

## Lipophilic Drug Transfer Between Liposomal and Biological Membranes: What Does It Mean for Parenteral and Oral Drug Delivery?

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*This review presents the current knowledge on the interaction of lipophilic, poorly water soluble drugs with liposomal and biological membranes. The center of attention will be on drugs having the potential to dissolve in a lipid membrane without perturbing them too much. The degree of interaction is described as solubility of a drug in phospholipid membranes and the kinetics of transfer of a lipophilic drug between membranes. Finally, the consequences of these two factors on the design of lipid-based carriers for oral, as well as parenteral use, for lipophilic drugs and lead selection of oral lipophilic drugs is described. Since liposomes serve as model-membranes for natural membranes, the assessment of lipid solubility and transfer kinetics of lipophilic drug using liposome formulations may additionally have predictive value for bioavailability and biodistribution and the pharmacokinetics of lipophilic drugs after parenteral as well as oral administration.*

**Keywords** lipophilic drugs, liposome drug delivery transfer, membrane solubility, pharmacokinetics, bioavailability

### Introduction

Low water solubility of many (mostly lipophilic) drugs prevent often parenteral and oral administration from being effective. As a rescue, very often solubilizers or formulations with a high dissolution rate are used to deliver the drug efficiently. Even in classical formulation principles, phospholipids are also known to solubilize such drugs.

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