

Title Lovastatin inhibition of alpha -farnesene production in ripening apple: precursor feeding studies.
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Abstract

Effects of alpha -farnesene biosynthesis precursors on alpha -farnesene and ethylene production were studied using Lovastatin-treated or nontreated Delicious and Granny Smith apples (*Malus sylvestris* var. *domestica*). In nontreated fruits, alpha -farnesene was detected only in fruit peel (approx equal to 3 mm) and not in the more proximal cortical tissue. alpha -Farnesene was not detectable in preclimacteric fruit peel at harvest. Mevalonic acid lactone (MAL) or farnesyl pyrophosphate (FPP) induced alpha -farnesene production when fed to preclimacteric peel tissue, but hydroxymethylglutaric acid (HMG) did not. Fruits stored at 0 deg C for 30 days (climacteric fruit) produced alpha -farnesene, and addition of HMG, MAL, or FPP further increased alpha -farnesene production. When treated at harvest with Lovastatin at 1.25 mmol/litre and stored at 0 deg C for 30 days, fruits produced ethylene but did not produce alpha -farnesene. Whereas MAL and FPP induced alpha -farnesene production in peel sections from these fruits, HMG did not. Induction of alpha -farnesene by precursor feeding was concentration-dependent and had no effect on ethylene production. Cortical tissue sections from climacteric fruits did not produce alpha -farnesene unless HMG, MAL, or FPP were fed during incubation. Including Lovastatin at 0.63 mmol/litre in the feeding solution eliminated HMG induced alpha -farnesene production, but did not affect MAL or FPP-induced alpha -farnesene production. Neither precursor feeding nor Lovastatin treatment affected ethylene production in cortical tissues.