

Abstract

The induction of resistance to *Botrytis cinerea* in carrot roots by UV radiation, a possible means for controlling storage diseases, was compared with systemic resistance induced by inoculation with the pathogen. UV radiation did not have any systemic effect, and disease resistance was induced only in tissues directly exposed to the radiation. Although UV radiation induced a local accumulation of 6-methoxymellein (6-MM), inoculation with *B. cinerea* caused 6-MM to accumulate systemically, away from the inoculation site. Because of amounts near or higher than the ED(50) (50% effective dose) for inhibiting *B. cinerea* found in both UV-treated and preinoculated roots at the time of challenge, 6-MM could be involved in both types of resistance. Freshly harvested carrots had a number of constitutive chitinases and beta-1,3-glucanases, which were not affected by UV radiation or inoculation. When challenged with *B. cinerea*, the induction of a 24-kDa chitinase was enhanced in UV-treated and preinoculated roots. Again, UV radiation had only a local effect in priming this chitinase response. Although UV- and pathogen-induced resistance in carrot may involve the same defenses, the responses are probably mediated differently, because UV radiation has an essentially local effect.