

Production of succinic acid from renewable resources

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Succinic acid is a four-carbon dicarboxylic acid synthesized as an intermediate of the tricarboxylic acid (TCA) cycle and also as one of the mixed-acid fermentation products. It has many applications in food, agricultural, pharmaceutical, and cosmetic industries. Succinic acid has mostly been petrochemically synthesized, but its fermentative production has become of great interest. Some anaerobic bacteria produce succinic acid as a major fermentation product of their metabolism, but concomitant production of metabolic by-products is problematic. We isolated *Mannheimia succiniciproducens* MBEL55E, a gram-negative capnophilic succinic acid-producing bacterium, from bovine rumen. We recently reported the full genome sequence of *M. succiniciproducens* and in silico genome-scale metabolic characterization. Here I report the results obtained by metabolic engineering of *M. succiniciproducens* based on genome-scale metabolic characteristics towards enhanced succinic acid production. [This work was supported by Genome to Bioprocess project from the MOST. Further supports by LG Chem Chair Professorship and BK21 program are appreciated.]