The Adsorption Properties of Endoglucanase to Lignin and their Impact on Hydrolysis

Xianqin Lu, Xiaoting Feng, Xuezhi Li, Jian Zhao

PII: S0960-8524(18)30810-1
DOI: https://doi.org/10.1016/j.biortech.2018.06.031
Reference: BITE 20048

To appear in: *Bioresource Technology*

Received Date: 28 April 2018
Revised Date: 10 June 2018
Accepted Date: 12 June 2018

Please cite this article as: Lu, X., Feng, X., Li, X., Zhao, J., The Adsorption Properties of Endoglucanase to Lignin and their Impact on Hydrolysis, *Bioresource Technology* (2018), doi: https://doi.org/10.1016/j.biortech.2018.06.031

The Adsorption Properties of Endoglucanase to Lignin and their Impact on Hydrolysis

*Xianqin Lu, XiaotingFeng, Xuezhi Li, Jian Zhao**

State Key Laboratory of Microbial Technology, Shandong University, No.72, Binhai Road, Qingdao，266237, P.R. China

* Corresponding author: Jian Zhao

Tel.: +86-531-88364690

E-mail: zhaojian@sdu.edu.cn

Abstract

Nonproductive adsorption of cellulase to lignin dramatically influenced the hydrolysis efficiency of lignocellulose. By comparing the adsorption behaviors of CBH and EG, we found that the adsorption of EG to lignin showed lower adsorption velocity and capacity versus CBH. During the adsorption of EG to lignin, carbohydrate binding domain (CBM) and catalytic domain (CD) both played an important role by a two-step adsorption process, in which CD slowly bond on lignin and developed stronger interaction with lignin. The optimal binding position of EG on lignin was consistent with that on polysaccharide located in the open catalytic tunnel. So, the adsorption of EG to lignin not only limited the movement of enzyme, but also restricted the catalytic ability of enzyme, which dramatically influenced enzymatic