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Screening of Different Classes of Olive Oil to Provide a Potential Healthiest Alternative for Deep Frying

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Abstract

Nowadays, deep frying absorbs a considerable amount of the edible oils produced in the world. The use of fats and oils rich in saturated fatty acids has decreased because of their negative effects on health, including their implication in cardiovascular diseases. Olive oil, which accounts for only about 3 % of the vegetable oils consumed in the world, is one of the few oils whose benefits on human health have been widely studied and documented. Nonetheless, the use of olive oil in deep frying is still very insignificant, not only because of its relatively high price, but also because of a generic idea which perceives it as an oil that should be consumed in raw, without referring to existent comparative studies with other plant species. Although there is a wide literature demonstrating its resistance during the frying process, only a few studies compare different commercial classes of olive oil and/or cultivars performance with regard to frying and/or resistance to temperature. From this two years' study, we aim at describing the impact of a prolonged intermittent heat application of 180°C on the behaviour of different commercial categories of three olive cultivars compared to other vegetable oils used as a reference. After a four day's treatment, the generated polar compounds and total phenolic fraction conserved in the oils demonstrated that all classes of virgin olive oils were more resistant to heat application, while free fatty acidity was lower in refined oils. Fatty acid composition changes were also observed. A better resistance of higher quality virgin olive oils has been clearly observed, indicating that the efficiency of olive oil under high temperature for a prolonged time also depends on the cultivar origin and intrinsic quality value. The results of this study can be considered as a first step towards the selection of the best virgin olive oils that could be suitably used as a healthiest alternative for frying or other cooking processes that involve high temperature. However, the interaction between the oil and each specific ingredient should be furtherly studied accordingly.

Keywords: Cultivars, healthy frying, olive oil classes, temperature resistance