

Production of gamma -butyrolactone from the bio -based chemical

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KAIST; ¹KAIST

(leesy@kaist.ac.kr*)

-Butyrolactone (GBL), an important C4 chemical, has a wide range of industrial applications. GBL can be produced by acid treatment of 4-hydroxybutyric acid (4-HB). Heterologous metabolic pathways were designed and established in succinic acid overproducing *M. succiniciproducens* LPK7 by the introduction of heterologous genes that encode succinyl-CoA synthetase, CoA -dependent succinate semialdehyde dehydrogenase, and either 4-hydroxybutyrate dehydrogenase in LPK7 (p3S4CD) or succinate semialdehyde reductase in LPK7 (p3SYCD). Fed -batch cultures of LPK7 (p3S4CD) and LPK7 (p3SYCD) resulted in the production of 6.37 and 6.34 g/L of 4-HB, respectively. Finally, GBL was produced by acid treatment of 4-HB. This study demonstrates that 4-HB and other C4 platform chemicals can be produced by the engineered *M. succiniciproducens*. ["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).]