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Redefining Solvent Systems in Pharmaceutical Research: The Role of Deep Eutectic Solvents

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Abstract

Deep eutectic solvents (DESs) represent a rapidly emerging class of green solvents with considerable potential in pharmaceutical science. Composed of hydrogen bond donors and acceptors, DESs are characterized by low volatility, non-flammability, biodegradability, and ease of preparation from readily available, often natural, components. In this presentation, I will explore the application of DESs as sustainable media throughout various stages of pharmaceutical development. Emphasis will be placed on their use as environmentally benign alternatives to conventional organic solvents in key organic transformations relevant to the synthesis of active pharmaceutical ingredients (APIs), as well as in formulation processes within the pharmaceutical industry. Particular attention will be given to natural deep eutectic solvents (NADES) and their growing role in enhancing the solubility and bioavailability of poorly water-soluble drugs. By aligning with the principles of green chemistry and the circular economy, DESs demonstrate exceptional versatility and hold the potential to redefine solvent paradigms in pharmaceutical research and manufacturing.

Keywords: eutectic solvent, environmentally, synthesis, pharmaceutical compound

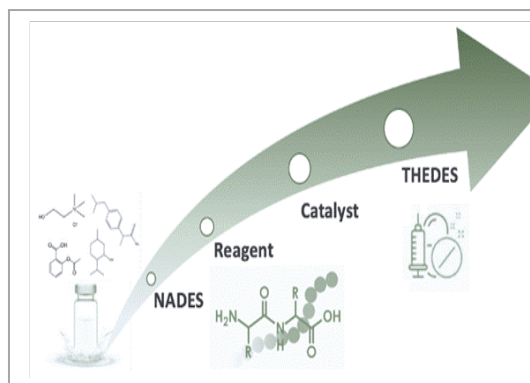


Figure 1. Deep Eutectic Solvents for Pharmaceutical Purposes

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