Highly selective butanol production by disruption of acetoacetate decarboxylase in *Clostridium acetobutylicum*

박종명, 이진영, 장유신, 이상엽*
한국과학기술원
(leesy@kaist.ac.kr*)

Butanol and ethanol have high potential as fuel, but acetone has not. In fermentation of *Clostridium acetobutylicum*, acetone production could make dissipation of carbon source. In this study, metabolic engineering of the acetone forming pathways in *C. acetobutylicum* was performed for highly selective butanol production. Disruption of the adc gene encoding acetoacetate decarboxylase involved in acetone forming pathway was particularly outstanding in selective butanol production. The *adc*-deficient *C. acetobutylicum* strain AdKW was able to produce 113.4 mM butanol with 8.5 mM acetone and ethanol 16.0 mM, resulting in butanol selectivity (a molar ratio of butanol to total solvents) of 0.82, which is much higher than that of the wild-type strain ATCC 824. [This work was supported by the Korea-Australia Collaborative Research Project on the Development of Sucrose-Based Bioprocess Platform (#10030795) from the Korean Ministry of Knowledge Economy. Further support by GS Caltex, BioFuelChem, and the World Class University Program (R32-2009-000-10142-0) of the MEST are appreciated.]