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Microbial Fuel Cells as Potential Power Generator

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Abstract : *The present research was done to establish waste-based microbial fuel cells as an efficient source of power generation. Two chambered cells were used. Methylene blue was used as the mediator. Potassium Ferricyanide was used as enhancer. L-cystiene was used as a scavenger of dissolved oxygen in the anodic chamber. The use of phosphate buffer in both the chambers and agar-KCl salt bridge in the Ananus comosus waste based cell of capacity 1000ml generated a potential upto 0.4V while using simple tap water instead of a buffer and a rope salt bridge with the same sample of same cell capacity gave a potential of just 0.25 V. It was found that the potential produced by a larger volume of cells (i.e.1000ml) was approximately 0.1-0.4 V as compared to the smaller volume of cells (i.e.200ml) with a potential of approx. 0.01-0.2 V, without any addition of microbial culture.This illustrated a clear relationship between the capacity of the cell and the potential generated by it. Addition of anaerobic isolates to the different fruit waste based cells showed a favourable effect on the efficiency of the cells. However, the effect varied with varying time duration. Among different samples used, which included waste generated out of Ananas comosus, Citrus limetta, Saccharum officinarum ; rice field soil and muck ; Ananas comosus proved to be the best sample to be used as substrate. The results demonstrate that a usable amount of bioelectricity can be generated by proper optimization of fruit waste based microbial fuel cells, thus providing a new dimension to sustainable electricity generation.*

Keywords: *Bioelectricity, salt bridge, phosphate buffer, microbial fuel cell, dissolved oxygen, L-cysteine.*

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