

Construction of L-threonine overproducer strain by rational metabolic engineering

박종명, 이광호, 박진환, 김태용, 이상엽*
한국과학기술원 생명화학공학과
(leesy@kaist.ac.k*)

Systems metabolic engineering approaches were applied to elucidate crucial factors affecting the biosynthesis of L-threonine in *E.coli*. We first developed the model strain, which can produce L-threonine by introducing targeted genetic modifications into prototrophic *E.coli* W3110. The L-threonine-producing strain was constructed by releasing regulatory mechanisms, such as feedback inhibition and attenuation. This strain also carries point mutations in *ilvA*, and *lysA*, *metA* and *tdh* gene. Next, we carried out comparative transcriptome analysis to identify the effect of L-threonine biosynthesis on the cellular physiology, and also undertook in silico simulation approaches especially to elucidate knock-out and amplification gene targets for the enhancement of L-threonine productivity. [This work was supported by the Korea Science and Engineering Foundation (KOSEF) grant funded by the Korea government (MOST) (No. M10309020000-03B5002-00000). Further supports by LG Chem Chair Professorship, Microsoft and IBM SUR program are appreciated.]