

## **Performance evaluation of selected vegetables and fruits waste by using double chamber microbial fuel cell**

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### **Abstract**

Microbial fuel cells technology is the most attractive alternative energy source to generate bioelectricity from wide range of substrates by using bio electro-genic microorganisms. It has special interests on supply the energy demands for small devices by using waste materials. In this study a prototype double chamber microbial fuel cell was developed with copper as cathode and anode electrodes and salt bridge as the proton membrane. The performance of microbial fuel cell was tested with the substrates extract from waste vegetables and fruits such as tomato, pumpkin and banana to generate bioelectricity over a testing period of 30 days and without renovation of substrates in the batch mode operation. Results revealed that the average value of open circuit voltage for tomato, pumpkin and banana were 382.59, 370.92 and 358.06 mV, respectively. The peak voltage of tomato is 700 mV. The output voltage depends on reaction of microorganisms, electrode and environmental conditions. The micro-organisms growth and multiplication period, the output voltage is high and the output voltage pattern over the tested period shows good agreement with growth pattern of microorganism.

**Keywords:** Double chamber, Electricity, Microbial fuel cell and Microorganism

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