

Assessment of metabolic engineering and novel downstream process in succinic acid recovery from fermentation broth

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In this work, we present a simpler and more efficient succinic acid recovery method in which only single reactive extraction was applied to the fermentation broth produced by a genetically engineered *Mannheimia succiniciproducens* strain (LPK7). The LPK7 strain enabled us to obtain highly purified succinic acid (more than 99.5% purity, weight percentage) at a yield rate of 67.05% (weight rate) using a novel downstream process, which consisted of single reactive extraction, vacuum distillation, and crystallization. On the other hand, the downstream process using the fermentation broth produced by the MBEL55E strain could not recover succinic acid having similar purity levels and yield rates to those of the LPK7 strain fermentation broth; even when multiple reactive extractions were performed. [This work was supported by the Korea Science and Engineering Foundation (KOSEF) grant funded by the Korea government (MOST) (No. 2005-01294). Further supports by the LG Chem Chair Professorship, IBM SUR program, Microsoft, and by the KOSEF through the Center for Ultramicrochemical Process Systems are appreciated.]