

ABSTRACT

Robithoh Wardah Baihaqi. 24020221130039. *Effect of Fermentation Time on Antioxidant Activity of Tempeh Using Rhizopus sp. R5 Powder Inoculum*. Under the guidance of Wijanarka and Susiana Purwantisari.

Tempeh is one of the sources of endogenous antioxidants from fermentation using Rhizopus sp. Each Rhizopus sp. has different potential in producing β -glucosidase enzyme which will cause differences in antioxidant activity produced. One important factor in tempeh fermentation is the length of fermentation time. Rhizopus sp. This study aims to determine the morphological characteristics of Rhizopus sp R5 isolate, determine the effect of fermentation time using powder inoculum of Rhizopus sp R5 isolate on the antioxidant activity of soybean tempeh, determine the best fermentation time based on the organoleptic score of tempeh made using powder inoculum of Rhizopus sp R5 isolate. R5, as well as knowing bioactive compounds with potential as antioxidants from fermented tempeh using Rhizopus sp R5 isolate powder inoculum. The variation of fermentation time used, namely 24 hours, 48 hours, 72 hours, and 96 hours. DPPH method was used to test the antioxidant activity of fermented tempeh with the highest antioxidant activity. The results of antioxidant activity testing were statistically analyzed with One Way ANOVA. Then GC-MS analysis was conducted and the results of bioactive compounds with antioxidant potential were analyzed through the literature. The results showed that Rhizopus sp. R5 isolate has macroscopic morphological characteristics, namely white colony color, cotton-like colony texture, and round colony shape. While microscopically, it has sporangium and round spores, there are stolons, single sporangiophore, and rhizoids that are opposite to the sporangiophore. The highest score of organoleptic tempeh made using powder inoculum isolate Rhizopus sp. R5 is tempeh with a fermentation time of 48 hours. The length of fermentation time with Rhizopus sp R5 isolate did not significantly affect the antioxidant activity of tempeh. Some bioactive compounds with potential as antioxidants, namely phenol; hexadecanoic acid, methyl ester (CAS); n-hexadecanoic acid; 9,12-octadecadienoic acid (Z,Z)-, methyl ester; 9,12-octadecadienoic acid (Z,Z)-; 9-octadecenoic acid (Z)-, methyl ester; and oleic acid.

Keywords : Antioxidants, DPPH, GC-MS, Rhizopus sp. R5, Tempeh