Your Abstract Submission Has Been Received

Print this page

You have submitted the following abstract to 2020 Food Innovation and Engineering (FOODIE) Asia Conference. Receipt of this notice does not guarantee that your submission was complete or free of errors.

Sophorolipid Production from Food Waste

Huaimin Wang[1], Guneet Kaur[2], Ming Ho To[1], Sophie L.K.W. Roelants[3], Chi-Wing Tsang[4], Raffel Dharma[5], Wim Soetaert[3] and **Carol Sze Ki Lin**[6], (1)City University of Hong Kong, Hong Kong, China, (2)York University, Toronto, ON, Canada, (3)Bio Base Europe Pilot Plant, Ghent, Belgium, (4)Faculty of Science and Technology, Technological and Higher Education Institute of Hong Kong, Hong Kong, Hong Kong, (5)Hong Kong Baptist University, Hong Kong, Hong Kong, (6)School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong

Abstract Text:
Sophorolipids (SLs) are among the most extensively studied microbial biosurfactants. *Starmerella bombicola* is the most productive strain known for SL production, with a volumetric productivity of up to 3.7 g/L.h (Wang et al., 2019). Recent sustainable development goals of food security, environmental protection, material and energy efficiency are the key drivers for the valorization of food waste. In the present work, the production of biosurfactant SLs from several (food) waste streams was investigated. Food waste obtained from a local restaurant was subjected to enzymatic hydrolysis for 16 h, yielding a hydrolysate containing about 100 g/L glucose and 2.4 g/L free amino nitrogen. The hydrolysate was subsequently used for SLs fed-batch fermentation and reached titer of 115.2 g/L in 92 h with an overall volumetric productivity of 1.25 g/L.h (Kaur et al., 2019). Further improvement of fermentation system and strategy has been developed using a semi-continuous integrated production-separation system. An average volumetric productivity of 2.43 g/L.h and an overall SLs yield of 0.73 g/g was achieved within 240 h. Moreover, the potential of sustaining high production efficiency during long-term fermentation times (480 h) was investigated and an overall productivity and SLs yield of 2.39 g/L.h and 0.73 g/g were obtained, respectively (Wang et al., 2020a). This laboratory experiment was further evaluated with TEA simulation. It was found that the most profitable option led to high NPV (US$183,598,000), IRR (36.17%), ROI (43.87%) and payback years (2.28 years) (Wang et al., 2020b). It should be stressed that SLs price need to lower to allow SLs to penetrate the market.

References

Wang et al., 2019. https://doi.org/10.1002/jctb.5847.

Kaur et al., 2019. https://doi.org/10.1016/j.jclepro.2019.05.326.

Wang et al., 2020a. https://doi.org/10.1016/j.jclepro.2019.118995.

Wang et al., 2020b. https://doi.org/10.1016/j.biortech.2020.122852.

Session Selection:
Global Food Challenges and their Solutions
Title:
Sophorolipid Production from Food Waste
Submitter's E-mail Address:
carollin@cityu.edu.hk
Preferred Presentation Format:
Oral Only
First Presenting Author
Presenting Author

Huaimin Wang
Email: hwang236-c@my.cityu.edu.hk -- Will not be published

City University of Hong Kong
Hong Kong
China

Second Author

Guneet Kaur
Email: kaur.guneet07@gmail.com -- Will not be published

York University
Toronto ON
Canada

Third Author

Ming Ho To
Email: minghoto@cityu.edu.hk -- Will not be published

City University of Hong Kong
Hong Kong
China

Fourth Author

Sophie L.K.W. Roelants
Email: sophie.roelants@bbeu.org -- Will not be published

Bio Base Europe Pilot Plant
Ghent
Belgium

Fifth Author

Chi-Wing Tsang
Email: ctsang@vtc.edu.hk

Technological and Higher Education Institute of Hong Kong
Faculty of Science and Technology
Assistant Professor
Hong Kong
Hong Kong

Sixth Author

Raffel Dharma
Email: raffel.dharma95@gmail.com -- Will not be published

Hong Kong Baptist University
Research Assistant
Hong Kong
Hong Kong

Seventh Author

Wim Soetaert
Email: Wim.Soetaert@UGent.be -- Will not be published

Bio Base Europe Pilot Plant
Ghent
Belgium

Eighth Presenting Author
Presenting Author

Carol Sze Ki Lin
Email: carollin@cityu.edu.hk -- Will not be published

City University of Hong Kong
School of Energy and Environment
Associate Professor
Hong Kong
Hong Kong

If necessary, you can make changes to your abstract submission

To access your submission in the future, use the direct link to your abstract submission from one of the automatic confirmation emails that were sent to you during the submission.
Or point your browser to /aiche/reminder.cgi to have that URL mailed to you again. Your username/password are 617585/.

Any changes that you make will be reflected instantly in what is seen by the reviewers. You DO NOT need to go through all of the submission steps in order to change one thing. If you want to change the title, for example, just click "Title" in the abstract control panel and submit the new title.

When you have completed your submission, you may close this browser window.

Tell us what you think of the abstract submission process