

Title Effects of methyl jasmonate on postharvest decay in strawberry fruit and the possible mechanisms involved

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Abstract

The effects of 1 μ mol/L methyl jasmonate (MeJA) treatment on fruit decay and some defense enzymes activities in strawberries during storage at 5°C were investigated. The results indicated that treatment with 1 μ mol/L MeJA significantly inhibited fruit decay caused by *Botrytis cinerea* during storage. Control fruit showed fungal decay on day 2 and thereafter fruit decay index increased rapidly. Fruit treated with MeJA exhibited visible fungal decay on day 4 and then the decay index increased gradually. After 10 days of storage, the decay index of MeJA treated fruit was only 12.7%, while that of control fruit reached 45.3%. Polyphenol oxidase (PPO) activity increased rapidly at the initial period and then decreased dramatically after 2 days. Fruit treated with MeJA showed significantly higher PPO activity than the control fruit during the first 6 days in storage. MeJA treatment caused a significant increase in chitinase and β -1,3-glucanase activities, both of the two enzymes activities were significantly higher in treated fruit compared to the control for the first 8 days in storage. Phenylalanine ammonium-lyase (PAL) activity and total phenolic content increased more quickly and stayed at significantly higher levels in fruit treated with MeJA than the control fruit during the whole storage period. These results suggest that the inhibition of postharvest fruit decay by MeJA was related to the induction of defense enzymes activities. The induced disease resistance may be involved in the mechanisms by which MeJA treatment inhibits fruit decay in strawberries.