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Study of the Enzymatic Hydrolysis of Alkaline-Pretreated Rice Straw Using Cellulase of Various Sources and Compositions

Nadiem Anwar, Arief Widjaja*, Sugeng Winardi

Abstract – *The study of the enzymatic hydrolysis of alkaline-pretreated rice straw was conducted using mixture of cellulases produced from *Trichoderma reesei* and from *Aspergillus niger*. 2 % NaOH was found effective in reducing the lignin content in rice straw as evidenced from quantitative data and confirmed by the SEM image. The enzymatic hydrolysis was performed at pH 5.5 and 40 °C, a condition which was determined upon compromising between the optimum values of pH and temperature and the enzyme stability. The mixture of crude cellulases was able to give higher conversion than cellulase from one source of fungi and also higher than the conversion using pure commercial cellulase from *A. niger*. Addition of 1 U activity of crude cellulase from *A. niger* to every 2 U activity of crude cellulase from *T. reesei* at 0.47 U/mL enzyme activity increased the concentration of reducing sugar by about 16%. Copyright © 2011 Praise Worthy Prize S.r.l. - All rights reserved.*

Keywords: *Alkaline Pretreatment, Hydrolysis, Mixture of Crude Cellulase, Rice Straw*