

Acetate conversion to succinate by electrochemically active strain, *Pseudomonas putida*

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Succinate is a platform chemical for synthesis of bio-based plastics, solvents, adhesives, and resins. Succinate can be produced by fermentation using reductive TCA pathway. In this study, we attempted to convert acetate, which is a final product of natural anoxic biodegradation, to succinate using an industrially applicable strain, *Pseudomonas putida*. To modified TCA cycle, various genetic engineering techniques were applied such as acetyl-CoA synthetase overexpression and succinate dehydrogenase deletion. The utilization of acetate as a carbon source can reduce cost for the cultivation media and being non-fermentative bacteria, *P. putida* reduces downstream processing costs too. This study provides a platform to produce bio-succinic acid from refractory simple carbon such as acetate.