

Succinic Acid Production by Recombinant *Mannheimia succiniciproducens* with Overexpressed Fumarase

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Mannheimia succiniciproducens MBEL55E has been known as a very promising succinic acid producer, because it produces a large amount of succinic acid using various carbon sources. A fumarase catalyzes malic acid to fumaric acid, which is a precursor of succinic acid. Therefore, a *fumC* gene, encoding fumarase, in *M. succiniciproducens* MBEL55E was overexpressed to increase succinic acid production by accelerating fumaric acid formation as well as preventing the accumulation of malic acid in the culture broth. The batch fermentation was performed using a complex medium containing glucose, as a carbon source, in a 5-L reactor under an anaerobic condition. A recombinant strain dramatically reduced the concentration of malic acid, but no fumarate was observed. The overexpression of *fumC* gene was confirmed by measuring its enzyme activity, and it was above 2 times higher than that of the wild type. These results suggest that the production of succinic acid can be enhanced by a genetic manipulation of *M. succiniciproducens* MBEL55E.

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