

Accepted Manuscript

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PII: S0960-8524(16)30515-6

DOI: <http://dx.doi.org/10.1016/j.biortech.2016.04.028>

Reference: BITE 16387

To appear in: *Bioresource Technology*

Received Date: 17 February 2016

Revised Date: 5 April 2016

Accepted Date: 6 April 2016

Please cite this article as: Zhu, C., Fang, B., Wang, S., Effects of culture conditions on the kinetic behavior of 1,3-propanediol fermentation by *Clostridium butyricum* with a kinetic model, *Bioresource Technology* (2016), doi: <http://dx.doi.org/10.1016/j.biortech.2016.04.028>

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**Effects of culture conditions on the kinetic behavior of 1,3-propanediol
fermentation by *Clostridium butyricum* with a kinetic model**

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Abstract: The effects of culture conditions on the kinetic behavior of 1,3-propanediol (PD) fermentation were investigated with a kinetic model. First, with initial glycerol concentration (S_0) increasing, μ_{\max} and PD inhibition increased. Glycerol assimilation was harder and a little glycerol was consumed on cell maintenance at high S_0 . Second, with yeast extract concentration increasing, PD inhibition decreased. However, μ_{\max} decreased and glycerol assimilation became harder. It seems that the stimulus effect of

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