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Microbial Fuel Cell: A New Technology to Generate Power Using Cyanobacteria and Wastewater**Imanthi K.P.A. *, Idroos F.S., Manage P.M.***Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayewardenepura***amayaimanthi94@gmail.com***Abstract**

Microbial fuel cells make it possible to generate electricity using wastewater and cyanobacteria. Microorganisms in wastewater actively catabolise substrate, and bioelectricities are generated. This study was directed to investigate the effect of cyanobacteria to electricity generation. Two cyanobacteria species, *Microcystis* sp. and *Chroococcus* sp. were sampled from Beira Lake and cultured in BG11 and Zarrouk medium respectively without aeration under 2500 lux light. Except cyanobacteria species all other conditions were same in both setups. MFC container made with poly acrylic sheet contain two chambers and silicone was used to seal the chambers except the lids. Two chambers were separated using cation exchange membrane (CMI-7000S) which allows only H⁺ ions to transfer from anode to cathode. Both electrodes were connected to an external resistor (0.33 Ω) and internal resistance was neglected. Carbon cloth (2×4) cm² were used as electrodes. Rice washed water with neutral red as a mediator was used as anolyte and 1 L of each cyanobacteria culture was used as catholyte in two setups separately. Control set up was maintained by adding sterilised water as catholyte. The voltage generated at each sampling time was recorded in both setups and current, power were calculated. Setup 01 with *Microcystis* sp. presented highest values such as voltage 1,184 mV, current 3,587.88 mA and power 4.24 mW. Subsequently setup 02 with *Chroococcus* sp. represented voltage as 1111 mV with current 3,366.67 mA and power 3.74 mW. Water treatment efficiencies were recorded as reduction in COD, Nitrate, Nitrite and Orthophosphate by 88.96%, 83.45%, 60.36%, 59.59% in setup 01 and 61.94%, 32.05%, 29.05%, 26.01% in setup 02 respectively. The findings of the present study reveal that single cell MFC with *Microcystis* sp. as cathode is a promising source of bioelectricity generation and wastewater treatment under laboratory conditions.

Keywords: Microbial fuel cell, Rice washed water, Wastewater treatment, Electricity generation