

## Effects of short chain alcohol on *Candida antarctica* Lipase B

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**Keywords:** N435, CALB, organic solvents

### Abstract:

Organic solvents are often used in biocatalysis to enhance substrate solubility, or enzyme stereo, regio- and chemo-selectivity. However, organic solvents can drastically affect enzyme activity and stability by acting as reversible inhibitor or by inducing conformational changes, which trigger denaturation and/or aggregation. Understanding the effect of organic solvents on enzymes is required to design new biocatalytic processes.

*Candida antarctica* lipase B (CALB), whether in its free or immobilized form, is widely used in biotechnology, from biodiesel production to resolution of racemic mixtures, because of its substrate and activity promiscuity.

In this thesis work, we investigate the effects of two short chain alcohols, *i.e.* methanol and ethanol, on the activity and stability on free and immobilized CALB. The effects of alcohols were studied combining biochemical and Fourier transform infrared micro-spectroscopy analyses. Overall, our results suggest that the decrease of activity observed in the presence of high alcohols concentration is due to protein aggregation