Short Communication

Enhanced *rhodococcus pyridinivorans* HR-1 anode performance by adding trehalose lipid in microbial fuel cell

Peng Cheng, Rui Shan, Hao-Ran Yuan, Li-fang Deng, Yong Chen

PII: S0960-8524(18)31100-3
DOI: https://doi.org/10.1016/j.biortech.2018.08.006
Reference: BITE 20289

To appear in: *Bioresource Technology*

Received Date: 17 July 2018
Revised Date: 1 August 2018
Accepted Date: 3 August 2018

Please cite this article as: Cheng, P., Shan, R., Yuan, H-R., Deng, L-f., Chen, Y., Enhanced *rhodococcus pyridinivorans* HR-1 anode performance by adding trehalose lipid in microbial fuel cell, *Bioresource Technology* (2018), doi: https://doi.org/10.1016/j.biortech.2018.08.006

Enhanced *rhodococcus pyridinivorans* HR-1 anode performance by adding trehalose lipid in microbial fuel cell

Peng Cheng [a,b,c,d,1], Rui Shan [a,b,d,1], Hao-Ran Yuan [a,b,d*], Li-fang Deng [a,b,d], Yong Chen [a,b,d]

[a] Guangzhou Institute of Energy Conversion, Chinses Academy of Sciences, Guangzhou 510640, China

[b] Key Laboratory of Renewable Energy, Chinese Academy of Sciences, Guangzhou 510640, China

[c] University of Chinese Academy of Sciences, Beijing 100049, China

[d] Guangdong Key Laboratory of New and Renewable Energy Research and Development, Guangzhou 510640, China

Abstract: In this study, a trehalose lipid was added to a *Rhodococcus pyridinivorans*-inoculated MFC to improve the power output by enhancing electron transfer. Upon trehalose lipid additions of different concentrate from 0 to 20 mg/L, the maximum power density increased from 54.7 mW/m^2 to 324.4 mW/m^2 (5.93 times) while the corresponding current density was 3.66 times increased from 0.35 A/m^2 to 1.28 A/m^2. Cyclic voltammetry analysis revealed that the addition of trehalose lipid increased the electron transfer performance, while electrochemical impedance spectroscopy results proved a decrease in internal resistance. It was demonstrated that adding bio-surfactant in MFC was a novel way to enhance power output performance.

* Corresponding authors. Dr. H. R. Yuan, Tel.: +86 20 8704 8394; E-mail address: yuanhr@ms.giec.ac.cn

[1] Both authors contributed equally to this work