

Hydrogen production metabolism in *Enterobacter* sp. SNU-1453

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Biological hydrogen production processes are found to be environment-friendly. Bio-hydrogen is produced by photosynthetic or fermentative bacteria. Therefore, biological H₂ production with anaerobic bacteria (*Enterobacter* and *Clostridium* etc.) has been reported. In this study, the hydrogen producing bacterium was isolated from several domestic landfill areas and identified as *Enterobacter* sp. SNU-1453. Important parameters were investigated including pH, the concentration of initial glucose, and the concentration of initial yeast extract. The medium pH rapidly decreased from 7.13 to 5.69 during exponential phase; this must be due to the accumulation of organic acids. However the medium pH increased from 5.69 to 6.62 during stationary phase; this may be due to metabolic shift. The hydrogen production started when cell growth entered early exponential phase and reached maximum production rate at the stationary phase.

The hydrogen production continued for a long time even after the stationary phase. This microorganism produced more hydrogen at stationary phase than at exponential phase. This is most likely due to shift metabolic flux from other pathways to hydrogen formation pathway at stationary phase.

Reference

1. Das D, Veziroglu TN. Hydrogen production by biological processes: a survey of literature (2001). *Int J Hydrogen Energy*. 26, 13-28.