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**Research Abstracts** 

## Fermentation Kinetics of *Saccharomyces cerevisiae* in batch and Fed-batch Cultures

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Abstract: The research to obtain ethanol has increased with the energy and environmental crisis. Nowadays the bioethanol fuel can be produced by fermentation using sugars obtained by hydrolysis of organic solid waste from urban and agricultural sources. However, to enhance its production by fermentation is not enough to control operation variables or optimize the culture medium also depends of the culture type. In this work were studied the kinetics of *Saccharomyces cerevisiae* in batch and fed batch cultures. The fermentations were carried out in a 4 L fermenter and in the fedbatch culture the volumetric feed rate of concentrated sucrose solution of 150 g.L<sup>-1</sup> was set constant. This culture operation mode increased the bioethanol production, two stages were observed, favouring in the first (batch culture) cell growth and in the second (fed-batch culture) the bioethanol production. In batch culture were obtained a maximum specific growth rate of  $\mu_{max}$ = 0.509 h<sup>-1</sup>, maximum biomass of 8 g.L<sup>-1</sup> and biomass yield of  $Y_{XS}$ = 0.3 g<sub>X</sub>.g<sub>S</sub><sup>-1</sup>, without significant ethanol production. Simulations showed a better fit with the Logistic Model. In fed batch culture the final ethanol concentration was 25 g.L<sup>-1</sup>. This strategy can be used to improve the production of other metabolites with similar behaviour.

Keywords: yeast, batch, fed batch, bioethanol

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