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**Enzyme-catalyzed synthesis of sugar esters in glucose-based deep eutectic solvents with high pressure CO<sub>2</sub>****Dong-Woo Shin and Yoon-Mo Koo**  
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Sugar based esters have been widely used as non-toxic, non-ionic and highly biodegradable surfactants in food, medical and cosmetic industries. The conventional chemical or enzymatic synthesis of these esters were carried out in organic solvents with a certain degree of environmental concerns. Various novel solvents such as ionic liquids and supercritical fluids have been investigated for synthesis of sugar esters with an intention of an productivity enhancement. However, these solvents also have obvious limitations such as high price, toxicity and requirement sophisticated facilities. In this study, Deep Eutectic Solvents (DES) derived from choline chloride (ChCl) and various Hydrogen Bond Donors (HBD) were investigated for the lipase-catalyzed synthesis of sugar fatty acid esters. In order to overcome the high viscosity of DES system, high pressure CO<sub>2</sub> was tried as co-solvent for sugar ester synthesis. The results showed that the synthesis productivity in glucose-based DES was higher than that of the conventional solvent due to the enhancement of substrate solubility and lipase activity in DES solvent.

**Biography**

Dong-Woo Shin is currently a PhD student at Department of Biological Engineering, Inha University. His studies focus on the enzyme-catalyzed reactions in ionic liquids, DES and supercritical solvents.

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