Effect of Hot Compressed Water Pretreatment on Biomass Enzymatic Digestibility

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Because of depletion of fossil fuel, renewable resources are one of the most important issues of today. Biomass is one of the renewable resources. Especially, biomass is carbon resources unlike other renewable resources. It is very important because it means that chemical products as well as energy can be produced from biomass. There are some difficulties in using biomass because of its structure and components. Thus, pretreatment is necessary. There are many kinds of pretreatment methods. Among the methods, hot compressed water pretreatment was used in this study. Biomass which was used in this study was Tulip poplar sawdust. Pretreatment was conducted at various temperatures(180℃-220℃) and reaction times(0-30min) using batch-type reactor. Enzymatic digestibility of pretreated samples was measured to evaluate the method. Kinetics of hot compressed water pretreatment was studied. High purity cellulose was produced after hot compressed water pretreatment and further treatment. Enzymatic digestibility increased after pretreatment. High purity cellulose which was produced in this study can be used as base material for chemical products.