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Comparison of different mobile phase modifiers according to their suitability for determination of chromatographic lipophilicity parameters

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The hydrophobicity is the main factor deciding about affinity of molecules for biological membranes. This physicochemical property of molecule is measured by the octanol-water distribution coefficient ($P_{o/w}$) defined as the ratio of the concentrations of the solute in the two phases of a saturated 1-octanol-water system. Direct measurement of this constant can be made by the traditional shake-flask method which is time-consuming and limited in range. The alternative methods for experimental measurements of $\log P$ values are the chromatographic techniques basing on partitioning of solutes between two immiscible phases: a stationary and a mobile phase. Several studies suggested the use of chromatographically determined parameters such as $\log k_w$, ϕ_0 , S and even simply isocratic $\log k$ values as a scale of lipophilicity. The main advantages of chromatographic methods are, first of all, good reproducibility of obtained data, a broader lipophilicity range, a small amount of sample which could even contain the impurities or degradation products. The hydrophobicity measurements using reversed-phase high performance chromatography (RP-HPLC) appears to be not perfect mainly due to the activity of residual silanols, influences of the organic solvent, structural diversity of solutes and presence of ionizable groups in the solutes structure. To avoid these problems different surfactants could be added to the mobile phase. In this presentation the homologous series of volatile perfluorinated acids and ionic liquids were applied as mobile phase modifiers in classical and micellar RP-HPLC of substances differing in acid-base properties.

Biography

Jolanta Flieger has completed her Ph.D in 1999 year from Medical University of Lublin. She has published more than 30 papers in reputed journals. She is a member of Polish Chemical Society and Polish Pharmaceutical Society. She works as an Associate Professor in Department of Analytical Chemistry Medical University of Lublin at Pharmacy Division.