

THE DETERMINATION OF OIL PROPERTIES OF SOME OLIVE CULTIVARS GROWN IN SÜTÇÜLER, ISPARTA REGION

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Abstract

The aim of this study was to assess the fatty acid compositions, tocopherol contents and some biochemical properties of 'Ayvalık', 'Memecik', and 'Topakaşı' olive cultivars' fruits grown in Mediterranean region of Turkey, Sütçüler/Isparta. According to mean values the highest value of oleic acid (73.88 %), which is the most dominant acid in olive fruit, was found in Memecik. The highest value for alpha tocopherol content was obtained from Topakaşı (213.63 %) whereas the highest values for beta, gamma and delta tocopherol contents were obtained from Memecik (2.46, 4.19 and 0.31 % respectively). Memecik had the highest values for chlorophyll (0.47) , carotenoid (0.31) and pheophytin a (2.29) contents according to mean values. According to the knowledge obtained from the research, the fatty acid composition and the quality characteristics of the olive oil are mainly depended on the growing conditions, harvest period and the oil extraction methods. In the study, it is concluded that 2nd harvest period for Memecik, 2nd and 3rd harvest periods for Ayvalık and Topakaşı would be more suitable under the Isparta, Sütçüler growing conditions for high-quality olive oil. This research is the first detailed research on olive in the research area and it is considered that it will be the basis to future scientific studies.

Key words: Ayvalık, biochemical properties, fatty acid compositions, tocopherol contents.

INTRODUCTION

The olive (*Olea europaea* L.) is known the oldest cultivated tree in the world (Özbek, 1975). *Olea europaea* is one of the most important and widespread fruit trees in the Mediterranean basin (Conde et al., 2008), especially in Spain, Italy, Greece and Turkey (Diraman and Dibeklioglu, 2009).

Olive oil is an essential constituent of Mediterranean diet and is obtained from the fruit of several cultivars. Each one of these cultivars exhibits specific physical and biochemical characteristics, providing oils with different compositions and performances (Matos et al., 2007). Olive oil is a good source of several bioactive compounds such as mono/poly-unsaturated fatty acids, phenols, phytosterols, carotenoids and tocopherols. Due to their antioxidant properties, these bioactive compounds have reducing effect on the risk of chronic degenerative diseases such as coronary heart disease, cancer, obesity, immune and inflammatory responses (Dag et al., 2015).

Turkey is the sixth largest producer of olive oil in the World (4.6 %) (Sevim et al., 2013) and exported 8% on the average between 2004 and 2010. While the production was 130.000 tonnes in 2008, it increased to 160.000 tonnes in the 2010 (Alkan et al., 2012). The economically important Turkish olive cultivars include Ayvalık, Memecik, Gemlik, Erkence, Nizip Yağlık, and Uslu (Diraman and Dibeklioglu, 2009). Olive cultivar 'Memecik' has more than 45% of orchard area in Turkey. Memecik is used both as table olive and for extraction of oil. Olive oil is classified as extra virgin, virgin, olive oil. This classification is carried out according to some quality characteristics (acidity, peroxide value, K₂₃₂, K₂₇₀, DK values, alkyl esters) (Caporaso et al., 2015).

The quality of olive oil is affected by many factors such as olive variety, climate and soil characteristics of the geographical region, maturity level, cultural practices and extraction methods (İlyasoğlu and Özçelik, 2011). Olives for oil production are generally harvested in November and December in Turkey. However,