

Metabolic Engineering of production of 1,4-butanediol in *Escherichia coli*

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1,4-butanediol (1,4-BDO) is used industrially as a solvent and a raw material in manufacturing plastics, elastic fibers and films, and has one of the largest markets in the succinic acid derivatives. Recently, the interest has been focused on the bio-based 1,4-BDO production which is more environmental friendly process and can also save a large amount of energy compared to the chemical processes. In this study, the 1,4-BDO producing strain was constructed by introducing new synthetic pathways to *Escherichia coli* which does not naturally produce it. As succinic acid is one of the major fermentative end products in the CO₂-rich atmosphere, the new synthetic route was constructed from succinic acid as a starting metabolic intermediate. This study will also provide a general strategy to produce various succinic acid derivatives by constructing the new synthetic pathways from succinic acid to 1,4-BDO in detail. [This work was supported by the Advanced Biomass R&D Center (ABC) of Korea Grant funded by the Ministry of Education, Science and Technology (2010-0029799). Further support by the World Class University Program (R32-2008-000-10142-0) of the MEST is appreciated.]