

Effect of pretreatment process on bioconversion of kenaf (*Hibiscus cannabinus* L.) core to glucose.

ABSTRACT

Kenaf (*Hibiscus cannabinus* L.) is a renewable carbon-rich lignocellulosic resource for fermentable sugars. In this study, kenaf cores cultivar V36 from four-month-old stems were pretreated by i) physical, ii) physical and thermal, and iii) physical and chemical methods. The celluloses of pretreated kenaf core particles were then hydrolyzed into fermentable sugars by cellulase from *Trichoderma reesei* (C2730). The pretreated kenaf core particles were incubated for 48 h at 37 °C. The efficiency of bioconversion was mainly dependent on the pretreatments applied prior to the hydrolysis process. The effects of the pretreatments on kenaf core's lignin, holocellulose, and cellulose contents were also determined. Kenaf cores without pretreatment had 19.4% lignin, 86.2% holocellulose, and 47.4% alpha-cellulose. The combination of physical and chemical pretreatment on kenaf cores cultivar V36 resulted in a higher cellulose content (92.49%) and produced 50 times higher sugar concentration than the physical pretreatment.

Keyword: Lignocelluloses; Kenaf core material; Enzymatic hydrolysis; Fermentable sugar