

Title Ethylene treatment 'Hayward' (*Actinidia deliciosa*) during ripening and its influence on ethylene biosynthesis and antioxidant activity

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Abstract

This experiment was to assess the influence of ethylene treatment on ethylene biosynthesis and on antioxidant activity in kiwifruit during ripening. Kiwifruit were treated with ethylene of 100 ppm at 20°C for 24 hours and then the ripening process at the same temperature was observed for 10 additional days. In treated fruits: a) flesh firmness in the early stage of ripening was significantly decreased by ethylene treatment; b) free sugar and soluble solids contents, ethylene production, respiration rate, and sensory scores increased following ethylene treatment and were significantly higher than in untreated fruit; c) ethylene biosynthesis increased simultaneously with an increase in 1-aminocyclopropane-1-carboxylic acid (ACC) content, ACC synthase (ACS) and ACC oxidase (ACO) activities; d) polyphenol content and related antioxidant activity increased significantly more than in untreated fruit; e) the acidity and pH were not influenced by ethylene treatment. In conclusion, the ethylene treatment of kiwifruits significantly increases its ethylene biosynthesis, contents of total polyphenols and antioxidant activity in comparison with untreated samples. ACS and ACO are key enzymes which control the rate of ethylene biosynthesis in kiwifruits.