

Thesis Title	Activity and Stability of <i>Aspergillus niger</i> Lipase Immobilized on Rice Hull Ash in Isooctane
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Abstract

The hydrolytic activity and thermal stability of lipase from *Aspergillus niger* immobilized on rice hull ash (RHA) in isooctane were investigated. Results showed that the optimum enzyme content of the immobilized enzyme was 10 mg/g RHA and the optimum water content for hydrolytic activity was 10 μ l. The optimum temperature of the immobilized enzyme shifted from 37 °C to 45 °C with respect to the free enzyme. Half-lives of the immobilized enzyme at 37, 45, 50, 55 and 60 °C were 480, 255, 228, 150, and 53 min, respectively.

Kinetic studies of the immobilized enzyme in different organic solvents (octane, heptane, isooctane) compared with buffer solution showed that K_m were 41.13, 33.94, 26.83 and 162.47 mM while V_{max} were 72.22, 74.49, 90.68 and 500.40 μ mole/hr-mg protein, respectively. The percent hydrolysis of palm oil, olive oil and tuna oil by the immobilized enzyme in isooctane at 37 °C, 28 hr were 78.76, 63.18 and 52.67 %, respectively. The fatty acid Docosahexaenoic acid (DHA) content in tuna oil increased from 30.06 % to 43.64 % in 32 hr but Eicosapentaenoic acid (EPA) content was not changed.

Keywords : Activity / *Aspergillus niger* / hydrolysis / kinetics / organic solvent /
Stability