# CHAPTER V
# CONCLUSIONS AND RECOMMENDATIONS

## Conclusions

Sugarcane bagasse has a potential to be utilized in the sugar production. This work showed the benefit of using microwave as an efficient heating method in the pretreatment of sugarcane bagasse to produce monomeric sugar. Sugarcane bagasse could be hydrolyzed by NaOH and $H_2SO_4$ combined with microwave heating. Pretreated sugarcane bagasse using 2.0 % (v/v) $H_2SO_4$ with a 15:1 liquid-to-solid ratio at 120 °C for 15 min resulted in the highest monomeric sugar yields (glucose 21.89 g and xylose 29.61 g per 100 g biomass), which was much higher than those pretreated using NaOH. As a result, the use of microwave lowers the hydrolysis time due to its high heating efficiency. The results of this work can serve as a step for further work of this area.

## Recommendations

1. Sugarcane bagasse should be extracted lignin prior to the acid hydrolysis. It may help improve the amount of sugar obtained from pretreatment (Laopaiboon *at al.*, 2010).

2. The monomeric sugar released from NaOH pretreatment should be improved by using two-stage pretreatment, such as treating sugarcane bagasse with sodium hydroxide, followed by acid (Zhao *et al.*, 2009).

3. The hydrolysates should be analyzed the amount of inhibitor obtained from the pretreatment because the inhibitor in the hydrolysate influences the further fermentation process. The optimal conditions should provide the highest amount of monomeric sugar and the lowest amount of inhibitor.