

Microbial production of poly (3-hydroxybutyrate-*co*-3-hydroxyvalerate) by metabolic engineering

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Polyhydroxyalkanoates(PHAs) are polyesters accumulated in many bacteria. Among lots of PHAs, poly(3-hydroxybutyrate-*co*-3-hydroxyvalerate) [P(3HB-*co*-3HV)] is one of the important copolymer because of lower melting point and flexibility compared to P(3HB). So far, for the production of P(3HB-*co*-3HV), adding of second auxiliary carbon source was needed. However, due to the toxicity of auxiliary carbon source, it is very hard to maintain the balance between cell growth and P(3HB-*co*-3HV) production. Thus, we developed the *E. coli* can stably synthesize 3HB-CoA and 3HV-CoA in controlled ratio from glucose without feeding of exogenous auxiliary carbon source by metabolic engineering. This engineered strain can efficiently synthesize P(3HB-*co*-3HV) independent with exogenous auxiliary carbon source. "This work was supported by the Technology Development Program to Solve Climate Changes from National Research Foundation of Korea (Development of systems metabolic engineering platform technologies for biorefineries; NRF-2012-C1AAA001-2012M1A2A2026556) and Intelligent Synthetic Biology Center (2011-0031963) of Korea through the Global Frontier Research Program of the Ministry of Education, Science and Technology (MEST)."