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The same sunflower oil used for the bleaching test was heated at 180 °C, under vacuum, to simulate the process of deodorization. There were no significant differences between the trienes and dienes concentrations before and after deodorization, indicating that heating at 180 °C for 1 h was a condition not sufficient for the dehydration of either the hydroxysterols or sterols. Moreover, recoveries of the hydroxysterols were quantitative with no decomposition reactions, whereas the recovery of 7-keto- β -sitosterol was ~80%, similar to the recoveries obtained after bleaching. The authors concluded that dehydration of the hydroxysterols would occur at higher temperatures (135). Effect of chemical interesterification of a blend of refined olive oil and palm stearin on POP content has been investigated. Generally, chemical interesterification had no effects on the POP content of the starting oil blend.

These results show that processing of vegetable oils at the temperature used for interesterification (90–120 °C), along with catalysis and other steps to produce interesterified fats, does not generate POP (113). The issue of authenticity is becoming increasingly important in vegetable oils.

Adulteration is generally motivated by the maximizing benefit by replacing an expensive vegetable oil with a cheaper one (162). To detect edible oils and fats adulteration, it is possible to use both major and minor components as detection tool. Since each oil and fat may have an especial component at a known level, their presence and amounts should be considered as a detection tool. The sterol profile can be used as a means of differentiating between vegetable oils or detecting possible adulteration (18, 163). In addition, it is

even possible to determine the geographical origins of olive oils using minor constituents, such as cycloartenol and tocopherols (164).

Hazelnut oil is used to adulterate olive oil due to its similar composition of triacylglycerols, fatty acids and major sterols (24, 165, 166). However, hazelnut oils have lower contents of β -avenasterol but higher levels of β -7-stigmastenol than olive oils (167). Some esterified 4-desmethyl sterols (campesterol, β -7-stigmastenol and β -7-avenasterol) have been used to detect olive oil adulteration with hazelnut oil using the Mariani ratio (RMAR1). For non-adulterated olive oil, RMAR is not more than 1.

This method can be used to detect adulteration at a level of 10% (168, 169).