

Kinetic Resolution and Selective Extraction of 1-Phenylethyl Acetate in Ionic Liquids/Supercritical CO₂

권민식, 하성호¹, 구윤모*

인하대학교; ¹인하대학교 초정밀생물분리기술연구센터

(ymkoo@inha.ac.kr*)

Ionic liquids (ILs) have characteristic properties such as negligible volatility and nonflammability over a wide temperature range. With these favorable properties, ILs has gained considerable attention as highly promising “green” replacements for conventional hazardous solvents. For lipase-catalyzed kinetic resolution of 1-phenylethanol, highly enhanced selectivity, operational stability, and thermal stability were obtained in some ionic liquids, compared with conventional organic solvents. For the efficient extractive separation of (R)-phenylethyl acetate, its product, ionic liquids/supercritical CO₂ system was investigated. Selective extraction to supercritical CO₂ provides a new approach for the separation of enantiomers. The enhanced selectivities were observed and the best operating condition for the enantioselective extraction of 1-phenylethyl acetate into CO₂ phase in [Edmim][Tf₂N] was found at 40°C and 180bar. Under that condition, high enantiomeric excess and conversion were also obtained. At the operating condition, higher selectivity was also obtained when the system scaled-up.