

Optimized putrescine production in *Escherichia coli* by metabolic engineering using synthetic small regulatory RNAs

박선영, 노민호, 이상엽†  
한국과학기술원  
(leesy@kaist.ac.kr†)

Putrescine, 1,4-diaminobutane, is a valuable chemical compound which has high potential to be applied in chemical industry. Especially, putrescine can be polymerized with adipic acid synthesizing nylon-4,6. Like this, biosynthesis of putrescine from renewable sources can substitute chemical compound synthesized from petroleum. Previously, *Escherichia coli* was developed to produce putrescine by knockout and overexpression of genes in constructed pathway. We supposed that this strain can be further improved by using small regulatory RNA system, which is recently developed gene knockdown tool. With this gene regulatory system, we blocked competitive pathway and increased the flux toward target chemical, putrescine. The culture condition was also optimized following the enhanced production rate of putrescine. As a result, the productivity, production yield and titer were all increased significantly. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012M1A2A2026556) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea.]