

Production of poly(3-hydroxybutyrate) from wood hydrolyzate using recombinant *Escherichia coli* expressing response regulator *dr1558*

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In this study, we confirmed the increase in PHB production in recombinant *Escherichia coli* due to overexpression of the response regulator *dr1558* gene in MR medium containing wood hydrolyzate. Recombinant *E. coli* in the medium containing wood hydrolyzate had low cell concentration and PHB content, but the cell concentration increased by 10% or more and PHB concentration by 70% or more by expression of *dr1558*. As a result of transcriptome analysis, it was confirmed that overexpression of *dr1558* increased the expression of TCA cycle-related genes and PHB biosynthetic genes. The results of this study are thought to be useful for the fermentation production technology of biodegradable polymer PHB and other biological materials using low-cost wood hydrolysates. In addition, the *dr1558*-expressing recombinant *E. coli* produced in this study is thought to be applicable to various fields such as the production of organic acids and the production of GABA using *cadA* having activity at low pH, and it is considered that it can be industrialized.