

Title Suppression of green and blue mold in postharvest mandarin fruit by treatment of *Pantoea agglomerans* 59-4

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Citation The Plant Pathology Journal, 26(4) p. 353-359, 2010.

Keywords Competition; *Pantoea agglomerans*; Postharvest disease

Abstract

In order to control postharvest spoilage of satsuma mandarin fruits, rhizobacteria were isolated from soil samples. The *Pantoea agglomerans* strain 59-4 (Pa 59-4) which suppresses the decay of mandarin fruit by green and blue mold, was tested for the control efficacy and its mode of action was investigated. Pa 59-4 inhibited infection by green and blue mold on wounded mandarins, which were artificially inoculated with a spore suspension of *Penicillium digitatum* and *P italicum* with control efficacies of 85-90% and 75-80%, respectively. The bio-control efficacy was increased by raising the concentration of cells to between 10^8 and 10^9 cfu/ml, and pretreatment with the antagonist prevented subsequent infection by green mold. The population of Pa 59-4 was increased more than 10 fold during the 24 hr incubation at 20°C, indicating that colonization of the wound site might prevent the infection by green mold. Despite poor antifungal activity, the Pa 59-4 isolate completely inhibited the germination and growth of *P. digitatum* spores at 1×10^8 cfu/ml. We argue that the control efficacy was mediated by nutrient competition. Overall, the effective rhizobacterium, Pa 59-4, was shown to be a promising biocontrol agent for the postharvest spoilage of mandarin fruits by green and blue mold.