**Abstract**

Nontreated control and 1-MCP-treated fruit of the scald-susceptible ‘Law Rome’ and scald-resistant ‘Idared’ cultivars were compared with respect to scald incidence, internal ethylene concentration (IEC), α-farnesene metabolism, and expression of the gene encoding α-farnesene synthase (*AFS1*), the final, rate-limiting enzyme in the α-farnesene biosynthetic pathway. The incidence of scald in nontreated ‘Law Rome’ apples after 20 weeks at 0.5 °C plus 1 week at 20 °C averaged 86%; 1-MCP treatment reduced increases in IEC and reduced the incidence of scald to less than 1%. Fruit of ‘Idared’ showed no scald regardless of the treatment. 1-MCP also inhibited α-farnesene production, suggesting that ethylene induces transcription of key genes involved in α-farnesene biosynthesis. In both ‘Law Rome’ and ‘Idared’, a sharp increase in *AFS1* mRNA during the first 4–8 weeks of storage preceded a proportional rise in α-farnesene and a subsequent increase in CTols. However, maximum levels of *AFS1* transcript, α-farnesene, and CTols were, respectively, 2.5-, 4-, and 33-fold greater in ‘Law Rome’ than in ‘Idared’ apples. 1-MCP suppressed the increases in *AFS1* transcript and α-farnesene early in storage, although *AFS1* expression and α-farnesene synthesis had recovered in treated ‘Law Rome’ fruit after 20 weeks, consistent with increasing IEC in these fruit.