

ABSTRACT

Microbial Fuel Cell (MFC) is one of the technology that utilizes the activity of microorganisms directly to convert from biochemical to electrical energy. The purpose of this research is to know the effect of rice waste addition with variation of concentration 1M, 2M, 3M to MFC system performance. This study used a double-chamber MFC system with each chamber able to accommodate a volume of 600 mL with each chamber having an electrode with a width of 5 cm, a length of 10 cm, and a thickness of 0.25 mm. The rice waste mixed with the sludge is used as the substrate and copper as the electrodes in the anode chamber, the aquades and the zinc electrodes in the cathode chamber, as well as the salt bridge (KCL 1M) as proton transfer media. In a double-chamber MFC system, the electrons from the zinc electrode in substrate anode chamber are transferred to the copper electrode at the cathode chamber, while the proton transferred from the anode chamber to the cathode chamber through the salt bridge. The results showed that the addition of 3M rice waste with additional stale rice waste of 108 grams can produce the highest electricity production with strong current reaches 0.23 mA (day 23), voltage 0.98 V (day 17), power density 37.24 mW.m⁻² (day 17), and energy 360 J (day 30).

Keywords: Microbial Fuel Cell (MFC), rice waste, mud.