Functional expression of *Candida antarctica* lipase B (CalB) in *Escherichia coli*

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Candida antarctica Lipase B (CalB) was functionally expressed in the cytoplasm of *Escherichia coli* Origami(DE3) with the N-terminus fusion of *E. coli* endogenous proteins. The previously-identified stress responsive proteins dramatically increased the solubility of CalB in *E. coli* cytoplasm when used as N-terminus fusion partners. We demonstrated that these stress responsive proteins were powerful solubility enhancers that presumably facilitated the protein folding of CalB. Moreover, one of the fusion mutant showed the highest hydrolytic activity and was as biologically active as standard CalB. Similarly to the previous report, the electrophoretic properties of CalB indicate that CalB seems to form dimer-based oligomer structures. We evaluated the structural compatibility between the fusion partner protein and CalB, which seems to be of crucial importance upon the bioactive dimer formation of CalB and might affect the substrate accessibility to the enzyme active site, thereby determining the biological activities of the fusion mutants.