

Enhanced bioethanol production by media optimization of *Enterobacter aerogenes* under micro-aerobic condition

이주훈, 김동섭, 이수권, 김찬겸, 양지현, 김승욱[†]

고려대학교

(Kimsw@korea.ac.kr[†])

In our previous study, bioethanol production from glycerol was carried out by *Enterobacter aerogenes* ATCC 29007 under micro-aerobic culture condition. A casein hydrolysate which is a nutrient source for cultivation medium was affected in cell growth of *Enterobacter*. Also, the ethanol production was enhanced, thus the identification of *alcohol dehydrogenase* (adhE) by gene expression level was performed.

In this study, significant variables (glycerol, peptone, ammonium sulfate and casein hydrolysate) of cultivation media were optimized by response surface method (RSM). The optimized values were as follows: 37 g/L glycerol, 9 g/L peptone, 5.9 g/L ammonium sulfate and 14.12 g/L casein hydrolysate. The coefficient of determination (R²) of the conversion rate model was excellent at 0.926, while the coefficient of variation (CV) was 18.96%. The cultivation conditions were performed at initial pH of 6, 37°C, and 180 rpm for 24 h. The predicted value of bioethanol was 14.8 g/L by the regression model; meanwhile the experimental value was 16.5 g/L. This verification indicated that the model has a high degree of accuracy about 90%.