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Identification of biochemical and molecular determinants responsible for the virgin olive oil phenolic profile

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Abstract

The nutritional and organoleptic quality of Virgin Olive Oil (VOO) is mainly determined by certain components that are specifically formed during the oil extraction process from precursors already present in the fruit by the action of different enzymes. However, the characterization of olive cultivars has been traditionally based on purely agronomic criteria without a systematic study devoted to the identification of markers related to oil quality. Knowledge of the genes/enzymes related to the synthesis of key metabolites such as phenolic compounds would allow establishing control strategies to optimize VOO organoleptic and nutritional quality. From a technological point of view, new VOOs with tailored phenolic composition may be developed by modulating the relevant biochemical processes active during their extraction. On the other hand, identification of the most important genes/enzymes in relation to phenolic metabolism and knowledge of their regulation can be used in the molecular marker assisted selection of olive clones with improved VOO quality features. The overall objective of this study is the identification of biochemical and molecular determinants involved in the synthesis of VOO phenolic compounds. Two specific objectives have been undertaken (i) the phenolic profile variability from a core collection (Core 36) recently established within the World Olive Germplasm Bank at Córdoba has been analyzed and those with dissimilar phenolic profiles have been identified, and (ii) key genes/enzymes related to phenolic metabolism (_-glucosidase, polyphenol oxidase and peroxidase) have been analyzed in those olive lines and olive cultivars with dissimilar phenolic profiles.

Biography

Ana G. Pérez got her Ph.D in Plant Biochemistry and Molecular Biology at the University of Seville in 1994. She got a permanent position as tenured scientist at the Instituto de la Grasa (CSIC) in 1999. She has published more than 20 contributions to books and 60 papers in peer reviewed journals in the areas of Food Science and Plant biochemistry. At the present she works in the biochemical pathways related to virgin olive oil organoleptic and nutritional quality.