Assessment on the Effect of Microbial Fuel Cells to Produce Electricity, C.P. "La Yarada" 2019

Tairo Chambilla, Leidy (School: Jose de San Martin)

In Peru, 27.1% of the population living in rural areas does not have electricity service (INEI, 2017), a situation reflected in the C.P. La Yarada (new and rural district of Tacna) where there is a need to implement technological solutions, taking advantage of the resources of the environment to generate renewable and efficient energy that improves the quality of life of the locals. In the experimental laboratory and field research, the comparative analysis of the prototypes of Microbial Fuel Cells (CCM) built for the generation of electricity, and their subsequent installation in a house, describing the characteristics and variations in the use of laboratory substrates, presence of microorganisms, type of electrodes, proton exchange membranes, aerobic and anaerobic media, use of cameras, cell installations, and type of electrical current. The results show that the most efficient CCM prototype is the one that has an organic substrate with the presence of anaerobic Geobacter (gram negative), with a pH of 7.6 and an internal temperature of 23.9 ° C. It consists of 60 single chamber cells, with graphite-zinc electrodes, in a mixed circuit that produces 22 volts and 0.45 amps of direct current, easy transformation to alternating current, enough energy to supply a house room in La Yarada. It is concluded that microbial fuel cells are a viable alternative to solve the problem of access to basic electricity service in rural areas, characterized by being a competitive energy source with environmental advantages.

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