

Effect of fermentation inhibitors in the presence and absence of activated charcoal on the growth of *Saccharomyces cerevisiae*

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The goal of the present study was to determine the effects of fermentation inhibitors on growth and glucose consumption by *Saccharomyces cerevisiae*. We also conducted in situ adsorption during cell cultivation in synthetic broth containing fermentation inhibitors. In order to evaluate the effect of in situ adsorption on cell growth, 5 inhibitors, namely, 5-hydroxymethylfurfural (5-HMF), levulinic acid, furfural, formic acid, and acetic acid, were introduced into synthetic broth. The presence of inhibitors of fermentation during cell culture of *S. cerevisiae* poses hindrances such as the inhibition of cell growth and sugar consumption. The in situ adsorption (in situ detoxification) achieved by the addition of activated charcoal in the synthetic broth in the presence of a fermentation inhibitor enhanced the cell growth and sugar consumption. As a result, detoxification by in situ adsorption may be a useful tool for treating hydrolysates for biofuel production in the presence of toxic compounds.