Abstract

Olives harvested at green pre-climacteric state behave as non-climacteric fruits and softening and red color development are prevented by ethylene application. Postharvest applications of cytokinins promoted some ripening processes, mainly the coloration, but ethylene at 1000 μl^{-1} arrested the effects. In this research, we studied the effects of abscisic acid (ABA) and its interaction with ethylene, using both ethylene application and the inhibitor of ethylene binding, l-methylcyclopropene (l-MCP) on harvested green olives at 25 ºC for up to 10 days. Three completely randomized experimental designs were adopted; (l) Fruit were immersed in ABA at 0, 100, 200, 300 and 400 mg l- for 1 h ; (2) After ABA treatment (150 mg l^{-1} for 1 h), fruit were exposed continuously to 6 ethylene concentrations from 0 to 1000 μl^{-1} ; (3) A 2^3 combinations of +/- application of one concentration of each of 3 factors (MCP at 1.2 μl^{-1} for 10 h, ABA at 300 mg l^{-1} for 1 h, continuous ethylene at 1000 μl^{-1}). Fruits of 3 jars from each combination were sampled after 9 days in (3) and of two pots or jars every 4 days in (1) & (2), respectively. Color was determined by a Minolta chromameter, firmness with a hand in (l) or bench in (2) & (3) Chatillon penetrometer equipped with a conical plunger (5 mm X 5mm). CO_2 production was measured in 0.5 l jar connected to a portable infrared gas analyzer (LI-COR, LI-6200 model0. Ethylene (endogenous or during treatment) was analyzed in a Perkin Elmer Sigma 300 gas chromatograph. The resulfs show that ABA advanced respiration and coloration. Ethylene prevented firmness decreased and coloration, in a concentration-dependent manner, in ABA treated fruit. L-MCP prevented the inhibition of ethylene on coloration and resulted in higher ethylene production rates relative to the rest of the fruit. In addition to commercial benefit, l-MCP can be very useful for further studies on ripening of fruits such as olives.