

Evaluation of the electrochemical properties of different strains of *Shewanella* in a mediatorless microbial fuel cell.

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The performance of a microbial fuel cell (MFC) and the properties of the anode with three different *Shewanella* isolates in the anolyte were evaluated using a number of different electrochemical techniques. A recent study has provided some information about the power producing characteristics of different strains of *Shewanella* [1]. In the present work, experiments were done to compare the electrical properties of three different *Shewanella* species when used as catalysts in the anode compartment of microbial fuel cells (MFCs): (*Shewanella oneidensis* MR-1, *Shewanella loihica* PV-4 and *Shewanella amazonensis* SB2B). A suite of electrochemical techniques was employed to characterize the current producing properties of these different strains in a MFC as well as their sensitivity to exposure to the different electrochemical methods. Cell voltage-current curves were used to determine the maximum power that can be generated by each strain while Electrochemical impedance spectroscopy (EIS), potentiodynamic polarization curves and cyclic voltammetry were applied to identify the differences in electrochemical behavior of the three strains studied in more detail.

References:

1. Orianna Bretschger, "Electron Transfer Capability and Metabolic Processes of the Genus *Shewanella* with Applications to the Optimization of Microbial Fuel Cells", PhD Thesis, University of Southern California, August 2008.