

Title Infection capacities in the orange-pathogen relationship: Compatible (*Penicillium digitatum*) and incompatible (*Penicillium expansum*) interactions

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Abstract

Penicillium digitatum and *Penicillium expansum* are the most devastating pathogens of citrus and pome fruits, respectively. Whereas *P. digitatum* is a very specific pathogen that only infects *Citrus* fruits, *P. expansum* has a broader host range but has not been reported to be infectious in *Citrus*. To determine the responses of fruits and the infection capacities of both moulds, two varieties of oranges at different maturity stages, different inoculum concentrations and two different storage temperatures were studied. In compatible interactions, no significant differences in rot dynamics among harvests were found with a 10^7 conidia mL⁻¹ inoculum concentration at both temperatures tested (20 °C and 4 °C). However, at other inoculum concentrations, significant differences in rot dynamics were found, especially in immature fruits. Incompatible interactions showed that *P. expansum* could infect oranges at commercial maturity in both tested varieties. Decay incidence and severity were higher at 4 °C than at 20 °C. In addition to infection capacity studies, histochemical tests were performed to detect wound-healing compounds for both pathogens. A positive reaction for lignin was detected for both pathogens in immature oranges over a short period (48 h). In all cases, no reactions were found in control samples. Our results indicate that pathogen concentration, host maturity and storage temperature can play important roles in the defence mechanisms of fruit. Furthermore, to our knowledge, this is the first work that demonstrates that *P. expansum* can infect oranges under favourable conditions.