

Corynebacterium glutamicum as a Biofactory for Large-scale Production of Glutaric acid

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There have been increasing industrial demand for C5 platform chemicals, in particular glutaric acid and 5-aminovaleric acid. Glutaric acid is a widely used chemical for various applications, including production of polyurethanes, polyamides. Here we report the development of *Corynebacterium glutamicum* strains overproducing glutaric acid by metabolic engineering of a classical L-lysine producer. Various aspects of gene expression were manipulated for efficient production of glutaric acid. The strain with heterologous expression of *davB* and *davA* from *Pseudomonas putida* ATCC 12633 was constructed. Fed-batch fermentation of the final strain produced 100.2 g/L glutaric acid in 97 hours. This result suggests that C5 platform chemicals can be efficiently produced by metabolically engineered *C. glutamicum* by filling discontinuity in metabolic pathway with powerful foreign operon. This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries from the Ministry of Science and ICT through the National Research Foundation of Korea [NRF-2012M1A2A2026556 and NRF-2012M1A2A2026557]