

Abstract

The potential of the volatile-producing fungus *Muscodor albus* for controlling postharvest diseases of fresh fruit by biological fumigation was investigated. In vitro tests showed that *M. albus* volatiles inhibited and killed a wide range of storage pathogens belonging to species of *Botrytis*, *Colletotrichum*, *Geotrichum*, *Monilinia*, *Penicillium* and *Rhizopus*. Fumigation of apples for 7 days with culture of *M. albus* grown on autoclaved grain gave complete control of blue mold (*Penicillium expansum*) and gray mold (*Botrytis cinerea*) in wound-inoculated fruits. There was no direct contact between the fruit and the *M. albus* culture. Shorter fumigation times ranging between 24 and 72 h, applied immediately or 24 h after inoculation, also controlled blue mold and gray mold. In wound-inoculated peaches, 24–72 h fumigation with *M. albus* provided complete control of brown rot (*Monilinia fructicola*). The volatile profile of *M. albus*-colonized grain was measured by gas chromatograph connected to a flame ionization detector (GC-FID) and showed that 2-methyl-1-butanol and isobutyric acid were the major volatile compounds found in the headspace. Since *M. albus* is a sterile mycelium and does not require direct contact with the crops to be treated, it could be an attractive biological fumigant for controlling postharvest diseases.