

EFFECT OF TEMPERATURE TOWARDS  
STABILITY OF VIRGIN COCONUT OIL AS  
COMPARED TO EXTRA VIRGIN OLIVE OIL

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## ABSTRACT

The main objective of this study is to investigate effect of temperature towards oil stability of virgin coconut oil as compared to extra virgin olive oil. Stability of oils was evaluated from the aspect of fatty acids profile by gas chromatography (GC), natural antioxidants that present in oil samples by chemical analysis, total phenolic content (TPC) and degree of unsaturation of fatty acids by iodine value (IV). Fourier transform infrared spectroscopy (FTIR) used to monitor the oxidation process of oil samples during heating. Oil samples were treated at 3 deep-frying temperatures, 150°C, 170°C and 190°C. Comparison was made with the control (untreated) oil samples. Results showed that there were significant differences ( $P < 0.05$ ) for IV and TPC test before and after heat treatment. For IV, virgin coconut oil decreased from 11.09 to 3.72 g I<sub>2</sub>/ 100g oil whereas extra virgin olive oil decreased from 80.74 to 76.82 g I<sub>2</sub> / 100g oil. In term of phenolic compound, virgin coconut oil decreased from 0.651 to 0.427 mg GAE per 100 g of oil while extra virgin olive oil decreased from 12.954 to 5.306 mg GAE per 100 g of oil. Results from GC showed that there were no significant differences ( $P > 0.05$ ) of each fatty acids in terms of percentage before and after heat treatment. However, there were significant changes ( $P < 0.05$ ) in the percentage of linoleic acid (from 0.74% to 0.58%) and palmitic acid (from 12.31% to 13.34%). Comparison of FTIR spectra between virgin coconut oil and extra virgin olive oil after 190°C heat treatment showed that virgin coconut oil is less stable than extra virgin olive oil due to produced greater amount of hydroperoxides, peroxides and secondary oxidative products. In conclusion, extra virgin olive oil might be more stable than virgin coconut oil towards high temperature treatment.

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