

**Metabolic engineering for the production of the C<sub>4</sub> platform chemical in *Escherichia coli***

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Owing to environmental problem, limited reserves and rising prices, oil-based industries should be replaced with renewable bio-based industries. Especially, C<sub>4</sub> chemicals such as 1,4-butanediol, gamma-butyrolactone and tetrahydrofuran were very important chemicals in our daily life. In this study, we report development of metabolically engineered *E. coli* strains capable of efficiently producing 4-hydroxybutyrate (4HB), which is an important precursor for the production of various C<sub>4</sub> chemicals. High-titer of 4HB was achieved by deletion of by-product and competing pathways, and amplification of the 4-hydroxybutyrate-synthetic pathway which includes succinyl-CoA synthetase, CoA dependent succinate serialdehyde dehydrogenase, and 4-hydroxybutyrate dehydrogenase. This system can be used for development of bio-based platforms for the production of various C<sub>4</sub> chemicals. [“This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea (NRF-2012-C1AAA001-2012M1A2A2026556).”]