

Efficient bioconversion of GABA (γ -aminobutyric acid) using recombinant *Escherichia coli* strains

이혜룡, 홍순호*
울산대학교
(tempest85@naver.com*)

GABA, or gamma-Aminobutyric acid is a non-essential amino acid and a precursor of pyrrolidone, a monomer of nylon 4. GABA can be biosynthesized through the decarboxylation of L-glutamate by glutamate decarboxylase. In this study, the effects of glutamate decarboxylase (*gadA*, *gadB*), glutamate/GABA antiporter (*gadC*) and GABA aminotransferase (*gabT*) on GABA production were investigated in *Escherichia coli*. Glutamate decarboxylase was overexpressed alone or with the glutamate/GABA antiporter to enhance GABA synthesis. GABA aminotransferase, which redirects GABA into the TCA cycle, was knock-out mutated. When *gadB* and *gadC* were co-overexpressed in the *gabT* mutant strain, a final GABA concentration of 5.47 g/l was obtained from 10 g/l of monosodium glutamate (MSG), which corresponded to a GABA yield of 89.7%.

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