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Bellary-583104 (Karnataka State).**

## **DEPARTMENT OF BIOTECHNOLOGY**

**A Project Report On**

# **“MICROBIAL FUEL CELL FOR THE GENERATION OF ELECTRICITY USING NATURAL AND SYNTHETIC SUBSTRATE”**

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## **ABSTRACT**

Microbial fuel cells (MFCs) represent a completely new method of renewable energy recovery: the direct conversion of organic matter to electricity using bacteria. While this sounds more like science fiction than science, it has been known for many years that bacteria could be used to generate electricity. However, expensive and toxic chemicals were needed to shuttle electrons from the bacteria to the electrode and purified chemicals (such as glucose) were needed for the bacteria to grow on. We now know that we can make electricity using any biodegradable material. The potential difference (Volt) between the anode and the cathode, together with the flow of electrons (Ampere) results in the generation of electrical power (Watt). In the present study, the organism *pseudomonas aeruginosa* is isolated from soil sample. Here we used various feed concentrations of various carbon sources for the production of electricity from samples obtained during anaerobic digestion of natural and synthetic media using single chambered microbial fuel cell.

The synthetic substrate glucose produced maximum current of 0.21mA and voltage of 185.3 mV at the feed concentration of 30 g/L. The natural substrate sugar bagasse produced maximum current of 0.14 mA and voltage of 198.9 mV at the feed concentration of 12 g/L. Synthetic substrates produces more current than the natural substrates but the voltage produced by natural substrates is more than synthetic substrates. MFC technology could find applications ranging from hydrogen production to renewable energy production from agricultural biomass. MFC fabricated was low cost and without any toxic materials.