Enhanced production of gamm-aminobutyrate (GABA) in Corynebcterium glutamicum



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Gamma -aminobutyrate (GABA) is one of the important biomolecules used in foods and pharmaceutical products. In this work, we engineered Corynebacterium glutamicum for the enhanced production of GABA. As one essential protein for biosynthesis of GABA, the glutamate decarboxylase (GAD) of Escherichia coli need to be produced in C. glutamicum, but instead of native GAD which is active at low pH (pH =4), we employed the engineered GAD which has a broad pH range (up to pH 7) for biological activity. For the higher gene expression, we optimized the gene expression system with synthetic promoters, and we also optimized culture conditions including pH and biotin concentration in the medium Finally, fed-batch cultures were performed in lab-scale bioreactor (5 L), and under the optimized condition, significant amount of GABA could be produced in 72 hr cultivation.