

Enhancing organic solvent stability of *Candida antarctica* lipase B in hydrophilic solvents

박현준, 박경문¹, 유영제*

Graduate Program in Bioengineering,
Seoul National University;

¹Department of Chemical System Engineering,
Hongik University
(yjyoo@snu.ac.kr*)

The production of biodiesel by enzymatic transesterification has attracted much attention for high purity product and enables easy separation. *Candida antarctica* lipase B is one of the most important enzyme in the biodiesel reaction. In reaction, CALB shows low organic solvent stability while having relation with methanol. In water-miscible solvents, water molecule seems to play an important role in biological structure and function. Water molecules in the enzyme are stripped away or replaced with hydrophilic solvent molecules and this causes deformation and denaturation of the enzyme. Increase of hydrogen bond interaction can make water molecule less strips off and more stable in hydrophilic organic solvents. Hydrogen bond interaction can be increased by shorten the distance of amino acids and water molecule and also increase electrostatic interaction. ASP and ASN was replaced to GLU and GLN of CALB for in silico mutagenesis. *In vitro* experimental data will be displayed.