

Title Effects of ReTain™ preharvest application on ripening parameters, phenolics and total antioxidant capacity of green table olives exposed at 20°C for up to 7 days

Author Eleni Tsantili, Mina Kafkaletou and Petros A. Roussos

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Abstract

The effects of preharvest applications with 100 mg L⁻¹ and 200 mg L⁻¹ ReTain™ on ethylene production rates, firmness, total phenolics concentration, total antioxidant capacity and concentrations of oleuropein, hydroxytyrosol and tyrosol were investigated in 'Konservolia' olives harvested at the mature green state 15 days after the applications. Harvested fruit were exposed at 20°C and 90% RH and measured on days 1 and 7 during the exposure. ReTain™ prevented the color development and resulted in a higher frequency of green olives than controls, as observed at harvest. Ethylene production rates were very low in all samples on day 1 at 20°C. During assessment time ethylene production increased in all samples, but never exceeded the level of 125 nl kg⁻¹ h⁻¹, in average, which was observed in controls. Increasing ReTain™ concentration reduced ethylene increases during exposure time. Firmness values were initially much higher in ReTain™ treated samples than controls. ReTain™ at 200 mg L⁻¹ was the most effective on prevention of softening in olives "on" the tree. During exposure time the percentage firmness losses in ReTain™ treated samples were higher than in controls. However, on day 7 firmness values in treated olives remained higher than or were equal to controls when treated with 200 mg L⁻¹ or 100 mg L⁻¹ ReTain™, respectively. Total phenolics concentration, total antioxidant capacity (DPPH method) and oleuropein concentration were considerably lower in ReTain™ treated fruit than controls during the whole exposure time although substantial increases were measured in all samples on day 7. The highest concentrations of hydroxytyrosol and tyrosol were measured in olives treated with 200 mg L⁻¹ ReTain on day 1 at 20°C. Changes in these two phenolic compounds during exposure time were not consistent, but the pattern of their changes was similar.