

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

This chapter will be focused on conclusions of all experiment details on batch fermentation, in which the effect of pH, initial substrate (commercial grade glucose (CG) and glucose from cassava starch hydrolysate (CSH)) concentrations, brewer's yeast autolysate (BYA) concentrations and the effect of bitterness of brewer's yeast autolysate on lactic acid production were studied together with growth curve observation and lactic acid production.

#### 5.1 Conclusions

1. The lactic acid production under controlled pH at 5.5 was better than uncontrolled pH and the suitable pH of batch fermentation for lactic acid production using *L.salivarius subsp. salivarius* at 37<sup>0</sup>C is 5.5.

2. The comparison of the commercial grade glucose (CG) and glucose from cassava starch hydrolysate (CSH) on lactic acid production indicated that the lactic acid concentration of both carbon source were resembled but the cell growth of CSH was higher than CG.

3. The suitable initial commercial grade glucose and glucose from cassava starch hydrolysate concentrations are 70 g/l and 70 g/l, respectively.

4. The comparison of the yeast extract (YE) and brewer's yeast autolysate (BYA) on lactic acid production indicated that the lactic acid productivity and lactic acid yield of BYA was higher than YE, so, the YE may replaced with BYA to produce lactic acid for reducing cost of nitrogen source.

5. The lag time of batch fermentation was increased when the BYA concentration increased and the suitable Brewer's yeast autolysate concentration for cell growth and lactic acid production is 48 ml/l.

6. The bitterness of BYA didn't effect the lactic acid production but the debittering of the bitterness was good for cell growth.

#### 5.2 Recommendations

1. According to the results of kinetic parameter, it can develop continuous lactic acid fermentation for enhancing lactic acid productivity.