

Visually imperceptible mechanical damage of harvested tomatoes changes ethylene production, color, enzyme activity, and volatile compounds profile

Poliana Cristina Spricigo, Thais Pádua Freitas, Eduardo Purgatto, Marcos David Ferreira, Daniel Souza Correa, Jinhe Bai and Jeffrey Karl Brecht

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Abstract

Improper postharvest handling often impairs horticultural quality even when damage is visually imperceptible. In this study, tomato fruit were subjected to controlled compressive forces (196.13 N) and the effects of this mechanical damage were evaluated. The following parameters were assessed: production of CO₂, ethylene (C₂H₄), color, enzymatic activity (LOX, HPL and ADH) and volatile compounds. Ethylene production increased in tomatoes subjected to compression. Damaged tomatoes were unable to develop the typical red color when compared to the control fruit and showed a transient increase in the activity of the enzymes LOX, HPL and ADH. The imperceptible damage applied to tomatoes modified the profile of volatile compounds produced by the fruit, reducing the emission of compounds perceived as fruity and sweet.