

Application of natural kaolin as support for the immobilization of lipase from *Candida rugosa* as biocatalyst for effective esterification

ABSTRACT

Lipase from *Candida rugosa* was immobilized onto natural kaolin by physical adsorption method. About 77% of protein content was immobilized onto the support. The activities of the immobilized lipase were determined by the esterification activities using oleic acid and 1-butanol as substrates and hexane as reaction medium. The effects of reaction temperature, thermostability, stability in organic solvent, leaching and storage studies of immobilized lipase were investigated. Kaolin-immobilized lipase exhibited activities higher by fourfolds than the native lipase after thermal stability test at 70 °C. Immobilized lipase was found to be stable in hexane at room temperature up to 12 days and also showed higher stability than native lipase in the storage study. Leaching studies showed that the immobilized lipase remained full activity even after being washed by 20 ml of solvent. The experimental results showed that physical adsorption is suitable for the attachment of enzyme onto kaolin.

Keyword: Clay; Kaolin; Immobilized enzyme; Lipase; Esterification