Pore volume increase and its effect on enzymatic hydrolysis of pretreated woody biomass by sequential subcritical water and formic acid process

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Lignin and hemicellulose are main components of lignocellulosic biomass, and also well known as inhibitors for enzymatic hydrolysis. Numerous researchers have been studying separation of the lignin and hemicellulose from lignocelluloses. In this study, most of the hemicellulose and lignin were selectively removed in turn by subcritical water hydrolysis and formic acid treatment. After the stepwise pretreatment, total pore volume dramatically increased compared with subcritical water only or formic acid only pretreatment. The effect of pore volume increase on enzymatic saccharification was also investigated.