

**Inhibitory effect of lignocellulosic hydrolysates on ethanol production by *Saccharomyces cerevisiae***

이하원, 이도훈<sup>1</sup>, 조진구<sup>1</sup>, 김상용<sup>1</sup>, 박철환\*  
광운대학교 화학공학과; <sup>1</sup>한국생산기술연구원 그린공정연구부  
(chpark@kw.ac.kr\*)

In the ethanol production using lignocellulos, pretreatment of lignocellulosic materials to make the fermentable sugars is required. During pretreatment process, various toxic compounds, which can inhibit ethanol production, are formed. In this study, the performance of *Saccharomyces cerevisiae* in the medium including model compounds (acetic acid, furfural, 5-hydroxymethylfurfural (5-HMF), syringaldehyde, and coumaric acid) as well as in lignocellulosic hydrolysates (yellow poplar, waste wood and rice hull hydrolysates) was investigated. The cell growth was inhibited with the increase of acetic acid concentration but acetic acid showed no significant inhibitory effect on ethanol production. Furfural and 5-HMF considerably decreased cell growth and ethanol production rate but not ethanol yield. Syringaldehyde and coumaric acid displayed a high inhibition on *S. cerevisiae*. In the 5 g/L syringaldehyde and coumaric acid, the relative ethanol production decreased to 2% comparison to the reference culture. In the case of fermentation of hydrolysates, synergetic effects of multiple inhibitory compounds were not considerable.