

Two-step Acid hydrolysis method for producing fermentable sugar from lignocellulosic biomass

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Two-step hydrolysis methodology is established to effectively hydrolyze cellulose to glucose without enzyme. In the first step, lignocellulosic biomass was hydrolyzed in high concentration 72% sulfuric acid (H_2SO_4) for 10minute, at 80°C. second step used dilute acid (4% H_2SO_4) for 60min, at 121°C. This conditions are selected for decline of glucose degradation during the saccharification. The first step condition is momentarily time then second step. During first step, cellulose is depolymerized with monomer and oligomer. The key of this hydrolysis minimizes degradation of the monomer. After the step, Second-step hydrolyze remaining oligomer to monomer. The material of acid hydrolysis used Palm residue(EFB) and *Pinus rigida*. For confirm the effect of the temperature and reaction time, each liquor through precess is analyzed on the basis of mass balance.