

## Analysis of Microbial Communities Associated with Hydrogen Production Obtained from Wastewater

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### ABSTRACT

Microbial Fuel Cells (MFCs) are devices capable to supply energy from organic substrates. Although MFCs offer low current densities, they have proven to be a feasible option for wastewater treatment. When a suitable overpotential is applied to MFCs, hydrogen is produced, these devices are known as Microbial Electrolysis Cells (MECs). México has a huge potential for solar energy, particularly Chihuahua exhibits a solar irradiance of 18kJ/m<sup>2</sup>. Bearing this in mind, this project aims to feed the overpotential for a MEC through a solar cell, in order to assess the potential to produce hydrogen through wastewater effluents in public universities. The microorganisms responsible of hydrogen production in these devices have not been fully characterized, as a matter of fact; the occurrence of microbial consortia able to optimize the operation of MECs is still under study. Therefore, at this stage of research, a representative wastewater sample was grown in differential cultures; and communities were compared by molecular techniques using a Polymerase Chain Reaction - Denaturing Gradient Gel Electrophoresis (PCR-DGGE) in order to compare their electrochemical performance and hydrogen yield within a MEC.

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*Keywords:* wastewater, MEC, PCR-DGGE

