

Comparison of fermentative hydrogen production with various strains

설은희, 김서형, 박성훈^{1,*}
부산대학교 화학공학과; ¹부산대학교
(parksh@pusan.ac.kr*)

H₂ production was compared by using the four different microorganisms. In batch fermentation by growing cells, effects of temperature and formate addition were studied and specific H₂ production activity was measured by resting cells. Relatively higher temperature was required for H₂ production and cell growth by E. coli K12 and E. coli DJT135 than C. ammalonaticus Y19 and E. aerogene. In the batch fermentation, genetic modified Escherichia coli DJT135 and E. aerogene showed a little higher H₂ production yield (1.81~1.89 mol H₂/mol glucose) than Citrobacter ammalonaticus Y19 and E. coli K12 (1.72 ~ 1.76 mol H₂/mol glucose). Specific H₂ production activity from formate under the various temperature and pH conditions by resting cells was measured. Maximum specific H₂ production activity of Y19, K12, DJT135 and E. aerogene were 1.21, 0.70, 1.14 and 0.94 mmol H₂/g cell•min, respectively. Relatively, E. coli DJT135 exhibited higher H₂ production yield and specific activity than others. And Y19 showed the highest maximum specific H₂ production activity even though a little low H₂ yield.