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ETHANOL PRODUCTION BY BIOENGINEERING

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Abstract

In this paper, the biological and engineering aspects of a bioproject related to the development of a process for production of bioethanol from biomass are presented. The particular process developed was that using potatoes as the raw material. The following stages were required for a complete, practical process of ethanol production: potato pre-treatment for starch extraction, enzymatic hydrolysis of the starch to obtain sugars, fermentation of sugars to obtain ethanol, concentration of ethanol by distillation and adsorption. Different operating parameters were tested (enzyme, substrate and nutrient concentrations, temperature, reaction time, etc.) and the corresponding results are presented. Starch hydrolysis was performed with *α-amylase* and *Amyloglucosidase* enzymes. Fermentation of starch sugars to ethanol was performed by *Saccharomyces bayanus* yeast. By simple, fractional distillation and by molecular sieve adsorption methods, the ethanol concentration was raised to 99% (w/w).

Keywords: environment, ethanol, biotechnology, valorization, waste, fermentation, enzymatic hydrolysis

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