J Bioproces Biotechniq 2014, 4:6
http://dx.doi.org/10.4172/2155-9821.C1.007

OMICS International
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3rd International conference on
Bioprocess and Biosystems Engineering

September 14-15, 2015 Baltimore, USA

Ethanol production by yeast cells' combination in electrochemical cell

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Bioethanol is an alternative renewable energy which can be used in place of mineral fuel. It can be produced in any places or environment. The production can be enhanced using electrochemical cell. Lignocellulosic biomass is a carbohydrate rich source which can be converted into bioethanol in low cost. *W. anomalous* on cathode and *S. cerevisiae* on anode is used for bioethanol production and found to be the best combination at 4V energy supply. Bioethanol production was high when platinum electrode was coated with fine platinum powder. The method shows enhancement in ethanol production when high surface area of platinum is used. Ethanol production is comparatively less when Nafion membrane was used. Ethanol production from lignocellulosic biomass i.e. *Saccharum spontanum* was comparatively less may be because of inhibitors generated during pretreatment.

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Antimicrobial activity of bacteriocin producing lactic acid bacteria from fermented batter of green gram and bengal gram against food-borne pathogens

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The increase of multidrug-resistant pathogens and the restriction on the use of antibiotics due to its side effects have drawn attention to the search for possible alternatives. Bacteriocins are ribosomally synthesized antimicrobial peptides that are active against gram-positive and gram-negative bacteria. The bacteriocins from lactic acid bacteria represent an important application of these peptides as clinical drugs or as food biopreservatives. The present study describes the isolation of bacteriocin producing Lactic Acid Bacteria (LAB) from fermented batter of green gram and bengal gram using Man, Rogosa and Sharpe (MRS) media. The bacteriocin produced by these organisms inhibited the growth of *Staphylococcus aureus*, *Escherichia coli, Klebsiella species, Pseudomonas aeruginosa,* The isolates G1, G2 were isolated from green gram; B1 and B2 were isolated from fermented bengal gram batter. G1 and G2 were identified as *Lactobacillus casie* and B1 and B2 were identified as *Streptococcus species*. Antimicrobial activity of the bacteriocin produced by these strains was studied by agar well diffusion method. Bacteriocins produced by the *Lactobacillus casie* and *Streptococcus spp* retained their antagonistic property at pH 5 and pH 7. Exposure of bacteriocin to UV light for 4 min showed antibacterial activity. The antagonistic property was observed even at 100 °C demonstrating stability at higher temperatures of the bacteriocin. The bacteriocins were stable for a period of 15 days at 27°C. The bacteriocins of G1, G2, and B2 exhibited highest antagonistic activity at pH 5 and B1 at pH 7. Therefore, the bacteriocins of the isolates may find important applications in controlling food-borne pathogens. The bacteriocins of these isolates would hold a potential for extension of shelf-life (biopreservatives) and improvement of microbiological safety in food industry.

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