Systems metabolic engineering of *Escherichia coli* for overproduction of diaminopentane

정해나, Zhi-Gang Qian, Xiao-Xia Xia, 이상엽*
KAIST
(leesy@kaist.ac.kr*)

Cadaverine is an important platform chemical having many applications in chemical industry. Here, we report development of a metabolically engineered strain of *Escherichia coli* that overproduces cadaverine in glucose mineral salts medium. We first inactivated cadaverine degradation and utilization pathways. Next, L-lysine decarboxylase, which converts L-lysine directly to cadaverine, was amplified with plasmid-based overexpression of the *cadA* gene under the strong tac promoter. Furthermore, the L-lysine biosynthetic pool was increased by the overexpression of the *dapA* gene encoding dihydrodipicolinate synthase through the replacement of the native promoter with the strong *trc* promoter in the genome. The engineered strain was able to produce 9.61 g/L of cadaverine with a productivity of 0.32 g/L/h by fed-batch cultivation. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012-C1AAA001-2012M1A2A2026556) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea.]