Construction of an Improved *Escherichia coli* Strain Producing High-titer of Putrescine

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Putrescine is an important diamine for various applications, in particular, for the synthesis nylon-4,6 by condensation with adipic acid. In the present study, we constructed a putrescine-producing *Escherichia coli* strain through systematic genetic engineering. To improve production of putrescine, we use amplification targets by using *in silico* simulation. Among the targets, we selected 5 genes that are more effective than control strain in flask culture. The final engineered *E. coli* strains with single gene overexpression of acnA, acnB, ackA, glk, and ppc produced 1.90 g/L, 1.89 g/L. 2.04 g/L, 2.23 g/L and 2.06 g/L of putrescine in batch cultivation, respectively. Co-overexpression of these five genes led to the enhanced production of putrescine up to 30 g/L in the fed-batch cultivation. [This work was supported by the Technology Development Program to Solve Climate Changes (systems metabolic engineering for biorefineries) from the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea (NRF-2012-C1AAA001-2012M1A2A2026556). Further support by the World Class University Program (R32-2008-000-10142-0) through the National Research Foundation of Korea funded by the MEST is appreciated.]