

## **Oxidative stability of virgin coconut oil compared with RBD palm olein in deep-fat frying of fish crackers**

### **ABSTRACT**

The oxidative stability of virgin coconut oil (VCO) in deep fat frying at  $185 \pm 5^\circ\text{C}$  for a total of 30 hours was evaluated and compared with that of similarly-treated RBD palm olein (RBDPO) based on changes in the peroxide value (PV), p-anisidine value (p-AV), total oxidation (TOTOX) value, total polar compound (TPC) content and color. The sample used in the frying study is a favorite Malaysian snack, fish crackers, a dried product comprising mainly of sago starch and comminuted fish. Twenty grams of the crackers were fried for 60-90 seconds in 1.5 kg of oil, 12 batches a day at an interval of 5 minutes, for five consecutive days. On each day of frying, fresh oil was added to replenish the oil used to its original volume before the next frying was carried out. Results show that there was a significant increase ( $P < 0.05$ ) in all the parameters tested with frying time, regardless of the oil use. However, the rate of change differed between the two oils. The highest values for peroxides ( $\text{meqO}_2/\text{kg}$ ) were 14.02 (initial value, 1.31) for RBDPO recorded after the third day of frying and a significantly ( $P < 0.05$ ) lower value of 10.07 (initial value, 3.62) for VCO over the same period of time. These represented a 10.7- and 2.8-folds increase in peroxide values, respectively, for VCO and RBDPO. The highest peroxide value for VCO (12.24) was recorded after the fourth day of frying. For p-anisidine result, the value recorded at the end of the frying period was 6.27 for RBDPO and 5.87 for VCO. The rate of increase in total oxidation (TOTOX) value was faster in RBDPO (5.19 units per day) compared to VCO (3.67 units per day) during the five consecutive days of frying. The amount of total polar compounds (TPC) in VCO (15.11%) was significantly lower ( $P < 0.05$ ) than that of RBDPO (19.3%). The color of the oils increased with frying time, and being initially near colorless, the change in red color index for VCO was far greater than for RBDPO. RBDPO did not undergo a significant red color change until the third day of frying.

**Keyword:** Frying stability; Virgin coconut oil; RBD palm olein; Fish crackers