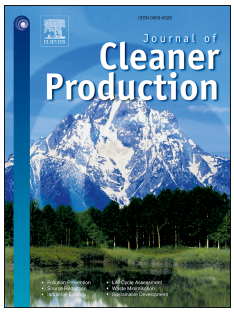
Accepted Manuscript



Efficient ethanol production from kitchen and garden wastes and biogas from the residues

Shiva Karimi, Keikhosro Karimi

PII: S0959-6526(18)30843-6

DOI: 10.1016/j.jclepro.2018.03.172

Reference: JCLP 12430

To appear in: *Journal of Cleaner Production*

Received Date: 14 December 2017

Revised Date: 15 March 2018

Accepted Date: 17 March 2018

Please cite this article as: Karimi S, Karimi K, Efficient ethanol production from kitchen and garden wastes and biogas from the residues, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.03.172.

Efficient ethanol production from kitchen and garden wastes and biogas from the residues

Shiva Karimi[a], Keikhosro Karimi[a,b*]

[a] Department of Chemical Engineering, Isfahan University of Technology, Isfahan 84156-83111, Iran

[b] Industrial Biotechnology group, Research Institute for Biotechnology and Bioengineering, Isfahan University of Technology, Isfahan 84156-83111, Iran (Email: karimi@cc.iut.ac.ir)

[*] Corresponding author:

Tel: +983133915623

Fax: +983133912677

E-mail: karimi@cc.iut.ac.ir

Abstract

Kitchen and garden wastes were used for ethanol production and the residue was applied for biogas production. The wastes were pretreated with dilute acid to improve the yield of ethanol production. The pretreatments were carried out with 0.05 M sulfuric acid at 120, 150, and 180 °C for 0, 10, 30, and 60 min, resulting in a liquor mainly containing starchy materials and hemicellulosic sugars and a solid mainly containing cellulose. In order to remove the inhibitors from the liquor, a detoxification step with lime (overliming) was performed. Furthermore, the starch contents of the liquor were enzymatically hydrolyzed before fermentation. Then, the