สำนักงานวิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

For the pretreatment step, it was found that [BMIM]Cl can be used to significantly reduce the crystallinity of cellulose. The optimal condition was at the 5:100 cellullose-to-[BMIM]Cl ratio, and the crystallinity of cellulose decreased about 90% after treating with [BMIM]Cl at 100°C. Although the pretreated cellulose was washed by deionized water, about 5% [BMIM]Cl still remained in the pretreated cellulose.

The enzymatic hydrolysis was performed by using three effective isolates (strain A 002, M 015, and F 018), isolated from Thai higher termites *Microcerotermes* sp. The results showed that strain F 018 gave the highest glucose concentration from the pretreated cellulose of about 0.59 g/L at 4 h. However, the glucose concentration from the hydrolysis of the untreated cellulose was slightly lower than that of the pretreated one. Moreover, the enzymatic hydrolysis using the mixed strains A 002 and M 015 was also studied. It was found that the mixed strains A 002 and M 015 had an adverse effect on the glucose concentration, resulting in the lower glucose concentration than that from strain A 002 and strain M 015.

In addition, the different structures of cellulose were investigated in the enzymatic hydrolysis. The hydrolysis of the No.5 Whatman filter paper with the fine crystalline structure gave the lowest glucose concentration. On the other hand, using the No. 1, 2, and 4 Whatman filter papers, which had the lower crystallinity, in the hydrolysis resulted in a higher glucose concentration.

5.2 Recommendations

For the future work, the enzymatic hydrolysis using bacteria should be compared with commercial cellulase enzyme in order to evaluate an activity and cost. Lignocellulosic material should also be applied in the future study. Moreover, HPLC should be used to determine other sugars from the hydrolysis of lignocellulosic material.