

CHAPTER 6

CONCLUSION

This study have identified the capabilities of three different substrates (soya bean, maize and rice) supplemented with three different nitrogen sources (peptone, yeast extract and malt extract) at three concentrations to support mycelia growth as a source of natural antioxidants. Overall, the IC₅₀ values of methanolic extracts were lower than dichloromethane extracts and it showed methanol was the best solvent to be used to extract antioxidants. Methanolic extract of maize supplemented with 0.04% peptone and inoculated with *L. squarrosulus* mycelia exhibited the best antioxidant reactions against radical scavenging molecules and reached a steady state in 30 minutes. Antioxidant extract from *L. squarrosulus* grown on maize with 0.04% peptone exhibited the best IC₅₀ value 20.2mg/ml. This extract was also better than antioxidant extracted from *L. squarrosulus* mycelia grown in liquid GYMP with IC₅₀ values of 23.5mg/ml and 26.9mg/ml respectively. The fermented maize extract also showed the best inhibition of lipid peroxidation of 83.6% compared to liquid fermentation extract which exhibited 74% inhibition and unfermented maize extract with 69.4% inhibition at 30mg/ml. However, in lipid peroxidation assay of cooking oil, at 5.0mg/ml extracts of *L. squarrosulus* in liquid fermentation and maize supplemented with 0.04% peptone did not show any significant difference in inhibition of lipid peroxidation activity with 66.0% and 64.8% respectively. In the total phenolic content assay, the results exhibited liquid fermentation had the highest TPC values with 31.39mgGAE/g extract compared to fermented maize extract with only 19.34mgGAE/g extract although the statistical analysis did not show any significant difference. As a conclusion for this study, the result reflects the potential application of solid substrate fermentation of *L. squarrosulus*

extracts obtained by inoculation on maize and supplemented with 0.04% peptone as a source of antioxidants and to be used as lipid-rich food stabilizer. Therefore, further study should be done to identify the bioactive compounds in this mushroom which may become a potential source of natural antioxidants for many applications especially in the food industry.