

THE EFFECT OF LAB BACTERIA (*Lactobacillus plantarum* and *Lactobacillus acidophilus*) FERMENTATION ON ANTIOXIDANT ACTIVITIES AND PROXIMATE COMPOSITION OF SALAK SEED FLOUR

Nur Ain Balqis Suhadak^a, Adi Md Sikin^{a*}

Structured Abstract

Background: Nowadays, there has been an increase interest in fermentation of plant-derived as food ingredient due to the health-promoting qualities of plant extract. This study is regarding the effect of two type of Lactic Acid Bacteria (LAB) (*L.plantarum* and *L.acidophilus*) fermentation on antioxidant activities and proximate composition of Salak seed flour.

Methods: Fermentation was done after incubation of Lactic Acid Bacteria (LAB) in the De Man, Rogosa, and Sharpe (MRS) broth for 24 hours in 37°C. Antioxidant analysis was carried out by Total Phenolic Content (TPC) which expressed in mg GAE/100g and 2,2-diphenyl-1-picryl hydrazyl (DPPH) assay which was expressed as IC₅₀. Proximate analysis and physicochemical properties which was water activity and pH of fermented Salak seed flour was conducted for each fermented flour by LAB.

Results: Result showed that based on the different temperature and time that has been subjected to the fermentation of Salak seed flour, *L.plantarum* had highest value of antioxidant activity of TPC on room temperature (28°C) for six days fermentation with significant different ($p<0.05$) between sample means meanwhile for the DPPH assay, highest amount of antioxidant activity was from 28°C of day 9. Meanwhile for *L.acidophilus*, both analysis has a significant different ($p<0.05$) between the sample means. The highest antioxidant results came from fermentation period of 9 days compared amongst all of the fermented sample. For proximate analysis, a decreased value in the total carbohydrate of fermented Salak seed flour by *L.plantarum* which was chosen according to the highest antioxidant activity from total phenolic content meanwhile for *L.acidophilus*, proximate analysis between the samples is significantly different ($p<0.05$) with the moisture content, fat and carbohydrate composition is higher than the unfermented sample. In terms of physicochemical analysis, fermentation by *L.plantarum* has no significant different ($p>0.05$) for water activity and there was significant difference for pH ($p<0.05$) for fermented samples compared to fermentation by *L.acidophilus*, both showed a significant different ($p<0.05$) between water activity and pH.

Conclusion: In conclusion, this study showed that there are an effect of temperature and time fermented sample toward its antioxidant activity and its proximate composition of Salak seed flour

Keywords: Fermentation, Salak seed flour, Antioxidant, Proximate composition, Water activity, pH

*Correspondence: adisikin@uitm.edu.my

^a School of Industrial Technology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia