

Green synthesis of lauryl palmitate via lipase-catalyzed reaction.

ABSTRACT

Enzyme catalysis is most attractive for the synthesis of fine organic compounds, which are difficult to prepare and to handle by conventional means. In this work, green synthesis of lauryl palmitate, a wax ester was successfully carried out by lipase-catalyzed esterification of palmitic acid and lauryl alcohol. In this study, commercial immobilized lipase from *Candida antarctica* (Novozym 435) was used as biocatalyst. The effect of various reaction parameters were optimized to obtain a high yield of wax esters. The optimum condition to produce lauryl palmitate was at reaction time (RT); 10 min, temperature (T); 40°C, amount of enzyme (E); 0.4 g, molar ratio of substrate (N); 2:1 and organic solvents of log P>3.5. The product was then subjected to characterize using Fourier-transform infrared spectroscopy (FT-IR) and Gas chromatography spectroscopy (GC) to ensure the purity of product obtained. Analysis of yield showed that at optimum condition, lauryl palmitate was produced in short time with high purity, >90%.

Keyword: Lauryl palmitate; Immobilized lipase; Esterification; Wax ester; Green synthesis.