ABSTRACT

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UTILIZATION OF RED MELINJO PEEL EXTRACT (*Gnetum gnemon* L.) AS A NATURAL ANTIOXIDANT FOR PALM OLEIN

(xiii+72 pages; 20 figures, 8 tables, 17 appendices)

Red melinjo peel contains many carotenoid compounds that could act as an antioxidant. Palm olein, the most consumed frying oil in the world is prone to oxidation. Extract of red melinjo peel was expected to become a natural antioxidant for palm olein. The purpose of this research was to study the utilization of red melinjo peel extract as a natural antioxidant, compared to synthetic antioxidant, and to determine the optimum concentration. Firstly, the extract was analyzed for the yield, carotenoid, and phenolic. Different concentration of extract (250, 500, 750, and 1000 ppm) was added to oil and treated with accelerated stability test (110°C, 2 and 4 days) and heating test (180°C, 1 hour). Before and after treatment, the oil was analyzed for total carotenoid, peroxide value (PV), p-anisidine value (p-AV), free fatty acid (%FFA), color (subjective and objective), and hedonic. The results of accelerated stability test showed that higher concentration of red melinjo peel extract could decrease PV, p-AV, and %FFA, increased total carotenoid, a* and b* value, and didn’t affect lightness value. Higher extract concentration gave darker color of yellow and decreased the acceptance of panelists. After 4 days, the a* and b* had no difference anymore. The optimum concentration was 750 ppm, chosen based on PV and p-AV. TBHQ was better than red melinjo peel extract based on PV, p-AV, and hedonic. The results of heating test showed that higher concentration of red melinjo peel extract decreased PV and p-AV, increased total carotenoid, lightness, and b* value, and didn’t affect the a* value. The oil tended to have darker color and lower acceptance of panelists. 1000 ppm was chosen for the optimum concentration based on PV and p-AV. Red melinjo peel extract was better than TBHQ based on PV and p-AV, and TBHQ was better based on hedonic.

Keywords : Antioxidant, carotenoid, melinjo peel, palm olein, oil, oxidation

References : 117 (2001-2016)