Youngsoon Um et al., J Fundam Renewable Energy Appl 2016, 6:3(Suppl)
http://dx.doi.org/10.4172/2090-4541.C1.009

Efficient production of butyric acid from lignocellulosic hydrolysate by *Clostridium* sp. S1

Youngsoon Um[1], Minsun Kim[1,2], Ki-Yeon Kim[1], Kyung Min Lee[1], Han Min Woo[1] and **Min-Kyu Oh[2]**
[1]Korea Institute of Science and Technology, Korea
[2]Korea University, Korea

Previously, *Clostridium* sp. S1 was found to produce butyric acid with the highest yields from various sugars compared to the other producers reported before because of a low production of acetic acid. In this study, the strain S1 was investigated for butyric acid production using lignocellulosic hydrolysate including fermentable sugars (glucose, xylose and mannose) and acetic acid. When synthetic medium mimicking soft wood (spruce) hydrolysate was tested (containing glucose, xylose, mannose, and acetic acid at 6.2 g/L, 0.52 g/L, 1.56 g/L, and 1.47 g/L, respectively), *Clostridium* sp. S1 consumed the mixed sugars simultaneously and there was no residual acetic acid. Because by-products in lignocellulosic hydrolysate such as furfural and phenolic compounds have been known to inhibit cell growth and butyric acid production, detoxification of lignocellulosic hydrolysate by electrochemical method previously developed in our group was applied to eliminate the inhibitors. Finally, *Clostridium* sp. S1 produced butyric acid successfully from the real soft wood (Japanese larch) hydrolysate (containing glucose, xylose, mannose, and acetic acid at 30.3 g/L, 4.72 g/L, 12.5 g/L, and 2.72 g/L, respectively) by utilizing mixed sugars and acetic acid. This unique feature of *Clostridium* sp. S1 consuming fermentable sugars simultaneously as well as acetic acid in lignocellulosic hydrolysate provides a great potential in butyric acid production with high yields.

Biography

Youngsoon Um has completed her PhD from Department of Chemical engineering at University of Maryland and Post-doctoral studies at University of Connecticut. She is a Principal Researcher in Korea Institute of Science and Technology. She has published more than 45 papers in reputed journals and has been serving as an Editorial Board Member of scientific reports.

yum@kist.re.kr

Notes: