Extraction of lipids from food waste using deep eutectic solvents

유혜정, 박새롬[1], 양영헌[1], 김형주[1], 이상현[1,†]
건국대학교; [1]건국대학교 생물공학과
(sanghlee@konkuk.ac.kr†)

The progressive increase of food waste causes excess consumption of water and fossil fuels, CO_2 emissions from decomposing food, and contamination of soil and groundwater. On the other hand, food waste can be used as a source of carbohydrate, protein, and lipid. In this work, extraction of lipids from food waste using deep eutectic solvents (DES) was investigated. DES, eutectic mixtures of an ammonium salt and a hydrogen bond donor such as choline chloride and urea, have recently gained great interest as extraction solvent, because of their non-volatility, non-toxicity, and cheap price. Several DES homogenized or dissolved food waste leaving lipids insoluble, and then floated undissolved lipids were easily recovered with n-hexane. The lipids were most efficiently extracted from food waste by using choline chloride and glycerol mixture at a ratio of 1:2. In addition, extracted lipids were highly pure and could be successfully used to produce biodiesel.