

### Lipase-catalyzed Synthesis of Glucose Fatty Acid Ester in Glucose Supersaturated Ionic Liquids Mixtures Using Organic Solvent

신동우, Ngoc Lan Mai, 배상우, 안기현, 하성호<sup>1</sup>, 구윤모\*  
인하대학교; <sup>1</sup>한남대학교  
(ymkoo@inha.ac.kr\*)

Ionic liquids (ILs) are being used as solvents in enzyme reactions because they have various advantages. Since fatty acid sugar esters offer a wide range of commercial applications due to their surfactant properties, synthesis of glucose fatty acid ester is widely used. However, the choice of solvent for the esterifications of sugar is difficult, because one reactant is polar, the other is nonpolar, and the product is amphiphilic. Recently, our group developed a new procedure referred to as 'water-mediated supersaturation' that entails mixing an aqueous sugar solution into ILs followed by water removal. However, this method was only effective to achieve a high solubility of glucose in hydrophilic ILs, not hydrophobic ILs. To solve this, we dissolved glucose in the mixture of water and organic solvent instead of just dissolving glucose in water. Unlike water-mediated method, the use of organic solvent has a greater effect on the preparation of supersaturated glucose solution in hydrophobic ILs. Compared to water-mediated solution glucose was 1.9 times more soluble when using methanol and the yield of glucose fatty acid ester was 1.8 times higher.