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Foreword

This volume is dedicated to the separation techniques of antibiotics, mainly liquid chromatography. As Waksman defined the expression “antibiotic” in 1942, antibiotic structures are of natural origin. Therefore sulfonamides, nitrofurans and quinolones which nowadays are called antibiotics by some authors, strictly spoken are not antibiotics because they are of purely synthetic origin. Since they show antibacterial activity, these synthetic products are more classically called antibacterial agents.

Antibiotics belong to very different chemical classes. The 35 papers of this volume, which have been authored by scientists from all over the world, cover the main groups of antibiotics. The papers treat the analysis of antibiotics at the different stages of their preparation and use. One paper describes the analysis of fermentation liquids used to produce antibiotics. Two describe preparative isolation. Analysis of antibiotics as a bulk substance is the subject of four papers. In one paper LC is used to verify the diffusion properties of antibiotics in agars which are used for microbiological assay. Solid-phase extraction from biomatrices is the subject of another paper. A review paper by Tawa et al. reports on the analysis of aminoglycosides in human plasma. About fifteen papers deal with analytical methods for samples of biological origin (plasma, serum, urine, respiratory secretion) and the use of these methods in pharmacokinetic studies. Another group of about ten papers deals with residue analysis in animal tissues

and food products. A review paper by Callery treats the analysis of milk. A paper by Niessen reviews the combination of liquid chromatography and mass spectrometry. Although mass spectrometry clearly becomes more important as detection mode, most papers still use UV detection or fluorescence after pre- or postcolumn derivatization. Electrochemical detection is applied in some cases. Besides straightforward reversed-phase LC, affinity chromatography and countercurrent chromatography are also employed. Only one paper deals with capillary electrophoresis. Most probably in the near future this powerful technique will be applied more frequently to the analysis of antibiotics.

This volume contains interesting examples of many different aspects and applications of liquid chromatography and other separation techniques of antibiotics. The content of this volume shows that analysis of antibiotics, even of the older ones, is still in progress. New opportunities will be opened by further introduction of capillary electrophoresis and mass spectrometry. New separation methods will continually be needed for the new antibiotics to be developed in the near future to replace the older ones, which are deemed to become ineffectual due to widespread (mis)use and consequent induction of resistance.

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