

Efficacy of hydrogen peroxide + peracetic acid and trans-2-hexenal against apple rots during long-distance transport

Dario Angeli, Fondazione Edmund Mach, Italy;
Lorenzo Turrini, Fondazione Edmund Mach, Italy;
Fabio Zeni, Fondazione Edmund Mach, Italy;
Alessandro Pedernana, Fondazione Edmund Mach, Italy;
Davide Spadaro, Università di Torino, Italy; davide.spadaro@unito.it

Preserving apples in semi-hermetic tray-packs is necessary when selling apples for long-term destination and allows to maintain a good intrinsic quality due to the good internal hygrometric conditions. However, long travel times (up to 45-60 days) and high humidity can induce the appearance of rots, moulds, and other secondary pathogens on the epicarp. With this experiment we aimed to verify the effectiveness of the bath treatment with a mix of hydrogen peroxide (25%) and peracetic acid (15%) and the gaseous treatment with trans-2-hexenal for the control of these fungi on 'Pinova' apples after storage into tray-pack. Apples treated with hydrogen peroxide + peracetic acid were left for 2 minutes in a water solution at a concentration of 1 ml/L and they were compared with apples in clean water. Aldehyde was applied on apples by evaporating the compound from a solution with a concentration of 12.5 µl/ml. All apples were stored in tray-packs at 1.5°C and 85% RH. Rot incidence was slightly lower on apples treated by hydrogen peroxide + peracetic acid after 30 days (-1% incidence) and 110 days (-2.6% incidence) of storage. On apples treated by aldehyde we did not observe any significant difference compared with untreated apples. Considering secondary pathogens, aldehyde treatment positively emerged after 30 days (-5% incidence), whereas during storage apples of all the treatments were infected by the pathogen. In conclusion, a certain level of effectiveness against apple pathogens could be observed, but further investigations are needed to better define dosages and application times.

Apple rots, moulds, aldehydes, peracetic acid, hydrogen peroxide, tray-pack, secondary pathogens