

Title Hayward kiwifruits and Plant Growth Regulators: Detection and effects in post-harvest studied by Magnetic Resonance Imaging and Scanning Electron Microscopy

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Abstract

We used Magnetic Resonance Imaging spectroscopy to reveal the use of two PlantGrowthRegulators (PGRs), i.e. cytokinin and auxin, on Haywardkiwifruits, at any stage of cultivation, and post-harvest ripening and storage. The internal morphology was non-destructively determined in order to depict structural features related to hormones treatments and we found that T_2 -weighted MRI images showed different internal tissue organisations depending upon the use and the type of PGR. Transverse relaxation times allowed the recognition of cytokinin-treated samples, whilst image analysis was used to identify auxin-treated kiwifruits. We also exploited the post-harvest conditions, i.e. normal refrigeration and controlled atmosphere, on PGRs treated kiwifruits, and found that auxin shortened the shelf-life, with normal refrigeration exerting a stronger effect. The kiwifruit pulp was also investigated by means of Scanning ElectronMicroscopy, highlighting significant differences at a cellular level amongst treatments, in terms of pore size and vacuoles number, both probably playing a fundamental role in the evaporation activity.