

Lipase-catalysed Glycerolysis in Ionic Liquids

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Ionic liquids (ILs), emerging as eco-friendly solvents, have many unique properties, such as negligible vapour pressure, good and tunable solvent power, excellent thermal and chemical stabilities, and increased stabilities of enzymes in ILs. These properties provide quite a few new opportunities and possible solutions for many chemical or biochemical processes. As a ubiquitous enzyme, lipase has also been employed as a model enzyme using ILs as reaction media. Being the natural substrates of lipase, fats and oils via enzymatic modification in ILs has not been reported and therefore became the aims of this study. The first system conducted was the rather complicated system of glycerolysis between fats and oils and glycerol, focusing on monoglyceride production. Surprisingly, very high monoglyceride yield can be achieved with very short of time and small dosage of ionic liquids in the system. A number of issues of the system have been systematically studied concerning the possible mechanisms, kinetics, thermodynamics, etc. as well as possible explanations through the calculation with COSMO-RS. The talk will introduce the system and highlight the interesting results from the study.

Literature:

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