

Accepted Manuscript

Title: Detoxification of sugarcane-derived hemicellulosic hydrolysate using a lactic acid producing strain

Authors: Regiane Alves de Oliveira, Carlos Eduardo Vaz Rossell, Joachim Venus, Sarita Cândida Rabelo, Rubens Maciel Filho



PII: S0168-1656(18)30149-4
DOI: <https://doi.org/10.1016/j.jbiotec.2018.05.006>
Reference: BIOTEC 8169

To appear in: *Journal of Biotechnology*

Received date: 6-11-2017
Revised date: 26-2-2018
Accepted date: 3-5-2018

Please cite this article as: de Oliveira RA, Rossell CEV, Venus J, Rabelo SC, Filho RM, Detoxification of sugarcane-derived hemicellulosic hydrolysate using a lactic acid producing strain, *Journal of Biotechnology* (2018), <https://doi.org/10.1016/j.jbiotec.2018.05.006>

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.

Detoxification of sugarcane-derived hemicellulosic hydrolysate using a lactic acid producing strain

Regiane Alves de Oliveira ^{a,b,c}; Carlos Eduardo Vaz Rossell ^d; Joachim Venus ^c; Sarita Cândida Rabelo ^b; Rubens Maciel Filho ^a

^a Laboratory of Optimization, Design and Advanced Process Control, School of Chemical Engineering, University of Campinas (Unicamp). Avenida Albert Einstein 500, Campinas, 13083-852, Brazil.

^b National Laboratory of Bioethanol Science and Technology (CTBE). Rua Giuseppe Máximo Scolfaro 10000, Campinas, 13083-100, Brazil.

^c Leibniz Institute for Agricultural Engineering and Bioeconomy e.V. (ATB). Max-Eyth-Allee 100, Potsdam, 14469, Germany.

^d Interdisciplinary Center of Energy Planning (NIPE), University of Campinas (Unicamp). Rua Cora Coralina, 330, Campinas, 13083-896, Brazil.

Corresponding author: Regiane Alves de Oliveira; **E-mail:** oliveiraalves.re@gmail.com

Highlights

- *L. plantarum* detoxifies hemicellulosic liquor during fermentation process
- Furfural from sugarcane bagasse hydrolysate is decreased for more than 98 % during lactic acid fermentation
- HMF from sugarcane bagasse hydrolysate is decreased for more than 86 % during lactic acid production

Abstract

Furfural and HMF are known for a negative impact in different bioprocesses, including lactic acid fermentation. There are already some methods described to remove these inhibitory compounds from the hydrolysates. However, these methods also reduce the yield of sugars from the hydrolysis and increase the process costs. In this work, the detoxification of sugarcane-derived hemicellulosic hydrolysate was performed by *Lactobacillus plantarum* during the fermentation time. At the end of the fermentation, a decrease of 98 % of furfural and 86 % of HMF and was observed, with a final lactic acid titer of 34.5 g/L. The simultaneous fermentation and bio-detoxification simplify the process and reduce operational costs, leading to economic competitiveness of second-generation feedstock for lactic acid production.

Keywords: Bio-detoxification; Furfural; HMF; Hemicellulosic liquor; Lactic acid.

Download English Version:

<https://daneshyari.com/en/article/6490291>

Download Persian Version:

<https://daneshyari.com/article/6490291>

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