

Optimization of media for enhanced ethanol production by *Enterobacter aerogenes* ATCC 29007

이주훈, 이상준, 유하영, 이자현, 최한석, 김동섭, 박찬호,
이수권, 김승욱[†]
고려대학교
(kimsw@korea.ac.kr[†])

A remarkable increase of biodiesel production has been shown, recently. Also, crude glycerol which is a by-product of the biodiesel was rapidly increased.

The previous work indicated that additional casein hydrolysate of media effectively enhanced ethanol production which was proved by expression level of *alcohol dehydrogenase* (*adhE*). Three-dimensional(3D) plots for all related factors were also indicated from partial differentiation. Three-dimensional(3D) mesh plots of the results were analyzed using Response Surface Methodology (RSM). The F value and P value were 13.53 and 0.0001, respectively. The coefficient of determination (R^2) of the conversion rate model was excellent at 0.926, while the coefficient of variation (CV) was 18.96%. The major factors for RSM with the optimized values were as follows: 8.99 g/L peptone, 5.97 g/L (NH₄)SO₂, 13.92 g/L casein hydrolysate and 37 g/L glycerol. The conditions of fermentation were performed at initial pH of 6 and 37 °C, 180 rpm for 24 h. Finally, the ethanol concentration was about 0.89 yield under optimized conditions.