Abstract

Colletotrichum gloeosporioides is an important postharvest pathogen that attacks ripe avocado fruit. Two reduced-pathogenicity mutants, Cg-M-142 and Cg-M-1150, previously obtained by restriction enzyme mediated integration, were used for the sequential analysis of the induction of biocontrol in avocado fruit. Plant biochemical indicators, such as H+-ATPase activity and levels of reactive oxygen species, phenylalanine ammonia lyase, epicatechin, and an antifungal diene, were investigated. The main difference between Cg-M-142 and Cg-M-1150 was the lack of appressorium formation by the latter. Preinoculation of avocado fruit with Cg-M-142 enhanced H+-ATPase activity and the production of reactive oxygen species. These early signaling events were followed by higher phenylalanine ammonia lyase activity and higher levels of epicatechin and the antifungal diene, and decay was delayed. Unlike Cg-M-142, Cg-M-1150 did not activate early signaling events related to fruit resistance. We suggest that the initiation of early signaling events affecting fruit resistance is determined by the capability of the pathogen to interact with the fruit during appressorium formation. Furthermore, the intensity of the fruit defense response determines the level of resistance during fruit storage.