CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this research, the microbial hydrolysis of bagasse using two bacterial strains (strain A 002 and M 015), isolated from Thai higher termites, *Microcerotermes* sp., was investigated. Glucose was found to be a major monosaccharide produced from the hydrolysis. It was found that bacteria strain A 002 produced more glucose than strain M 015 at 37 °C because of the higher β-glucosidiase activity of strain A 002 over strain M 015. The optimum amount of malt extract in production medium was also investigated since the bacteria require nitrogen source from malt extract to grow and hydrolyze the bagasse to glucose. Particle size of bagasse also played important role on glucose production. In this research, the > 80 mesh bagasse provided the highest surface area for the enzyme to hydrolyze the bagasse, resulted in the higher glucose production. The maximum glucose production of 0.46 g/L was obtained at 8 h from microbial hydrolysis of > 80 mesh bagasse using strain A 002 at 37 °C and 10 g/L of malt extract in production medium. In order to compare glucose production, the > 80 mesh bagasse was hydrolyzed enzymatically using cellulase, produced from *Aspergillus niger*. The results revealed that the hydrolytic activities of both strains were found to be as high as that of commercial enzyme. However, using commercial enzyme requires more hydrolysis time and operating cost than using bacterial strains from Thai higher termites.

5.2 Recommendations

For the future work, the enzymatic hydrolysis of lignocellulosic material using these bacteria should be carried out in continuous process and the effect of the ratio of raw material to the production medium on glucose production should be investigated.