

Production of gamma-butyrolactone by the acid-treatment of 4-hydroxybutyric acid containing fermentation broth

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$\gamma$ -Butyrolactone (GBL) is an industrially important four carbon chemical. GBL can be produced by acid treatment of 4-hydroxybutyric acid (4-HB), a derivative of succinic acid. Metabolic pathways were established in succinic acid overproducing *M. succiniciproducens* LPK7 by introducing 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 the 4-HB obtained from the fermentation broth. [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).]