

## IDENTIFICATION OF VOLATILE COMPOUNDS OF OLIVE OILS FROM DIFFERENT GEOGRAPHIC REGIONS

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The aim of the study was to determine the effects of different geographic origin, cultivar and harvest year on volatile compounds of olive oil. For this aim, samples from 5 different types of olive oil from 5 geographic regions; Mediterranean, Aegean, Southeastern Anatolia, Marmara and Black Sea, were collected in two different harvest years (2010 and 2011). A total of 25 samples were collected in each harvest year. Volatile compounds of olive oils were extracted using solid phase micro extraction (SPME) method and were identified with GC-MS. A total of 59 volatile compounds from 7 different chemical groups were identified in the olive oil samples, including aldehydes, ketones, hydrocarbons, alcohols, esters, terpenes and furans. Aldehydes were detected as the major group in all geographic regions. Within aldehydes, *trans*-2-hexenal was found to be relatively higher amounts. Hexanal was the other significant aldehyde in all geographic regions except Mediterranean region. Alcohols and esters were determined as other important compounds. In the olive oil samples, *cis*-2-pentene-1-ol, *cis*-3-hexene-1-ol, *cis*-2-hexene-1-ol, 1-hexanol, 1-pentene-3-ol and *trans*-3-hexene-1-ol were evaluated as significant alcohols. The peak area of acetic acid hexyl ester was higher than those of other esters. However, it was determined that olive cultivar factor had no significant effect on esters. Among ketones, 6-methyl-5-heptane-2-one showed higher values in all geographic regions. In terpenes such as  $\alpha$ -farnesene, d-limonene,  $\alpha$ -cubebene, *trans*- $\alpha$ -bergamotene,  $\beta$ -sesquiphellandrene and zingiberene, the significant differences were determined in terms of cultivar and regions. As a result, the effects of cultivar and harvest year on the volatile compounds were quite variable in each geographic region.

Keywords: Olive oil, volatile compound, aldehydes, GC-MS, SPME

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