Title	Chilling induced ethylene biosynthesis in ‘Hayward’ kiwifruit following storage
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Abstract

‘Hayward’ kiwifruit were stored at 0, 5, 10, 15 and 20°C for 5, 12 and 17 days before rewarming to 20°C for 10 more days. Ethylene and CO_2 production, ACC, ACC synthase (ACS) and ACC oxidase (ACO) activities, flesh and core firmness, soluble solids content (SSC) and flesh colour were measured. Kiwifruit stored at 0, 5, 10 and 15°C did not ripen, produce ethylene or show increases in ACS or ACO activity. Fruit stored for 5 days at the above temperatures, then rewarmed to 20°C, did not show any change during the following 10 days. Rewarmed fruit, pre-stored at 0–10°C for 12 days, started autocatalytic ethylene production within 24 h, followed by fruit ripening. Fruit stored at 15°C for 12 days needed 72 h to start ethylene autocatalyse and did not fully ripen during 10 days at 20°C. After 17 days storage at 0–15°C kiwifruit started autocatalytic ethylene production with no delay upon exposure to 20°C. Autocatalytic ethylene production correlated with increased ACC content, and increased activities of ACS and ACO. Fruit held continuously at 20°C started autocatalytic ethylene production after 19 days, with concomitant increases in ACC content, ACS and ACO activities and ripening. Respiration increased after rewarming, concomitantly with the increase in ethylene production.

We concluded that exposing kiwifruit to chilling temperatures (0–10°C) for 12 days advanced ethylene biosynthesis and ripening when compared with fruit held continuously at 20°C. The advanced ethylene biosynthesis was due to increase ACS and ACO activities immediately upon rewarming of the fruit.