

Bio-H₂ production via formate decomposition

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Recently, there has been growing interest in biological hydrogen production which is found to be an environment-friendly method. Biological process occurs at ambient temperature and pressure. Moreover, the reaction obviates production of CO which absorbs on the catalytic site where an electrochemical reaction occurs in fuel cell. In this study, we examined behavior of *Enterobacter asburiae* SNU-1 under various culture conditions for hydrogen production. Hydrogen production phase of this isolate was surely decoupled from the growth phase. The hydrogen production in stationary phase occurs through formate decomposition by formate hydrogen lyase (FHL). Thereby, we carried out hydrogen production from formate decomposition after the cell harvest. Important factors which affect on hydrogen productivity were investigated including pH, temperature, the concentration of initial formate. We carried out optimization of conditions of hydrogen production with formate as substrate. This method has the potential to enable the construction of bio-reformer for PEMFC.