

## **Modelling partitioning of sparingly soluble drugs in a two-phase liquid system**

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### **Abstract**

The aim of this work was to develop a proper mathematical model able to describe the kinetics partitioning of a drug between a polar (water buffer) and an apolar (n-octanol) liquid phase. In particular, attention is focussed on sparingly soluble drugs in one or both environments. Basically, we suppose that drug fluxes occurring between the polar and apolar phase depend also on drug solubility, and not only on both the kinetics constants and the instantaneous drug concentration in the two phases. The proposed model adequately describes the drug partitioning of sparingly water soluble drugs (piroxicam and nimesulide) as proven by the comparison of the predicted and experimental data. Moreover, it indicates the unsuitability of a previous approach (Chem. Pharm. Bull. 29 (1961) 2718) in describing the partitioning kinetics unless sink conditions in both phases are attained, this being difficult to achieve when working with sparingly soluble drugs. Consequently, the model represents a simple and reliable tool to study the drug partitioning kinetics.

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