A Novel Research for Efficient MFCs Using Electroactive Bacteria from Mangrove Trees

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In recent years, the search for new sources of energy has increased due to the depletion of hydrocarbon fuels and the environmental damages resulting from its usage. Attention has focused on electrochemical cells, including Microbial Fuel Cells (MFCs), in applications such as treated wastewater for the production of electricity in saltwater desalination plants. The purpose of this research is to determine if MFCs can utilize novel sources of electroactive bacteria found in Mangrove trees. Two Microbial Fuel Cells were constructed by inserting the anode and cathode in to the ports of the cells. A sample then was collected from the Mangrove trees in Saudi Arabia and from treated wastewater and placed in Microbial Fuel Cells. Current output then was measured by connecting the cells to the Potentiostat by wires. The results included that the highest peak of the output current from the sediment's cell was 14.43mA, while it reached 0.198mA in the wastewater sample. That means that the output current in the sediment sample is about 73 times greater than the output current from the wastewater's cell. The increase of the electrical current might lead to higher efficiency in the desalination process. These results are positive indicators which can lead to the development of environmentally friendly and inexpensive MFCs by classifying the local mangrove bacteria. This can be applied to the efficiency of the electrical production for hospitals with poor access and for sea water desalination to obtain potable water and help decrease water scarcity.

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