



Catalysis by *Candida antarctica* B (CALB) immobilized on natural pure silica by adsorption: comparison with the free enzyme

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ABSTRACT

Objective: In this work, a lipase B from *Candida antarctica* strain was immobilized onto natural silica carriers via adsorption to enhance its feasibility in practical applications.

Methodology and results: The biocatalyst was prepared by simple adsorption on the support whose composition was beforehand characterized and the activities in ethyl ester hydrolysis and synthesis evaluated. The natural silica carriers were rich in silicon dioxide (SiO₂) (97.36%). The optimum temperature of immobilized lipase was 40 °C, which was identical to that of the free enzyme. The immobilized lipase exhibited a higher relative activity than that of free lipase over 40 °C. The optimal pH for immobilized lipase was 7.5, which was similar to that of the free enzyme. After 10 recycled batches, a high residual esterification conversion (90%) was maintained.

Conclusions and application of findings: The results in the present work indicate that pure silica is a potential material as an immobilization matrix for industrial process. There may have a promising future as support of the biocatalysts in various syntheses.

Key words: Lipase immobilization, adsorption, *Candida Antarctica*, natural silica.