

**Animal Models for Oral Drug Delivery in Man: In Situ and In Vivo Approaches.**

Edited by WILLIAM CROUTHAMEL and ALLEN C. SARAPU. American Pharmaceutical Association, Academy of Pharmaceutical Sciences, 2215 Constitution Ave. N.W. Washington, DC 20037. 1983. 179 pp. 15.5 X 23.5 cm. Price: \$54.00.

This book is based on the symposium "Animal Models for Drug Absorption in Man" held in September 1980 at the APhA Academy of Pharmaceutical Sciences meeting in San Antonio, Texas. It contains texts from various recognized authorities in the field.

The book is divided into six chapters which discuss the mechanisms of drug absorption and techniques for studying them (Chapters 1 and 2), the use of the dog in new drug development, bioavailability testing and quality control (Chapters 3-5) and the regulatory viewpoint on the use of animals in NDA submissions (Chapter 6). In many respects, however, the most obvious division in the book is between the academic and industrial approaches to studying absorption—a distinction entirely appropriate in a subject that is of intense interest to both sides of pharmaceutical research. The text is well-argued and very readable and the rather unfortunate misspelling of 'gavage' as 'garbage' (Chapter 6) in no way reflects the general high quality of the contents.

The first two chapters (written by G. L. Amidon and N. F. H. Ho *et al.*) are excellent and give a fairly comprehensive description of the theoretical and practical aspects of the subject. The analysis, in Chapter 2, of physiological factors controlling absorption is particularly effective.

The subsequent chapters are in some ways an anticlimax, although they do represent a useful account of industrial experiences with these models in new drug development. There are a number of examples or 'case studies' which readily illustrate the points being made, although the description of compounds in vague terms such as 'anxiolytic-type,' without structures, tends to be a little frustrating. The main criticism of this part of the book is in what it omits rather than what it includes; this may be a result of its origins as a symposium, where time is limited and a subject cannot be covered comprehensively. However, there does seem to be an overriding emphasis on the use of blood level studies in dogs when discussion of other species, such as rat and monkey, would have been of benefit. Other important considerations such as the correlation between *in situ* and *in vivo* absorption data and the crucial issue of interspecies variation in absorption also have not been given the coverage they deserve.

Nevertheless, an authoritative text on this subject is long overdue and this book is both welcome and useful. It will be of particular value to those in the pharmaceutical industry who are involved in drug design and product development. The more interested readers will be stimulated to look into the literature for some of the things the book omits and the excellent sets of references will be a useful guide for this.

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"Size Enlargement Methods and Equipment"; "Mixing of Powders; Storage of Particulate Solids"; "Fluidization Phenomena and Fluidized Bed Technology"; "Spouting of Particulate Solids"; "Transport of Solids in Pipelines"; "Size Reduction of Solids: Crushing and Grinding Equipment"; "Sedimentation"; "Filtration of Solids from Liquid Streams"; "Cyclones"; "Electrostatic Precipitator Applications and Concepts"; "Granular Bed Filters"; "Wet Scrubber Particulate Collection".

Statistical discussion is supported by sample problems, and the validity of the calculations are discussed. Analytical instruments and processing equipment are listed, and methods of selection for specific conditions are discussed in detail. The currentness of the book is exemplified by the modern chapter on morphology of a particle and powder signature. The book contains a wealth of information on the technology of handling, measurement, separation, and use of powders.

This excellent book has an abundance of information not only for those (graduate students) who have little experience in powder technology, but also for the pharmaceutical scientists in production, research and development, and academia.

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**Nucleosides, Nucleotides, and Their Biological Applications.** Edited by JANET L. RIDEOUT, DAVID W. HENRY, AND LOWRIE M. BEACHAM III. Academic Press, 111 Fifth Avenue, New York, NY 10003. 1983. 327 pp. 16 X 24 cm. Price: \$29.50.

The book presents the manuscripts of the 11 plenary lectures given at the Fifth International Round Table on Nucleosides, Nucleotides, and Their Biological Applications, held in Research Triangle Park, North Carolina, October 20-22, 1982. Each lecture is given its own chapter, a list of which includes "Nucleosides with Antiviral Activity", "The Chemistry and Biology of Nucleosides of Purines and Ring Analogs", "Experimental and Clinical Studies on 2'-Fluoroarabinosyl Pyrimidines and Purine-Like C-Nucleosides", "2',5'-Oligoadenylates, Their Role in Interferon Action and Their Potential as Chemotherapeutic Agents", "Receptors for Adenosine and Adenine Nucleotides", "Analogues of 2',5'-Oligoadenylates: Biological Probes for the Antiviral/Antitumor State of Mammalian Cells", "Synthesis of Pyrrolo[2,3-d]Pyrimidine Nucleosides by Phase Transfer Glycosylation and Their Function in Polynucleotides", "The Alkylsilyl Protecting Groups: in Particular, the *t*-Butyldimethylsilyl Group in Nucleoside and Nucleotide Chemistry", "Unusual Nucleoside Synthons and Oligonucleotide Synthesis", "Selective Modification and Deoxygenation at C-2' of Nucleosides", and "Synthesis of Versatile C-Nucleoside Precursors and Certain C-Nucleosides".

While no attempt is made to exhaustively review all the literature in each chapter, general references are provided wherein additional reviews can be found. Each chapter is generally well written with very few typographical and/or structural errors, and all have substantial (albeit not extensive) bibliographies. The index at the end of the volume is quite detailed, including page references for specific compounds. Although the material is now almost two years old, and much new literature has been published, especially in the areas of adenosine receptors and antagonists, novel C-nucleosides, and 2',5'-oligonucleotide synthesis, this reference is nevertheless a valuable source of information on methodology (both chemical and biological) and structural design of nucleoside/nucleotide analogues.

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**Handbook of Powder Science and Technology.** By M. E. FAYED and L. OTTEN, Van Nostrand Reinhold Company, Inc., 135 West 50th Street, New York, NY 10020. 1984. 650 pp. 18 X 26 cm. Price: \$79.50.

This book is intended to be a guide for quick access to a wide range of information on powder science. Actually it is not a handbook, but is a comprehensive text to which 26 authors have contributed their expertise. For a multiauthored book it is very readable.

The book is divided into 19 chapters, which are entitled: "Particle Size Analysis: Theory and Statistical Methods"; "Particle Size Measurement: Experimental Techniques"; "Particulate Characterization: Future Approaches"; "Structural Properties of Packing Particles"; "Fundamental Properties of Powders"; "Vibration of Fine Powders and Its Application";