

Effects of olive drying on aroma, chlorophyll and fatty acids composition of olive oil

Wissal Dhifi¹, Maher Ben Khedher², Wissem Mnif¹, Marc El Beyrouthy³, Lara Hanna Wakim³ and Brahim Marzouk²

¹: UR Ecophysiologie Environnementale et Procédés Agroalimentaires, BiotechPole de Sidi Thabet Université de La Manouba, Tunisia

²: Laboratory of Bioactive Substances, Biotechnology Center in Borj-Cedria Technopol, BP. 901, 2050 Hammam-Lif, Tunisia

³: Department of Agricultural Engineering, Faculty of Agricultural and Food Sciences, The Holy Spirit University of Kaslik (USEK), B.P. 446, Jounieh, Lebanon

The olive agrifood chain is one of the main agrindustrial sector in Mediterranean countries. Olive products, mainly table olive and extra virgin olive oil, have been processed as a plant food since prehistoric times. A large increase in demand for high-quality olive oil and table olive during the past few years can be attributed not only to its potential health benefits but also to its organoleptic properties. In this sense, a new technological procedure, involving drying of olive (fruit), has been developed.

The purpose of this work was to ascertain the effect of drying on FA and total volatile compound composition and also on total chlorophyll amount. Samples were obtained from homogeneous olive fruits belonging to four Tunisian cultivars: "Chemlali", "Chetoui", "Oueslati" and "Picholine". Olives were submitted to air drying, oven drying (40°) and infra red drying (40°) Oils were extracted using the continuous soxhlet method. Fatty acids were converted into fatty acid methyl esters (FAMES) and their composition was analyzed by capillary gas chromatography (CGC). Total chlorophylls content was measured by The AOCS method. Furthermore, volatile compounds were stripped by dynamic headspace and their composition was performed with the same capillary column used for FA analysis.

The main results showed that, by comparison with oil extracted from non dried olives, the drying didn't affect FA composition whereas a significant decrease in pigment contents was found when fruits were dried by infrared radiation and oven dried. Air drying gave the most pigmented oil. In all our oils, aroma compounds were represented by C6 aldehydes, alcohols and esters. We noticed a decrease of aldehydes against an increase of alcohols and esters after oven drying at 40°C. Aldehydes amount was more important in oils extracted from olives submitted to drying by infra-red radiations.

Keywords: olive, olive oil, drying, fatty acids, volatiles, chlorophylls