Comparing the Glucose Concentration of Lignocellulosic Biomass Generated by Cellulase Across Six pH Buffers

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This experiment was performed to determine the most efficient pH buffer for the production of glucose in lignocellulosic biomass as a result of the enzymatic effects of cellulase. The lignocellulosic biomass used was barley straw, and it was pretreated using manual grinding and a five-minute steam treatment. The pH buffers were prepared in a range of 3-8. After the addition of 1.0 g of barley straw and 0.5 mL of cellulase to 10 mL of each pH buffer, the glucose levels were tested. The hypothesis was that the pH 7 buffer would produce cellulase most efficiently because ethanol has a pH of 7.33. The results indicated that the pH 5-8 buffers were most efficient, however, results of t-tests showed that the difference between the average glucose concentrations throughout the pH buffers was not statistically significant. This means that cellulase broke down lignocellulosic biomass and produced glucose efficiently across all six pH buffers.

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