

Development of a Gene Expression System for *Clostridium beijerinckii*

이승환*, 엄경태, 최민정, 강경희, 노 원, 박시재, 송봉근
한국화학연구원
(hwanlee@kriect.re.kr*)

Clostridium beijerinckii is a gram-positive, spore-forming, obligate anaerobic bacterium, which is able to produce solvents acetone, butanol and ethanol by using various sugars. A gene expression reporter system (pCBEst-MTL) for *C. beijerinckii* NCIMB 8052 was developed by using the esterase gene from *Clostridium* as a reporter gene. In order to test the reporter system, promoters of key metabolic pathway genes, *ptb* (coding for phosphotransbutyrylase), *thl* (coding for thiolase), *glnA* (coding for glutamine synthetase) from *C. beijerinckii* NCIMB 8052, were cloned upstream of the reporter gene in pCBEst-MTL to construct plasmids pCBEst-MBP, pCBEst-MBT, and pCBEst-MBG, respectively. Detection of esterase activity performed with strains NCIMB 8052 (pCBEst-MBP), NCIMB 8052 (pCBEst-MBT), and NCIMB 8052 (pCBEst-MBG) demonstrated that each reporter gene expression system produced functional esterase in *C. beijerinckii*.