

The Impact of the Method of Extraction on 'Chemchali' Olive Oil Composition in Terms of Oxidation Index, and Chemical Quality

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Abstract : Introduction and purposes: Olive oil is the main oil used in the Mediterranean diet. Virgin olive oil is valued for its organoleptic and nutritional characteristics and is resistant to oxidation due to its high monounsaturated fatty acid content (MUFAs), and low polyunsaturates (PUFAs) and the presence of natural antioxidants such as phenols, tocopherols and carotenoids. The fatty acid composition, especially the MUFA content, and the natural antioxidants provide advantages for health. The aim of the present study was to examine the impact of method of extraction on the chemical profiles of 'Chemchali' olive oil variety, which is cultivated in the city of Gafsa, and to compare it with chetoui and chemchali varieties. Methods: Our study is a qualitative prospective study that deals with 'Chemchali' olive oil variety. Analyses were conducted during three months (from December to February) in different oil mills in the city of Gafsa. We have compared 'Chemchali' olive oil obtained by continuous method to this obtained by superpress method. Then we have analyzed quality index parameters, including free fatty acid content (FFA), acidity, and UV spectrophotometric characteristics and other physico-chemical data [oxidative stability, β -carotene, and chlorophyll pigment composition]. Results: Olive oil resulting from super press method compared with continuous method is less acid(0,6120 vs. 0,9760), less oxydazible(K232:2,478 vs. 2,592)(k270:0,216 vs. 0,228), more rich in oleic acid(61,61% vs. 66.99%), less rich in linoleic acid(13,38% vs. 13,98 %), more rich in total chlorophylls pigments (6,22 ppm vs. 3,18 ppm) and β -carotene (3,128 mg/kg vs. 1,73 mg/kg). 'Chemchali' olive oil showed more equilibrated total content in fatty acids compared with the varieties 'Chemleli' and 'Chetoui'. Gafsa's variety 'Chemlali' have significantly less saturated and polyunsaturated fatty acids. Whereas it has a higher content in monounsaturated fatty acid C18:2, compared with the two other varieties. Conclusion: The use of super press method had benefic effects on general chemical characteristics of 'Chemchali' olive oil, maintaining the highest quality according to the ecocert legal standards. In light of the results obtained in this study, a more detailed study is required to establish whether the differences in the chemical properties of oils are mainly due to agronomic and climate variables or, to the processing employed in oil mills.

Keywords : olive oil, extraction method, fatty acids, chemchali olive oil

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