

**$\beta$ -carotene production of recombinant *Escherichia coli* with engineered whole mevalonate or non-mevalonate pathway in batch cultures at different temperatures**

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$\beta$ -carotene (C40) functions as a provitamin A, rendering it as functional a food or cosmetics. Recently, recombinant *Escherichia coli* engineered to contain the whole mevalonate (MVA) pathway as well as foreign genes for  $\beta$ -carotene biosynthesis was developed for production of  $\beta$ -carotene in our group.

In this study, we compared the  $\beta$ -carotene producing capacity of *E. coli* strains harboring the foreign whole MVN pathway with the ones engineered with non-mevalonate pathway (MEP) at different temperatures (37°C and 25°C) in bioreactor culture controlled at neutral pH. Maximum  $\beta$ -carotene production was observed in MVA pathway engineered strain at 37°C (119 mg/L), while the lowest productivity was found from MEP pathway engineered strain at 25°C (46.7 mg/L). In addition, acetate byproduct formation was kept at very low concentration in foreign MVA engineered *E. coli* at both temperatures compared to the one formed from the non-MVA pathway harboring *E. coli*.