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A Microbial Fuel Cell for People without Direct Access to Electricity

Providing an alternate means of generating energy from easily obtained resources, microbial fuel cells present a major opportunity as a renewable energy resource for those who do not have access to energy obtained in other forms. The cell needs only a source of waste water and another source of cleaner water to operate once it has been assembled, and produces electricity through a process in which bacteria break down sugar molecules to produce electrons and protons. In the experiment, various configurations of a microbial fuel cell were tested, and it was found that a way to cut off oxygen supply to the anode, along with a way to expose the cathode to oxygen was necessary for operation. In tests with multiple samples, an agar salt bridge and dialysis tubing were used as proton exchange membranes. Also different resistances were applied to the cell in order to find the highest stable current output and thus greatest power of the cell. The voltages and currents obtained from the cell turned out to be high enough to make the cell a viable solution for operation in places without electricity, as the cell could possibly provide enough electricity for dim LED lighting.