

Enhancing enzymatic digestibility of alkaline pretreated banana pseudostem for sugar production

ABSTRACT

This study compares the efficacy of a soaking pretreatment with an alkaline solution for banana pseudostem prior to enzymatic hydrolysis. Banana pseudostem was pretreated by soaking in sodium hydroxide solutions at various concentrations and durations. The pretreatment more than doubled delignification but retained 82.09% of the holocellulose content and 73.74% of the cellulose content. The enzymatic (*Trichoderma reesei*) digestibility of pretreated banana pseudostem was found to have been enhanced by 44.41% as compared to initial biomass. This was evidenced by higher enzymatic activities (endoglucanase, exoglucanase, and α -glucosidase) on the treated sample. Meanwhile, glucose yield showed a proportional relationship with incubation time and enzyme loading throughout the hydrolysis process.

Keyword: Banana pseudostem; Alkaline pretreatment; Enzymatic hydrolysis; Sugar yield; *Trichoderma reesei*