

Immobilization of lipase from *Candida rugosa* on synthetic polymer beads for use in the synthesis of fatty esters

ABSTRACT

Lipase from *Candida rugosa* was immobilized on three different supports, i.e. Amberlite XAD7, poly(methylmethacrylate) (PMMA) and celite. With the conditions tested, maximum adsorption can be achieved after 30 min. The activities of the immobilized lipases were determined by the esterification reaction of oleic acid and butanol. The immobilized lipases were found to be very effective in the esterification reaction. The immobilized activities generally were high in apolar organic solvents with log P values from 2.0 to 4.0. The preference for fatty acids as acyl donors differed in all cases of immobilized lipases. Lipase immobilized on XAD7 and PMMA exhibited high preference of acyl donors (fatty acids) with chain lengths 12-18 and 8-18, respectively. Lipase immobilized on celite, however, showed high activity in all cases of fatty acids. The nucleophile (alcohol) selectivity studies showed that lipase immobilized on XAD7 and celite was more accessible to alcohols of chain lengths 3-12. However, lipase immobilized on PMMA showed a significant preference towards alcohols of chain lengths from 3 to 10.

Keyword: Esterification; Immobilization; Selectivity; Supports