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PROCESSING METHODS AND STORAGE PERIOD AFFECT THE QUALITY OF PALM OIL

Enyi Chukwunwike U.[1], Ojimelukwe Philippa C.[1]✉

[1]Michael Okpara University of Agriculture Umudike, College of Applied Food Sciences and Tourism, Department of Food Science and Technology, P.M.B 7267 Umuahia, Abia State Nigeria.
✉philippaco60@gmail.com

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ABSTRACT

The effects of processing methods and storage periods on oil palm quality were studied in this research. The palm fruits were subjected to four different processing methods; boiling (B), soaking followed by boiling (SWB), steaming (ST) and extraction with petroleum ether (SP). Quality indices, functional; physical properties and selected vitamins were determined. The results showed that free fatty acid values ranged from 5.14 in SP to 6.54 mg/KOH/g in SWB: peroxide value from 2.67 in SP to 10.07meq/kg in SWB, saponification value from 194.48 in ST to 196.82 mg/KOH/g in SWB; iodine value from 49.07 in SP-52.24g/100g in SWB. Free fatty acid, peroxide and iodine values increased as storage time increased except for saponification value which decreased. The moisture content value was from 0.17-0.35 %, specific gravity (0.89-0.92 g/cm^3); smoke point (231.67-240.00℃), flash point (294.00-303.00℃) and fire point (297.33-309.33℃). The soaked and boiled sample (SWB) had the highest values in moisture, smoke and flash point. While steaming (ST) induced the highest values in specific gravity and fire point. The sample extracted with petroleum ether had the lowest values for all the physical properties determined and the highest values for vitamins A (718.97IU/100g) and E (43.95IU/100g. The boiled sample (B) had the lowest values for vitamin A (699.47IU/100g) and vitamin E (38.87IU/100g). Both vitamins decreased as storage time increased. Moisture content and specific gravity increased while smoke, flash and fire points decreased as storage time increased. Emulsion capacity ranged from 62.19-100 % and emulsion stability ranged from 42.70-100 %. Steaming method (ST) produced oil samples with the highest values for both emulsion capacity and stability while extraction with petroleum ether had the lowest values. Both emulsion stability and emulsion capacity increased as storage time increased. Extraction with petroleum ether was the best in terms of good quality, followed by steaming and boiling methods.