ABSTRACT

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EFFECT OF PINEAPPLE (*Ananas comosus* (L.) Merr) EXTRACT AND SOAKING TIME ON THE ANTIOXIDANT ACTIVITY AND OTHER CHARACTERISTICS OF TEMPEH

(xiii + 84 pages: 13 figures, 18 tables, and 8 appendices)

Tempeh is soy-based fermented food that requires long time processing, especially during soaking and fermentation process. Previous studies found that the utilization of pineapple peel or core extract during soybean soaking could accelerate tempeh fermentation time. The aim of this research was to investigate the effect of pineapple extract to water ratio and soaking time toward the antioxidant activity of ripe tempeh (48-h fermentation). Total phenolic content, physical, and organoleptic properties were also assessed. During tempeh making, soybean was soaked in media with different pineapple extract to water ratio (1:0, 1:1, 1:2, and 0:1) for different times (3, 6, 12, and 24 h) prior to inoculation and incubation. The result showed that there was significant interaction between pineapple extract to water ratio and soaking time that affected the antioxidant activity and total phenolic content of soaked soybean and ripe tempeh (p<0.05). These values tended to increase as prolong soaking and higher pineapple extract portion was present in the media. It seems that the increased of antioxidant activity was the result of isoflavone aglycones production by β-glucosidase and bioactive peptides formation during fermentation. Soybean soaked for 12 h in 1:0 and 1:1 media and those soaked for 24 h in 1:1 and 1:2 media were shown to give tempeh with highest antioxidant activity and total phenolic. Additionally, tempeh from 12-h soaking treatment produced highest acceptance in all of organoleptic test parameters. Considering the antioxidant activity, total phenolic content, organoleptic parameters acceptance, and economical value, thus tempeh from soybean soaked for 12 h in 1:1 media was chosen as the best treatment. From the changes of functional properties observed, it can be concluded that fermentation was important process that majorly contributed to the increase of antioxidant activity of tempeh.

Keywords: Antioxidant activity, pineapple, soaking, tempeh, total phenolic content

References: 82 (1979-2015)