**PRODUCTION OF 5-AMINOLEVULINIC ACID IN ESCHERICHIA COLI BY OVEREXPRESSING PUTATIVE AMINOLEVULINIC ACID SYNTHASE OF STREPTOMYCES NODOSUS ASUKAENSIS**

Chang Joon Kim, Van Thi Nguyen and Sung Bae Kim  
Engineering Research Institute (ERI)-Gyeongsang National University, Republic of Korea

The 5-aminolevulinic acid (ALA) has medical application for cancer and tumor diagnosis. The production of ALA using recombinant Escherichia coli (E. coli) has been previously studied, in which the hemA gene from Rhodobacter spaeroides or Bradyrhizobium japonicum was expressed. Recently, bioinformatic studies with complementary experiments revealed that the asuD2 gene located in asukamycin biosynthetic gene cluster of Streptomyces nodosus asukaensis, encoded aminolevulinic acid synthase. This study aimed to elucidate the putative function of asuD2 and then produce ALA in E. coli by overexpressing this gene. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) was performed to examine asuD2 expression in the recombinant E.coli. Thin layer chromatography (TLC) and mass spectroscopic analysis showed that crude enzyme of asuD2 catalyzes the synthesis of ALA by condensation reaction between glycine and succinyl CoA. Recombinant E.coli cells expressing asuD2 were cultured in M9 medium at 28 °C. The effects of expression vector and induction conditions were investigated. The effect of glycine, succinic acid, and medium components were examined. In bioreactor cultures, cell growth and production were monitored.

cj_kim@gnu.ac.kr

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