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IDENTIFICATION OF HYDROXYTYROSYL AND TYROSYL OLEATE IN OLIVE OILS AND OLIVE OIL BY-PRODUCTS

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Although olive fruit is rich in phenolics, only 2% of the total phenolic content is found in the oil. The main fractions are found in olive mill waste water (OMWW) and pomace. Hydroxytyrosol (HTy) and Tyrosol (Ty) are two of the major phenolic components of olive and olive oil. They are present in the esterified form as secoiridoid derivatives, as well as in the free form, whose amounts increase during olive ripening and olive oil processing as a result of endogenous β-glucosidase hydrolytic activity that release HTy and Ty from the secoiridoids. HTy and Ty display a wide range of biological activities associated to human health. Despite their properties, HTy and Ty show low bioavailability, with fast absorption and elimination in humans, because of their polar character which limits their use as a dietary supplement as well as an additive in foods. Lipophylization of phenolics has been suggested as a useful method to increase their metabolic stability and ability to cross cell membranes. In order to expand the knowledge on the biological activities of Hty and Ty fatty esters as potential ingredients in functional foods with improved quality, the anti-inflammatory properties of a series of Hty and Ty esters with short, medium and long acyl chains by LPS-stimulated murine macrophage cell line were evaluated. The results obtained have demonstrated that, contrary to TyOle, HtyOle has *in vitro* anti-inflammatory properties and can be considered as a booster of the parent HTy. Moreover, HtyOle and TyOle occur in olive oil by-products while they were not detectable in intact olives. Taken together, these findings suggest the potential role of HtyOle and TyOle as markers of quality of olive oil and highlight the value of olive by-products as a source of bio-active compounds to produce medicines, cosmetics, nutraceuticals and functional foods for animal feeding.

BIOGRAPHY

Cinzia Benincasa has completed her PhD in Chemical methodologies for the development of molecules of pharmacological interest from University of Calabria, Italy in 2004. She is a researcher (Scientific disciplinary sector: Food Chemistry) of the Council for Agricultural Research and Economics and works at the Research Centre for Olive, Citrus and Tree Fruit, Italy since 2015. Her area of interest is in applications and determinations of isotopic ratios and trace elements for food traceability; investigation and characterization of phenolic compounds using HPLC, GC-MS/MS and LC/MS techniques; chemical-physical and organoleptic analysis for the characterization of olive oils and chemometric analysis. She has 23 publications that have been cited over 344 times and her publication H-index is 9.

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