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Nota di contenuto	Drug-Membrane Interactions; Contents; Preface; Foreword; Introduction; 1 Function, Composition, and Organization of Membranes; 1.1 The Physiology of Cells and the Importance of Membranes for their Function; 1.2 Composition and Organization of Membranes; 1.2.1 Mammalian Membranes; 1.2.2 Bacterial Membranes; 1.2.3 Fungal Membranes; 1.2.4 Artificial Membranes, Liposome Preparation, and Properties; 1.3 Dynamic Molecular Organization of Membranes; 1.3.1 Thermotropic and Lysotropic Mesomorphism of Phospholipids; 1.3.2 Phase Separation and Domain Formation 1.4 Possible Effects of Drugs on Membranes and Effects of Membranes on Drug Molecules References; 2 Octanol-Water Partitioning versus Partitioning into Membranes; References; 3 Analytical Tools for the Analysis and Quantification of Drug-Membrane Interactions; 3.1 High-performance Liquid Chromatography (HPLC); 3.1.1 Determination of the Retention Time on "Artificial Membrane" Columns; 3.2 Displacement of (45)Ca(2+) from Phospholipid Head Groups; 3.2.1 Studies of Drug-Membrane Interactions using Phospholipid

Monolayers; 3.3 Differential Scanning Calorimetry (DSC)
3.3.1 Phase Transition and Domain Formation 3.4 Fluorescence Techniques; 3.5 Fourier Transform Infrared Spectroscopy (FT-IR); 3.6 Electron Spin Resonance (ESR); 3.7 Small-angle Neutron and X-ray Diffraction; 3.8 Nuclear Magnetic Resonance (NMR); 3.8.1 Study of Membrane Polymorphism by (31)P-NMR; 3.8.2 Effect of Cholesterol and Diacylglycerols; 3.8.3 Effect of Drugs; 3.8.3.1 (31)P-NMR for the Study of Changes in Orientation of Phospholipid Head Group; 3.8.4 Determination of Drug Transmembrane Transport; 3.8.5 (1)H-NMR in Combination with Pr(3+) for the Study of Drug Location
3.8.6 The Use of (2)H-NMR and (13)C-NMR to Determine the Degree of Order and the Molecular Dynamics of Membranes 3.8.7 Change in relaxation rate, 1/T2: a Method of Quantifying Drug-Membrane Interaction; 3.8.8 NOE-NMR in the Study of Membrane-induced Changes in Drug Conformation; 3.9 Circular Dichroism (CD); 3.10 UV Spectroscopy; 3.11 Combined Techniques for Studying Drug-Membrane Interaction; 3.11.1 Combination of DSC and NMR; 3.11.2 Combination of DSC and X-ray Diffraction; 3.11.3 Combination of DSC and ESR; 3.11.4 Combination of DSC and Fluorescence; 3.11.5 Combination of FT-IR and NMR
3.11.6 Combination of UV and (2)H-NMR 3.11.7 Combination of DSC, FT-IR, and NMR; 3.12 Summary; References; 4 Drug-Membrane Interaction and Pharmacokinetics of Drugs; 4.1 Drug Transport; 4.1.1 Absorption Models; 4.1.1.1 Caco-2 Cells as an Absorption Model; 4.1.1.2 Parallel Artificial Membrane Permeation Assay (PAMPA); 4.1.1.3 Surface Plasmon Resonance Biosensor Technique; 4.1.1.4 The Use of IAM Columns; 4.1.1.5 Partitioning into Immobilized Liposomes; 4.1.2 Computational Methods, QSAR; 4.2 Drug Distribution; 4.2.1 Distribution into the Brain Compartment
4.2.2 Distribution, Localization, and Orientation of Drugs in Various Tissues and Membranes

Sommario/riassunto

Barrier, reservoir, target site - those are but some of the possible functions of biological lipid membranes in the complex interplay of drugs with the organism. A detailed knowledge of lipid membranes and of the various modes of drug-membrane interaction is therefore the prerequisite for a better understanding of drug action. Many of today's pharmaceuticals are amphiphilic or catamphiphilic, enabling them to interact with biological membranes. Crucial membrane properties are surveyed and techniques to elucidate drug-membrane interactions presented, including computer-aided predictions. Ef

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