

## Application of aqueous biphasic systems composed of ionic liquids and kosmotropic salts in extraction of pharmaceuticals

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Ionic Liquids (ILs) are novel solvents. Thanks to their “eco-friendly” properties they have gained in popularity and are used in many areas of chemical industry. ILs are salts, made exclusively of ions. Typically, IL consists of nitrogen- or phosphorous containing asymmetrical organic cations and large organic or inorganic anions. The physical, chemical and biological properties of ionic liquids can be adjusted by: switching anions or cations, designing specific functionalities constituents into the cations and/ or anions, or mixing two or more simple ionic liquids. These enable selection of the most suitable pair for a specific chemical application. Ionic liquids can be used for separations and extractions of chemicals from aqueous and molecular organic solvents. It has been recently demonstrated that hydrophilic ionic liquids induce formation of aqueous biphasic systems (ABS). This method could be regarded as novel liquid partitioning systems, which appears to be an attractive alternative to conventional extraction methods such as liquid-liquid extraction and solid-phase extraction. These systems consist of water-soluble ionic liquid, which could be thought of as chaotropic salts. Chaotropic solutes increase the entropy of the system by interfering with intramolecular interactions. The addition of kosmotropic salts (water-structuring salts) leads to liquid-liquid de-mixing and finally to the formation of two water-rich immiscible phases where upper phase contains ionic liquid and lower one concentrated salt. Presentation concerns application of ABS in extraction of pharmaceuticals and biogenic compounds differing chemical nature.

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