ABSTRACT

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SOLID STATE FERMENTATION OF OKARA USING *Aspergillus oryzae*
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Okara is a by-product from soymilk production which possessed disposal problem. As a by-product okara has high protein content which could be utilized as a functional ingredient. Through solid state fermentation, protein could be hydrolyzed by protease and possibly released potential bioactive peptides which can exhibit antioxidant activity. *Aspergillus oryzae* is known to have high proteolytic activity. Therefore, this research was aimed to study the most suitable condition of okara fermentation at different fermentation times (24, 48, 72, 96, and 120 h), *A. oryzae* concentrations ($0.8x10^{-3}$, $1.4x10^{-3}$, and $1.6x10^{-3}$ g_{DCW}/g_{Okara}), and water activity (0.913, and 0.931). The most suitable conditions were chosen based on the highest radical scavenging activity. The results showed that the most suitable conditions were 96 h fermentation, $1.6x10^{-3}$ g_{DCW}/g_{Okara} initial concentration of *A. oryzae*, and 0.913 of water activity with an increasing 67.78% in radical scavenging activity upon 24.37% degree of hydrolysis. It was also found that, essential amino acids which were lysine, methionine, tyrosine, and tryptophan were enhanced through *A. oryzae* solid state fermentation. Tyrosine and cysteine which contributes to radical scavenging activity in bioactive peptides was also enhanced. Thus, through *A. oryzae* solid state fermentation the functional properties of okara could be enhanced.

Keywords: *Aspergillus oryzae*, antioxidant activity, okara, solid state fermentation.
References: 54 (2005-2017)