Relationship between *CsLOX* gene expression and C6 and C9 aldehydes during cucumber fruit storage

Yuting Yang, Tingting Zhang, Xuewei Wang, Meiqian Wu, Xvzhen Li, Xiao Guo, Yulin Fang and Shuxia Chen

Postharvest Biology and Technology, Volume 161, March 2020, 111085

Abstract

Changes in volatile compounds, the ratio of six-carbon (C6) to nine-carbon (C9) aldehydes, the ratio of linoleic acid to linolenic acid and *CsLOX* gene expression patterns were investigated in cucumber fruits of two different inbred lines after storage at 25 °C or 4 °C. The content of total volatile compounds in both lines was lower and the peak was later for the fruit stored at 4 °C than for that stored at 25 °C, whereas C6 was produced more rapidly than C9 at both temperatures and in both lines. The amount of linoleic acid cleaved at 4 °C was greater than that cleaved at 25 °C, and (E, Z)-2,6-nonadienal/(E)-2-nonenal content was higher at 25 °C than at 4 °C in both lines. There were different expression patterns for cucumber *CsLOX* genes at the two storage temperatures in the different lines. Principal component analysis showed that the 9-type *CsLOX02* was closely related to the formation of C9 aldehydes and the 13-type *CsLOX16*, *CsLOX17*, *CsLOX19*, and *CsLOX20* were closely related to formation of C6 aldehydes. Therefore, the expression of *CsLOXs* might be responsible for differences in the production of volatile compounds at the different storage temperatures.