

Succinic Acid Production using *Mannheimia succiniciproducens* MBEL55E in Anaerobic Batch and Fed-batch Fermentations

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Succinic acid has been mainly used as a flavoring agent for food and beverages, and also it can be used as an intermediate for industrially very important chemicals including n-methylpyrrolidone, 1,4-butanediol, γ -butyrolactone, adipic acid, tetrahydrofuran and linear aliphatic esters. *Mannheimia succiniciproducens* MBEL55E isolated from Korean bovine rumen produces a large amount of succinic acid under anaerobic conditions. Anaerobic batch and fed-batch fermentations were performed at various concentrations of glucose ranging from 2.5 to 60 g/L in a 5-L reactor. The anaerobic condition in the reactor was maintained by flushing with CO₂ during the entire period of the fermentation. CO₂ supplementation can enhance the production of succinic acid because CO₂-fixation reactions occur for the conversion of phosphoenolpyruvate and pyruvate to oxaloacetate and malate, respectively. This study suggests that succinic acid can be produced efficiently using glucose as a carbon source by an anaerobic fed-batch culture of *M. succiniciproducens* MBEL55E. Furthermore, this work shed light on the development of a process optimization for microbial succinic acid production.

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