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MOLECULAR MARKER CHARACTERISATION OF OLIVE OIL VARIETY COMPOSITION AND SNP DEVELOPMENT IN OLIVE

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Olive (Olea europaea) is one of the most characteristic and important cultivated tree in the Mediterranean basin. The crop is of immense historical importance as the principal source of edible oil for people of the Mediterranean area. The leading world producer is Europe (80%), in particular Spain (42%), Italy (24%) and Greece (12%), with a total tree population of 400-500 million. The quality and value of olive oils are determined by several parameters such as the chemical composition, the nutritional and organoleptic properties, the area of production which is often associated with specific varieties, and the degree of processing of oil. Research focused on the authenticity and provenance of agricultural products has recently received the attention of both the EU and National programmes. For these reasons our study has progressed on the genetic identity characterization of olive oil varietal composition using microsatellite markers (SSRs), and on the quantification of the relative proportion of different varieties that make up the oil blends. The development of diagnostic protocols and databases for variety DNA profiles are at the basis for molecular determination of oil PDO, IPG and variety authenticity. We have amplified SSRs from DNA recovered from filtered and unfiltered olive oils, which are suitable for distinguishing between varieties. Moreover, we are developing a set of SNP markers from functional genes that will be used to quantify genotypes within oil blends using real-time PCR. The SNP markers will also be used to determine genetic diversity in functional genes involved in fatty acid biosynthesis pathways.

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