Analyses of key enzyme activities related in producing succinic acid in Mannheimia Succiniciproducens MBEL55E

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Mannheimia succiniciproducens MBEL55E, a capnophilic rumen bacterium, produces succinic acid in high concentrations as a fermentation end product under anaerobic conditions. M. succiniciproducens uses anaplerotic pathway to produce succinic acid. In the beginning of the anaplerotic pathway, two Enzymes, phosphoenolpyruvate carboxylase(Ppc) and phosphoenolpyruvate kinase(PckA), take part in the reaction. They convert phosphoenolpyruvate to oxaloacetate. We analysed activation of both enzymes to elucidate the roles in the production of succinic acid. We can find that PckA is much stronger than Ppc in M.succiniciproducens, suggesting that PckA is a very important enzyme for producing succinic acid. [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.]