

Contribution of Olive Fruit β -glucosidase to the Phenolic Composition of Virgin Olive Oil

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Occurrence of hydrophilic phenols in virgin olive oil (VOO) is related to the activities of olive fruit endogenous enzymes such as β -glucosidase and esterase, acting on secoiridoid glucosides present in the olive fruit, as well as oxidoreductases that might promote phenolic oxidation during the crushing and malaxation steps within the industrial process to obtain VOO. A protein with β -glucosidase activity in olive fruits cv. Picual has been purified and characterized. The enzyme seems to be constituted by 64 KDa monomers, exhibits optimum activity at pH 6.8 and 45°C. Kinetic data showed that olive fruit β -glucosidase displays a higher affinity for the natural substrate oleuropein than for the synthetic p-nitrophenyl- β -D-glucopyranoside (PNPG). Differences in the β -glucosidase activity and phenolic content along olive fruit ripening among several Spanish cultivars point out to a close relationship between this enzymatic activity and the phenolic composition of VOO.