

EXPLOITATION OF NUTRACEUTICAL PROPERTIES OF MINOR ITALIAN OLIVE GENOTYPES FROM APULIA, SARDINIA AND ABRUZZO

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The strategic geographical position of Italy in a temperate area has favoured olive (*Olea europaea* L.) cultivation and therefore the enrichment of its germplasm over time; the great diffusion of this species on the Italian territory highlights its importance for production, economy and local traditions. Nowadays, as a consequence of the general awareness about the loss of plant genetic diversity and the drastic climate change currently underway, a more sustainable agriculture is becoming more and more necessary. A valid and intriguing opportunity to help in overcoming these issues is offered by the unexploited or still poorly characterized germplasm, including autochthonous, local or minor genotypes.

This research has focused on the exploration, recovery and valorization of some minor Italian olive cultivars, about which little information is currently available. A pattern of nine minor genotypes cultivated in three Italian regions (Abruzzo, Apulia and Sardinia) has been first of all molecularly characterized by means of 12 nuclear microsatellites (SSRs), that were able to clearly identify all genotypes. A unique molecular

fingerprint was obtained for each cultivar, thus representing a crucial tool for their unequivocal identification and the traceability of their oils. Moreover, an integrated approach of oil biochemical characterization, with particular focus on tyrosol, hydroxy-tyrosol and oleacein, coupled with a genetic expression study of key enzymes (TYRD, CuAO, ALDH) involved in the first steps of their biosynthesis, has been performed at different developmental drupe stages. This analysis revealed that genotypes differed to the greatest extent in the content of oleacein and total phenols.

The information obtained with this study not only has contributed to clarify the molecular mechanisms underlying the polyphenol biosynthetic pathway in olive species, but also unveils the genetic potentialities of the still poorly explored Italian olive germplasm thus encouraging its use and valorization.