Short Communication

Lipid accumulation of *Chlorella pyrenoidosa* under mixotrophic cultivation using acetate and ammonium

Li-Jun Liu, Yuan Zhao, Xiao-Xue Jiang, Xiao-Yu Wang, Wen-Yan Liang

PII: S0960-8524(18)30615-1
DOI: https://doi.org/10.1016/j.biortech.2018.04.092
Reference: BITE 19872

To appear in: *Bioresource Technology*

Received Date: 28 February 2018
Revised Date: 21 April 2018
Accepted Date: 23 April 2018

Please cite this article as: Liu, L-J., Zhao, Y., Jiang, X-X., Wang, X-Y., Liang, W-Y., Lipid accumulation of *Chlorella pyrenoidosa* under mixotrophic cultivation using acetate and ammonium, *Bioresource Technology* (2018), doi: https://doi.org/10.1016/j.biortech.2018.04.092

Lipid accumulation of *Chlorella pyrenoidosa* under mixotrophic cultivation using acetate and ammonium

Li-Jun Liu [a,b], Yuan Zhao [a], Xiao-Xue Jiang [a], Xiao-Yu Wang [a], Wen-Yan Liang [a*]

[a] Beijing Key Lab for Source Control Technology of Water Pollution, College of Environmental Science and Engineering, Beijing Forestry University, No. 35 Qinghua East Road Haidian District, Beijing 100083, China.

[b] Beijing ENFI Environmental Protection Co._Ltd., No.12 Fuxing Road Haidian District, Beijing 100038, China.

ABSTRACT

Acetate and ammonium were used as organic carbon and nitrogen sources, respectively, during mixotrophic cultivation of *Chlorella pyrenoidosa*. Cell growth, content of neutral lipid (NL), productivity of biomass and total lipid, and fatty acid profiles were investigated. Results showed that *C. pyrenoidosa* could endure high concentrations of NH_4^+-N (100–200 mg/L) and immediately entered logarithmic growth, when the culture media contained 2.0–10.0 g/L NaAc. The 2.0–10.0 g/L NaAc in the media also resulted in the NL content of 1.87–3.05 mg/10^9cells, much higher than 0.5 mg/10^9cells of the controls. The maximum productivities of biomass and total lipid were achieved under 50 and 10 mg/L NH_4^+-N respectively when the 2.0 g/L NaAc was dosed. The fatty acids were mainly composed of C16:0, C16:1, C18:0, and C18:1 under the mixotrophic cultivation, with the higher saturation compared to the controls.

Keywords: acetate; ammonium; lipid accumulation; microalgae; biofuel

*corresponding author. Tel.: +86 10 62336615; fax: +86 10 62336615.
E-mail address: lwy@bjfu.edu.cn