

Title Methyl jasmonate alters arginine catabolism and improves postharvest chilling tolerance in cherry tomato fruit

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Citation Postharvest Biology and Technology, Volume 64, Issue 1, February 2012, Pages 160-167

Keywords Arginine catabolism; Arginine-related amino acids; Chilling injury; Methyl jasmonate; Polyamine; Tomato fruit

Abstract

The influence of methyl jasmonate (MeJA) on levels of gene transcripts, enzyme activities and metabolites related to arginine catabolism and chilling injury (CI) was studied in cherry tomato (*Solanum lycopersicum* L. cv. Messina) fruit stored at 2 °C for 21 days. The CI index of fruit pretreated with 0.05 mM MeJA vapor for 12 h at 20 °C was reduced compared with that of untreated fruit. The reduction was associated with up-regulated arginine catabolism. The mRNA levels and activities of arginase, arginine decarboxylase (ADC) and ornithine aminotransferase (OAT) in treated fruit were higher than in control fruit, while those of ornithine decarboxylase (ODC) increased transiently in response to MeJA treatment during the early days of cold storage. Free putrescine (Put) and proline accumulated in MeJA-treated fruit, while levels of other arginine-related amino acids were affected by MeJA. Spermidine (Spd) and spermine (Spm) contents remained unchanged in response to MeJA treatment over most of the storage time. The results indicate that MeJA becomes involved in coordinated catabolism of arginine, and helps to improve chilling tolerance in cherry tomato fruit.