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# Ionic liquids as hydrotropic solubilizing agents for hydrophobic drugs

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## PURPOSE OF THE ABSTRACT
The therapeutic efficiency of a drug largely depends on its bioavailability, which is directly related to its solubility. Recently, some ionic liquids (ILs) were shown to display a strong ability to enhance the solubility of biomolecules through hydrotropy [1,2]. In this communication, the capability of aqueous IL solutions to solubilize two poorly water-soluble model drugs, namely ibuprofen and naproxen, was demonstrated and a mechanism of solubility enhancement was proposed [2]. The effects of the IL chemical structures and their concentration on the solubility of the hydrophobic drugs were evaluated and compared with the performance of conventional hydrotropes. The results obtained clearly evidence the outstanding ability of ILs to act as hydrotropes for both anti-inflammatory drugs. Furthermore, it was shown that cation and anion may synergistically contribute to the hydrotropic mechanism of solubilization, which makes them powerful catanionic hydrotropes. Using Dynamic Light Scattering and molecular dynamics (MD) simulations, it was possible to infer that the enhanced solubility of drugs in aqueous IL solutions is related to the formation of IL-biomolecule aggregates. These results have a significant impact on the understanding of ILs aqueous solutions as novel solvents with enhanced performance.

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## FIGURES

FIGURE 1

FIGURE 2


## KEYWORDS

Ionic liquids | Tunable hydrotropic agents | Solubility enhancement | Hydrophobic drugs


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