ABSTRACT

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STUDY OF ALCOHOLIC FERMENTATION EFFECT TO ANTIOXIDANT CHARACTERISTICS OF BLACK RICE BEVERAGE
(*Oryza sativa* L. Indica)

(xii + 97 pages : 10 tables, 3 appendices)

Black rice (*Oryza sativa* L. Indica) has high potential to be utilized as a source of antioxidants. Sample preparation (grinding and cooking) and fermentation time that applied in black rice are expected to increase its antioxidant characteristics. This research was aimed to study the antioxidant characteristics of black rice as it treated with different sample preparation (cooked and grinded) and to study the effect of alcoholic fermentation by *Saccharomyces cerevisiae* towards the antioxidant characteristics of black rice as it treated with different methods (filtered and unfiltered). The fermentation was performed for 21 days with periodical analysis once every 3 days. The selected sample preparation was the grinded black rice with IC$_{50}$ = 616.12 ± 101.67 mg/L. The effect of different methods in producing fermented black rice showed that filtered fermented black rice has higher antioxidant activity with IC$_{50}$ = 794.2 ± 72.58 mg/L. While the effect of fermentation time showed an increase of antioxidant activity up to day-13 with IC$_{50}$ = 1658.72 ± 1257.21 mg/L. The final product from the filtered fermented black rice has alcohol content of 9.18% (v/v), highest total reducing sugar of filtered 0.72%, total titratable acidity of 2.99 g citric acid/100 mL, pH of 3.44, total dissolved solids of 17.4 ± 0.57 °Brix, total phenolic content of 173.98 ± 7.99 mg GAE/g sample, total flavonoid content of 2.97 ± 0.84 mg QE/g sample and IC$_{50}$ of 794.2 ± 72.58 mg/L. In conclusion, the fermentation process by *Saccharomyces cerevisiae* that applied to the black rice has increased the antioxidant activity up to certain point of fermentation time.

Keywords : Black rice, antioxidants, fermentation, filtered