

Title Fungicidal activity of plant volatile compounds for controlling *Monilinia laxa* in Stone fruit
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Abstract

Nine plant-volatile compounds were tested for their activity against *Monilinia laxa*, the cause of brown rot in stone fruit. In vitro trials on conidial germination and mycelial growth showed a consistent fungicidal activity of trans-2-hexenal, carvacrol, and citral, whereas trans-cinnamaldehyde, hexanal, (-)-carvone, eugenol, 2-nonanone, and p-anisaldehyde exhibited a progressively lower inhibition. The best inhibitor of conidial germination was trans-2-hexenal (effective dose for 50 and 90% inhibition [ED₅₀ and ED₉₅] = 7.53 and 9.4 µl/liter, respectively; minimal inhibitory concentration [MIC] = 12.3 µl/liter], whereas carvacrol was the best inhibitor of mycelial growth (ED₅₀ and ED₉₅ = 2 and 3.4 µl/liter, respectively; MIC = 6.1 µl/liter). The three most active compounds in in vitro studies also were tested in vivo as postharvest biofumigants. The best control of brown rot was with trans-2-hexenal (efficacy ranging from 46.2 to 80.3%, depending on cultivar), whereas citral and carvacrol resulted in a lower efficacy of 40 and 32.9%, respectively. Fumigation with trans-2-hexenal at concentrations that stopped decay did not cause any visible disorders to plum, whereas it was phytotoxic to apricot, peach, and nectarine and produced off-odors or off-flavors in all species of stone fruit tested.