BIO-ENERGY PRODUCTION FROM SINGLE-CHAMBER MICROBIAL FUEL CELL USING AGRICULTURAL WASTES AS FUEL SOURCE

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ABSTRACT

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Microorganisms such as bacteria have some beneficial properties. It was found out that some bacteria have the ability to produce bio-electricities. Through the application of microbial fuel cell various strains of bacteria can generate electricity by oxidizing the organic matter on the anode chamber which in turn produces electrons. Thus, the study aimed to generate bio-energy from single-chamber MFC with the use of carabao and pig manure as substrate. Also, the electrogenic potential of *Lysinibacillus macroides, Bacillus flexus* and *Bacillus megaterium* were evaluated. The SCMFC was created using a one-liter capacity container and the electrodes were made using stainless-steel mesh with activated carbon. The SCMFC were left operated at room temperature for 30 days. Results showed that the *B. flexus* treated MFCs produced the highest power output of 17.26 ± 6.01 mW as seen on the sterile pig manure, thus the average voltage and current recorded was 220.23 ± 55.60 mV and 52.24 ± 13.61 µA. Meanwhile, the highest power output for *L. macroides* MFCs was observed on sterile carabao manure with 7.05 ± 6.01 mW. Lastly, *B. megaterium* generated the highest power output on sterile pig manure with 15.55 ± 6.01 mW. Thus, results suggest that the evaluated bacteria have the potential to be electrogenic as it enhances the power generation.

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