REVIEWS

Drug Design. Vol. IX. Edited by E. J. ARIENS. Academic, 111 Fifth Ave., New York, NY 10003. 1980. 355 pp. 15 × 23 cm. Price $39.50.

This book is the ninth in the Drug Design series dating back to 1971. This seven-chapter volume emphasizes quantitative methods of structure–activity relationships (SAR) and drug design.

The first chapter by Ariens deals with toxicity considerations on designing candidate molecules with expected biological activity. The processes leading to toxicity are discussed with consideration of SAR. Chapter 2 covers a wide variety of subjects generally centering around physicochemical properties and their relation to biological activity. Some interesting aspects of property–activity relationships are raised, but too great a variety of subjects is covered with the sacrifice of much depth.

Chapter 3 describes recent contributions to orally active prodrugs based on physical–chemical properties. The authors, Yalkowsky and Morozowich, develop these factors systematically and present recent work from their laboratory. Chapter 4, authored by Mager, describes the MASCA model in the first of a two-part presentation. The second part will appear in Volume X. Considerable space is devoted to a development of the mathematics involved with only limited illustration of its application. The two chapters are clearly interdependent and perhaps should have appeared in the same volume.

Chapter 5, by deBlaey and Polderman, is a good description of the design of rectal and vaginal drug delivery forms. In Chapter 6, Meyer reviews interactive graphics, touching on hardware and software data banks with some applications. The last chapter, by Golender and Rozenblit, discusses the logico-structural approach to drug design. The chapter develops the analytical method in a clear and useful manner.

The book will be of particular interest to medicinal chemists engaged in drug design using theoretical methods to analyze and predict activity.

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Official Methods of Analysis of the AOAC, 13th ed. Edited by WILLIAM HORWITZ. The Association of Official Analytical Chemists, 1111 N. 19th St., Arlington, VA 22209. 1980. 1038 pp. 22 × 28 cm. 2.4 kg. Price $78.00.

This, the latest, largest, and most weighty of "Methods," received about 175 new methods and lost 83 during the current 5 years between editions. Page size was increased to maintain the book as a single volume in the interest of convenience and cost. Methods employing GLC now are more numerous than spectrophotometric methods. HPLC makes its first appearance in this edition.

"Methods of Analysis" is a compendium of quantitative and qualitative analytical methods and other procedures used by regulatory agencies in monitoring regulated industries. The methods also are specified in certain government purchase orders. "Methods" has a worldwide distribution.

These methods were tested by collaborative assays and found to satisfy the criteria set by the subcommittee having jurisdiction. In theory, the methods are precise and accurate referee methods suitable for resolving differences of opinion. In practice, the methods are a mixture of the tried and true, recent innovations, the obsolete but barely adequate, the worthless, and methods to be used only when conditions beyond the control of the analyst require them. Nonetheless, the book belongs in the library of any analyst who must do official assays; assays agricultural products; determines efficacy of disinfectants; assays pesticide formulations, foods, food additives, cosmetics, drugs, drugs in animal feeds, vitamins, and amino acids; looks for filth in foods and for microbial contaminants in raw and processed foods; or needs to develop latent fingerprints and make voice print identifications. There is something for everyone from the agricultural chemist to the budding Sherlock Holmes.

When the first edition of "Methods" was published in 1920, the editors could make the valid assumption that it would be used by trained and experienced analysts. Today, that assumption can no longer be made, and presentation of procedures should be modified accordingly. Many people in certain fields are not trained in analytical techniques. Although the editors can do nothing about this misapplication of people, they could provide tutorial material to teach basic techniques. One of the first skills to be taught should be how to select and use volumetric pipets and flasks. This gives an idea of the extent of the needs.

Of particular interest to pharmaceutical scientists are the chapters on disinfectants, flavors, food additives, metals, and other elements as residues in foods, sugars and syrups, color additives, cosmetics, drugs (five chapters), and vitamins and other nutrients.

"Methods" grows with each edition. Vigorous steps need to be taken to keep its size within reasonable limits for a one-volume book and to control its cost. The 68 pages of tables at the back of the book probably could be put on one or two pages as comments and as equations suitable for solution by the ubiquitous digital calculators. Space could be saved by presenting general procedures once and, thereafter, giving only deviations under the specific assay. More information could be placed in tables, and needless instructions could be omitted.

Equations for the wet chemistries would help the analyst understand what he or she is doing. Not everyone who uses "Methods" has a complete file of the *Journal of the Association of Official Analytical Chemists* or other sources of information. The absence of supporting theory gives "Methods" the appearance of a cookbook.

The chapter on drugs in feeds has 56 procedures for extracting a drug from feeds. In 45 of them, solids are included in the total volume of extract, thus causing possible bias.

The section on microbiological assays for antibiotics in animal feed has turbidimetric methods for the first time. The turbidimetric method is manual for chlortetracycline, and an AUTOTURB® System is used for monensin. The latter assay could be improved considerably at no cost of time or money. Also, the AUTOTURB System is not operated to give the accuracy and precision it was designed to give. Even the name of the system is incorrect.

The diffusion assays for antibiotics in feeds, being obsolete both in design and practice, contain possible inherent and easily avoidable errors. At that, the methods may be superior to those in the E.E.C. Possible significant biases in certain diffusion assays, such as those of bacitracin, hygromycin B, and monensin, are not mentioned. Collaborative assays have shown the bacitracin method to be an activity check and not a quantitative assay.

Theory and practice of microbiological assays for vitamins (Chapter 43) have progressed little since the Snell and Strong publication in 1939. Fortunately, accurate assays rarely are needed. Improvement in the quality of methods could come from someone with access to an AUTOTURB System who operates it correctly. Factors that need to be studied are: composition of media, preparation of inocula, time and temperature of incubation, dose–response line, computation of potency, and proper statistical treatment of data. Once these studies have been done, the influence of assay specificity, interferences, and details of sample preparation on accuracy and precision of assays for vitamins and amino acids could be investigated with profit. Microbiological assays, in contrast to chemical methods, have been stagnant too long.

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