

Joint Event on

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## Enhancement in bio-ethanol production in electrochemical cell using *Saccharomyces cerevisiae* and *Wickerhamomyces anomalus*

Jarina Joshi, Reejina Shrestha, Lakshmaiya Sreerama and Tribikram Bhattarai  
Tribhuvan University, Nepal

Ethanol production by the yeast strains *Saccharomyces cerevisiae* and *Wickerhamomyces anomalus* was done by simultaneously cultivating the yeasts in the anode and the cathode of an electrochemical cell alternatively on either side of the electrolytic compartments. When *Saccharomyces cerevisiae* was cultivated on a platinum plate anode and *Wickerhamomyces anomalus* was cultivated in graphite rod cathode and an external electric potential of 4 V was applied to induce the electrochemical redox reaction in the anode and cathode compartment of an electrochemical cell using glucose as a substrate,  $27.61 \pm 0.35$  mg/ml ethanol was produced, however counter combination produced only  $24.78 \pm 0.45$  mg/ml ethanol. Electrochemical oxidation potential inhibited *Wickerhamomyces anomalus* but showed a reduced effect on *Saccharomyces cerevisiae*. Graphite rod when modified by the immobilization of neutral red as a mediator of electron transfer showed improvement in ethanol production. The *Wickerhamomyces anomalus* when cultured with modified graphite rod and *Saccharomyces cerevisiae* when cultured in the anode 11.67% more than the neutral red non-immobilized combination of *Saccharomyces cerevisiae* and *Wickerhamomyces anomalus* and 64.28% more than that of the control maintained without the supply of external voltage. Further the optimized technique is going to use for ethanol production from lignocellulosic hydrolysate.

jarina@biotechtu.edu.np

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