

## Kinetic Modeling of Biobutanol Fermentation using Glucose and Xylose

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Due to the toxicity of butanol, high concentration level of butanol in fermentation broth inhibits the cell growth and the production resulting in low productivity, which is one of the major hurdles for commercialization of acetone-butanol-ethanol (ABE) fermentation. In our previous work, we suggested the integrated system of a fermenter and adsorption columns to continue the ABE fermentation without the inhibitory effect of butanol, and the substrate is only glucose. However, an actual hydrolysate of lignocellulosic biomass contains xylose as well as glucose so we need to consider the fermentation using both glucose and xylose to improve commercial viability of the system. The target strain consumes glucose and xylose simultaneously but general models for the diauxic growth can't describe and predict the simultaneous uptake of glucose and xylose. In this study, we propose the kinetic model for the ABE fermentation using xylose concurrently with glucose. The kinetic modeling is conducted through the following two steps: 1) development of kinetic model of the fermentation using only glucose 2) development of kinetic model of the fermentation using both glucose and xylose.