

**Title** Effects of exogenous ethylene treatments on the major volatile flavor compounds of peach fruit in CA storage

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### Abstract

The suppression of endogenous ethylene production in peach fruit during controlled atmosphere storage at low temperature affects the biosynthesis of volatile flavor compounds. This paper describes the influence of continuous exogenous ethylene treatment (0  $\mu\text{l/L}$  (CK), 20-50  $\mu\text{l/L}$ , 50-80  $\mu\text{l/L}$ ) during CA storage for 8 weeks (0-1°C, 9-11%  $\text{CO}_2$  + 9-11%  $\text{O}_2$ ) on the major volatile flavor compounds (hexanal, trans-2-hexanal, benzaldehyde, linalool, and  $\gamma$ -decalactone) of 'Bayuecui' peach fruit (*Prunus persica* L. Batsch.). The results showed that the content of hexanal in fruit of all ethylene treatments and the CK decreased during storage, but the content of hexanal in ethylene-treated fruit was higher than in CK fruit. The content of trans-2-hexanal also decreased during CA storage, but during the later period of storage the content was higher in fruit treated with 50-80  $\mu\text{l/L}$  ethylene than in those treated with 20-50  $\mu\text{l/L}$  and CK. There was no significant difference in benzaldehyde among exogenous ethylene treatments and the CK during the first 4 weeks of storage, but the content of benzaldehyde in fruit of the 50-80  $\mu\text{l/L}$  ethylene treatment increased and was higher than in the 20-50  $\mu\text{l/L}$  treatment and the CK during the final 4 weeks of storage. Exogenous ethylene treatments increased the content of linalool, 50-80  $\mu\text{l/L}$  treatment >20-50  $\mu\text{l/L}$  treatment >CK, and the difference was significant, whereas the content of  $\gamma$ -decalactone was not affected by exogenous ethylene treatment and there was no difference between treatments and the CK. It was clear that exogenous ethylene treatment induced the production of hexanal, trans-2-hexanal, benzaldehyde and linalool to some extent, but had no effect on the production of  $\gamma$ -decalactone. Considering the comprehensive effects of different ethylene concentrations on the major flavor compounds of peach fruit, we suggest that during CA storage at low temperature peaches be treated with 50-80  $\mu\text{l/L}$  ethylene to promote the production of major volatile flavor compounds.