

Conversion of wheat straw into volatile fatty acids using dark fermentation and homoacetogenesis

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Summary

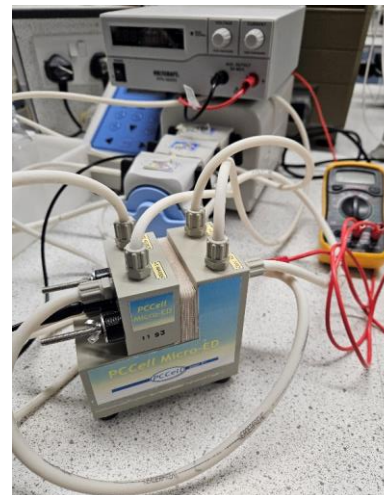
Volatile fatty acids (VFAs) are essential for various industries, and while they are typically produced petrochemically, they can also be obtained biologically from anaerobic fermentation of abundant biomass like cereal straws. This alternative method offers a sustainable way to produce valuable VFAs, such as acetic and butyric acids.

Aims

- Demonstrate that electrodialysis can be used to recover and concentrate volatile fatty acids (VFAs) during fermentation of wheat straw.
- Test whether the yield of VFAs produced can be increased via integration of electrodialysis to extract VFAs from the bioreactor and alleviate product inhibition.

Outcomes

- Using electrodialysis during anaerobic fermentation of wheat straw can improve VFA yields, resulting in a 16% increase in VFA production
- Electrodialysis effectively concentrated acetic and butyric acids in the fermentation effluent by 2.98x and 2.14x, respectively.



“Our activities have created new collaborations with industrial and academic partners who can support further process development”

Matthew Reilly,
University of York