

Lipase catalysed synthesis of adipate wax esters in ionic liquid

ABSTRACT

Adipate wax ester shows excellent properties such as its low toxicity, good thermal stability, low volatility and high biodegradability, which made it as a very useful compound and significant to various industrial applications including pharmaceutical, food and coating. Green route organic synthesis via enzymatic synthesis, offers clean and mild reaction conditions provides an opportunity to increase productivity, efficiency and quality output. Considering the industrial importance of the ester, the optimal conditions for upscaling process was performed using Response Surface Methodology (RSM). Ionic liquid of [bmim]PF₆ was used as a solvent in the esterification of different chain length of alcohol with adipic acid, and Novozyme as a biocatalyst. Higher percentage of yield (>80%) was obtained for longer alcohol chain (dioleyl adipate) but slightly lower yields were found for medium alcohol chain than in hexane. Ionic liquid become the major interest as it can recycled and remained the efficiency once compared to conventional organic solvent.

Keyword: Adipate wax ester; Ionic liquid