

Abstract

Chronological events of the intercellular interaction between *Verticillium lecanii* and the postharvest pathogen *Penicillium digitatum* were investigated by transmission electron microscopy and gold cytochemistry. Growth inhibition of *P. oligandrum* as a response to *V. lecanii* attack correlated with striking host changes including retraction of the plasma membrane and cytoplasm disorganization. Such changes were associated with the deposition on the inner host cell surface of a chitin- and cellulose-enriched material which appeared to be laid down as a structural defense reaction. The accumulation of chitin in the newly formed material correlated with a decrease in the amount of wallbound chitin. However, the deposition of cellulose appeared to correspond to a de novo synthesis, as evidenced by the occurrence of cellulose-containing vesicles which released their content in the space between the invaginated plasma membrane and the host cell wall. Results of the present study provide the first ultrastructural and cytochemical evidence that antagonism, triggered by *V. lecanii*, is a multifaceted process in which antibiosis, with alteration of the host hyphae prior to contact with the antagonist, appears to be the key process in the antagonism against *P. digitatum*.