

Enhancement of hexanoic acid production by *Caproiciproducens galactitolivorans* using a cathode as supplementary electron donor

강성철, 전병승, 전재성, 최옥경, 이태호, 상병인[†]

한양대학교 화학공학과

(biosang@hanyang.ac.kr[†])

The electron transfer from a cathode to microbes enhances the production of valuable chemicals by increasing reducing power such as NADH. Here, we investigated whether electron reducing equivalents supplied from the cathode increase the hexanoic acid production by *Caproiciproducens galactitolivorans* from galactitol as a carbon source. Three mediators like methyl viologen, neutral red, and anthraquinone were evaluated for electron transfer activity at various concentrations. When 0.1 mM neutral red was added at -550 mV vs. Ag/AgCl, both cell growth and hexanoic acid production were increased and the productivity of hexanoic acid increased about 25% compared to control. Interestingly, NADH/NAD⁺ ratio and ATP level were also higher than the condition without electricity. The results showed the reducing equivalent using electricity led the enhancement of hexanoic acid production through increasing NADH/ NAD⁺.