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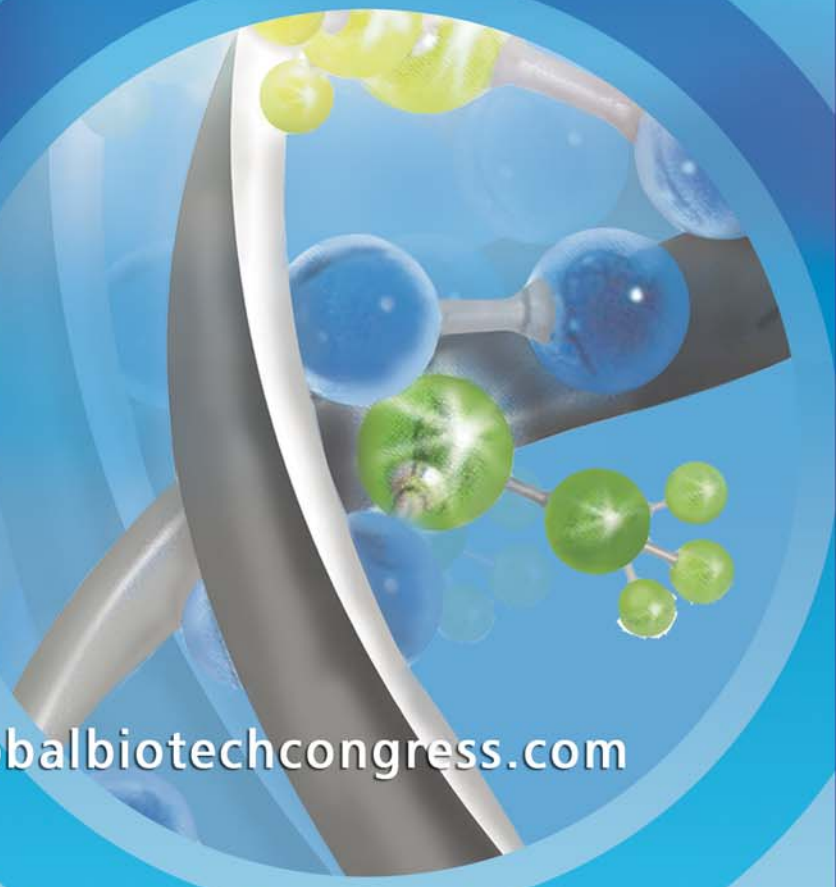
Abstracts



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POSTERS

PO-31

Track: Industrial and Manufacturing: Bio-Fuels

ETHANOL PRODUCTION USING RED BEET JUICE BY SACCHAROMYCES *CERVISIAE* ATCC 9763

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In Mexico, red beet (*Beta vulgaries* L. conditiva) is available all the year, therefore its juice and bagasse can be used for bioethanol production. In this work was investigated the ethanol production by *Saccharomyces cervisiae* ATCC 9763 using juice red beet at pH = 2.8 and 37 °C. The rates of biomass growth, sugar consumption and ethanol production during batch fermentation of red beet juice were estimated. The logistic, Pirt, and Luedeking-Piret equations were used to model the microbial growth X(t), substrate consumption S(X), and ethanol production P(X), respectively. The volumetric ethanol productivity (Qp) and ethanol production (P) were 0.86 g L^{-1} h^{-1} and 28 g L^{-1}, respectively. The maximum specific growth rate (μ_{max}) and maximum biomass concentration (X_{max}) were 0.23 h^{-1} and 1.95 g L^{-1}, respectively. These results indicate that a significant portion of the carbon source was used for maintenance of strain, which agrees with the fact that the lowest values of Xmax obtained under these fermentation condition. The strain of *Saccharomyces cervisiae* ATCC 9763 utilized in this study was able to produce ethanol with high yield and volumetric productivity under acid and thermal stress condition.

PO-76

Track: Industrial and Manufacturing

HETEROGENEOUS NANOBIOCOMPOSITES ON THE BASIS OF CARBONIZED SORBENTS

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Microbial cells immobilized on solid surfaces cover nowadays a wide area of applications in biotechnology. A unique combination of valuable physical and chemical characteristics makes nano-structured carbonized sorbents of plant origin very attractive as a constituent of heterogeneous composite systems containing microbial cells. Due to their remarkable properties, nanostructured carbon rice husks (CRH) can be used as sorbents for adsorption of different industrially important microorganisms. Our research is aimed to creation of cost-effective and sustainable bio-composite materials on the basis of microbial cells adsorbed CRH. Electron microscopy studies confirmed that multiple probiotic and protein producing valuable cells can successfully attach, survive and proliferate inside the porous network of the CRH. In our model experiments, the carbon material specifically adsorbed up to 95% microbial cells from various solutions. The resulting biocomposite materials possess outstanding probiotic and nutraceutical properties accompanied by high specificity, depending on the particular microbial strain used. The *in vivo* and *in vitro* studies strongly suggest that the use of the CRH as carrier for the oral administration of probiotic microorganisms has a very big potential for improving functionality and safety of probiotic preparations. This interdisciplinary knowledge could significantly stimulate development of novel immobilized bio-catalysts possessing high activity, selectivity and stability.

Keywords: Nanobiocomposites, carbonized sorbents, immobilization.
