantiomeric forms both in the laboratory and on a commercial scale is a common synthetic objective in the research and development of drugs and other biologically active substances. Further, it is generally of great advantage to be able to synthesize a single isomer rather than to prepare a mixture and then separate it. Stereoselective syntheses can be achieved by starting with pure natural enantiomers or by a stereospecific reaction in the course of synthesis. In the latter case, an auxiliary chiral reagent or a chiral catalyst may be used. Microorganisms, as well as complexes of transition metals with chiral ligands, are a valuable class of chiral catalysts.

In this book the basic characteristics of biocatalytic microbial transformations are reviewed briefly. Major focus is directed toward specific kinds of microbial-catalyzed stereoselective reactions, such as substitution, elimination, addition, oxidation, and reduction reactions. The book contains an excellent list of up-to-date references and a comprehensive subject index.

All chemists concerned with the synthesis of new biologically active compounds will derive a great deal from this book; it will also be a useful adjunct in courses related to organic synthesis and bioorganic chemistry.

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