

## Lipase-catalyzed synthesis of glucose fatty acid ester using ionic liquids mixtures

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The low solubility of sugars has hampered the lipase-catalyzed synthesis of fatty acid sugar esters in organic solvents and ionic liquids (ILs), because several solvents that are able to effectively dissolve sugars are detrimental to enzymes. In order to prepare a high concentration of sugars in ILs, we have developed a new procedure that entails mixing an aqueous sugar solution into ILs followed by removal of the water from the solution. In this work, lipase-catalyzed synthesis of 6-*O*-lauroyl-D-glucose in ILs mixtures was investigated by using supersaturated glucose solution. Although the activity of Novozym 435 in a 1-butyl-3-methylimidazolium trifluoromethanesulfonate ([Bmim][TfO]) and 1-butyl-3-methylimidazolium bis[(trifluoromethyl)sulfonyl]amide mixture (1:1 v/v) was somewhat lower than that in pure [Bmim][TfO] which showed the highest enzyme activity, the stability of Novozym 435 was significantly increased. Specifically, the activity of Novozym 435 was increased from 1.1 to 2.9  $\mu\text{mol}/\text{min}/\text{g}$  by using supersaturated glucose solution in this mixture, compared with reaction using saturated solution.