Darunwan Chuenbubpar 2010: The Study of Optimal Condition of Hydrolysis of Banana Peel (*Musa sapientum Linn*.) and Detoxification. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Assistant Professor Anusith Thanapimmetha, D.Eng. 85 pages.

This research was divided into 2 sections. The first section was investigated the optimum condition for reducing sugar production from banana peel using acid hydrolysis. The effect of sulfuric acid concentration (2-10%), temperature (30-90 °C) and reaction time (15-75 min) was studied. The results showed that the optimum condition was obtained at 4% sulfuric acid, 90 °C for 45 minutes which gave the highest reducing sugar of 34.2 g/L. Due to the by-product from hydrolysis by sulfuric acid such as furfural, 5-hydroxymethylfurfural and phenolic compound can inhibit on cell growth. Therefore, the treatment method was investigated in order to eliminate the toxic during process. The second section was investigated the techniques of detoxification for reducing sugar such as detoxification method using calcium hydroxide ($Ca(OH)_2$), resin and activated carbon. The results showed that 100% furfural can be completely removed by all techniques, 80.73% of phenolic compound and 98% of 5-hydroxymethylfurfural can be efficiently removed from the reducing sugar when activated carbon was used.

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