Hydrogen Production in the Recombinant *Escherichia coli* Harboring NADH-Dependent Hydrogenase Gene from *Enterobactor cloacae*

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Biological hydrogen production has been considered as one of the most promising environmentally friendly process compared to other chemical process due to the use of natural resources. Among two biological processes, i.e., photolysis and dark fermentation, hydrogen production using renewable resource is more adequate for mass production. The yield per glucose, however, still remains around 3 mol H_2/mol glucose which is only 25 % of theoretical maximum yield (12 mol H_2/mol glucose). The elevation of yield more than 6 mol H2/mol glucose should be essential by metabolic engineering for commercialization of biological hydrogen production process. Although *E. coli* is the most useful organism as a target for metabolic engineering, lack of NADH-dependent hydrogenase is the major hurdle for engineering. Unlike other most hydrogenases, hydrogenase from *Enterobacter cloacase* displays full activities only with single polypeptide. In this study, we developed the recombinant *E. coli* with hydrogenase from *E. cloacae* showing the potential of metabolic engineering on biological hydrogen production.