CHAPTER 6

CONCLUSIONS

1. All fungal strains could grow and produced reducing sugar and enzymes such as cellulase, xylanase, mannanase, pectinase and amylase on sugar depleted dried longan.

2. Maximum reducing sugar production was obtained from *A. foetidus* TISTR 3461, it was 30.84 ± 0.59 g/l or 102.79 ± 1.96 mg/g dried substrate at 7 days cultivation, followed by reducing sugar content from *A. niger* TISTR 3089 at 25.10 ± 0.32 g/l or 83.67 ± 1.06 mg/g dried substrate after cultured for 6 days.

3. The reducing sugar obtained consist of *S. cerevisiae* fermentable reducing sugar around 65.71 ± 2.09 % in *A. foetidus* TISTR 3461 extract and 57.41 ± 6.41 % in *A. niger* TISTR 3089 extract. The mainly of fermentable reducing sugar was glucose.

4. After extracted and concentrated of both fungal extracts, they were used to produce ethanol by *S. cerevisiae* TISTR 5606. The maximum ethanol concentration when using *A. foetidus* TISTR 3461 extract and *A. niger* TISTR 3089 extract as substrate were 22.88 ± 0.34 g/l and 20.19 ± 0.43 g/l, respectively. The maximum ethanol production yield ($Y_{p/s}$) from both fungal culture extracts were 0.41 ± 0.003 g/g and 0.40 ± 0.005 g/g representing 80.39% and 78.43% fermentation conversion efficiency, respectively.

5. The pH value of the *A. niger* TISTR 3089 extract should be adjusted for appropriate ethanol production.

6. These fungal extracts were not necessary to be sterilized before cultivation and ethanol production by *S. cerevisiae* TISTR 5606.