

Accepted Manuscript

Effect of lignocellulosic composition and structure on the bioethanol production from different poplar lines

Xiaojian Duan, Changbo Zhang, Xuehai Ju, Qiongcui Li, Shouyi Chen, Jingan Wang, Zhongqi Liu

PII: S0960-8524(13)00725-6

DOI: <http://dx.doi.org/10.1016/j.biortech.2013.04.101>

Reference: BITE 11761

To appear in: *Bioresource Technology*

Received Date: 26 March 2013

Revised Date: 24 April 2013

Accepted Date: 25 April 2013

Please cite this article as: Duan, X., Zhang, C., Ju, X., Li, Q., Chen, S., Wang, J., Liu, Z., Effect of lignocellulosic composition and structure on the bioethanol production from different poplar lines, *Bioresource Technology* (2013), doi: <http://dx.doi.org/10.1016/j.biortech.2013.04.101>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Effect of lignocellulosic composition and structure on the bioethanol
production from different poplar lines

Xiaojian Duan^{a,b}, Changbo Zhang^a, Xuehai Ju^a, Qiongcui Li^{a,b}, Shouyi Chen^c, Jingan Wang^b,
Zhongqi Liu^{a,*}

^a*Agro-Environmental Protection Institute, Ministry of Agriculture, P.R. China, Tianjin 300191,
China*

^b*College of Life Sciences, Tianjin Normal University, Tianjin, 300384, China*

^c*Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing,
100101, China*

*Correspondence concerning this article should be addressed to Zhongqi Liu at
zqliu733@yahoo.com.cn

Abstract

Branches from 3 transgenic poplar lines and their wild type line 107 were used to study the effect of lignocellulosic composition and structure on the production of glucose and ethanol. Experimental results showed that the transgenic line 18-1 had the high cellulose content and amorphous fibril structure. After poplar meals were pretreated with 10% NaOH and a mixture of hydrogen peroxide and acetic acid, their lateral order index decreased significantly. The highest glucose yield in enzymatic hydrolysis and ethanol yield from the substrate of 18-1 was much higher than that from feedstock of 107 by 192.7% and 108.7%, respectively. Scanning electron microscopy images confirmed that lignocellulose from the 18-1 could be destroyed by chemicals more easily than those from other lines. These results demonstrated that changing lignocellulose structure could be more effective on improving the digestibility and enzymatic hydrolysis of poplar biomass than increasing the

Download English Version:

<https://daneshyari.com/en/article/7082067>

Download Persian Version:

<https://daneshyari.com/article/7082067>

[Daneshyari.com](https://daneshyari.com)