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**Effects of the pretreatment method on high solids enzymatic hydrolysis and ethanol fermentation of the cellulosic fraction of sugarcane bagasse**

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**Abstract:**

This work evaluated ethanol production from sugarcane bagasse at high solids loadings in the pretreatment (20 to 40% w/v) and hydrolysis (10 to 20% w/v) stages. The best conditions for diluted sulfuric acid, AHP and Ox-B pretreatments were determined and mass balances including pretreatment, hydrolysis and fermentation were calculated. From a technical point of view, the best pretreatment was AHP, which enabled the production of glucose concentrations near 8% with high productivity (3.27 g/L.h), as well as ethanol production from 100.9 to 135.4 kg ethanol/ton raw bagasse. However, reagent consumption for acid pretreatment was much lower. Furthermore, for processes that use pentoses and hexoses separately, this pretreatment produces the most desirable pentoses liquor, with higher xylose concentration in the monomeric form.

**Keywords:** sugarcane bagasse; pretreatment; enzymatic hydrolysis; high solids concentration; hexoses fermentation

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