THE EFFECT OF *BUTYLATED HYDROXYANISOLE* (BHA), *BUTYLATED HYDROXYTOLUENE* (BHT), AND *PROPYLGALLATE* (PG) ON THE RANCIDITY LEVEL OF PALM OIL

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ABSTRACT

This research entitled the effect of butylated hydroxyanisole (BHA), butylated hydroxytoluene (BHT), and propylgallate (PG) on the rancidity level of palm oil, aims to find out the difference of the effectiveness among BHA, BHT, and PG antioxidants inhibiting the rancidity level of palm oil.

The sample used in this research is the palm oil from Bantul market, Yogyakarta. The sample was added with BHA, BHT, and PG antioxidants each with the concentration level of 0,02 ; 0,04 ; 0,06 ; 0,08 and 0,10 % w/v respectively. Previously, the optimum temperature within the range of the cooking temperature was specified. It was done by heating the palm oil within the temperature of 150, 170, 190, 210, and 230^{0}C and then added the antioxidants 0,02 % w/v. The temperature that results in the highest level of absorbance was the optimum temperature and that used in the next analysis. The effect of antioxidant addition can be analyzed by determining the TBA rate. Determining the rate was done by using spectrofotometer UV-Vis. The red coloured complex that emerges indicates the rancidity level of the oil. To find out the change of constituent the palm oil used gas chromatography (GC). Meanwhile, to find out the kind of constituent the palm oil was analyzed by GC-MS.

The result of this research shows that by adding BHA, BHT, and PG antioxidants 0,02 % w/v within temperature of 150, 170, 190, 210, and 230^{0}C will produce the highest absorbance at the 230^{0}C. The analysis using antioxidant concentration variation of 0,02 ; 0,04 ; 0,06 ; 0,08 and 0,10 % w/v at the temperature of 230^{0}C shows that BHA and BHT can inhibit the rancidity by producing lower level of absorbance. Meanwhile, PG tends to produce absorbance that is relatively stable (high), because it deteriorates since at the temperature of 148^{0}C and has low level of solubility in the oil. The analysis using GC-MS shows that palm oil contains fat acids of miristate, palmitate, linoleate, oleate, and stearate. The analysis using GC shows that fat acids, especially the unsaturated one deteriorates when heated.

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