

STUDIES ON EFFECT OF TEMPERATURES TOWARD
UNSATURATED FATTY ACIDS IN CANOLA OIL,
CORN OIL AND OLIVE OIL

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2006

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ABSTRACT

The objective of this study is to determine the stability of oleic, linoleic and linolenic acid in olive, canola and corn oils. The stability of all three oils was determined through chromatographic method and simple chemical tests. Through gas chromatography – flame ionization detector (GC – FID) analysis, fatty acids composition of various oils was determined before and after heat treatment. Oils were treated at normal cooking temperature, 60°C, low frying temperature, 100°C and regular deep frying temperature, 180°C. Comparison was made with the oils stored at room temperature, 25°C as control. Results showed that the Peroxide Value (PV) showed a significant increase ($P < 0.05$) while the Iodine Value (IV) showed a significant decrease ($P < 0.05$) for both canola and corn oil after heat treatment. Olive oil showed neither significant increase ($P > 0.05$) for PV nor a significant decrease ($P > 0.05$) for IV. These results correlated well with the results obtained from chromatographic method. Results obtained showed that heat treatment caused a significant decrease ($P < 0.05$) in the concentration of linolenic acid when compared to that of untreated canola, corn and olive oils. The concentration for oleic acid, linoleic acid, and linolenic acid decrease significantly ($P < 0.05$) in olive oil. Concentrations of saturated fatty acids showed no significant decreases ($P > 0.05$). From the unsaturated / saturated ratio of fatty acids, the stability of the oils decreased in the order: olive oil > corn oil > canola oil.

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