

Metabolic engineering of *Escherichia coli* for putrescine production: A four carbon diamine

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

Putrescine, also known as 1,4-diaminobutane, is an important nitrogen-containing platform chemical with numerous applications in industry. Particularly, putrescine is currently polycondensed with adipic acid to synthesize nylon-4,6 (Stanyl®, DSM), a superior engineering plastic because of its high melting point and mechanical strength as well as excellent solvent resistance. Current production of putrescine on industrial scale relies mainly on chemical synthesis from petrochemicals under harsh conditions. Here, we show a sustainable bio-based process for putrescine production using metabolically engineered strain of *Escherichia coli*. The final engineered *E. coli* strain was able to produce 1.68 g L⁻¹ of putrescine with a yield of 0.168 g per g glucose in a batch cultivation. Furthermore, high cell density cultivation allowed production of 24.2 g L⁻¹ of putrescine within 32 hour. [This work was supported by the Korean Systems Biology Research Project (20110002149) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea. 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.]