

Title Integrated control of citrus green and blue mold and sour rot by *Bacillus amyloliquefaciens* in combination with tea saponin

Author Weining Hao, Hui Li, Meiyong Hu, Liu Yang and Muhammad Rizwan-ul-Haq

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Abstract

A strain of *Bacillus amyloliquefaciens* HF-01, isolated from citrus fruit surfaces, was screened for *in vitro* antagonism toward *Penicillium digitatum* and identified, based on Biolog identification and phylogenetic analysis of 16S rDNA sequences. The isolate was further evaluated alone, or in combination with tea saponin (TS) on artificially inoculated 'Wuzishatangju' mandarin fruit. The results showed that the isolate performed significantly better than the water control in reducing the incidence of green and blue mold and sour rot, but was not as effective as the fungicide treatment. Biocontrol activity of *B. amyloliquefaciens* HF-01 was significantly improved by addition of TS, which might influence the formation of a bacterial biofilm and stimulate the antagonist population in wounds. The treatment comprising HF-01 combined with $50 \mu\text{g mL}^{-1}$ TS was as effective as the fungicide treatment, which gave more than 90% control of green and blue mold and sour rot. *B. amyloliquefaciens* HF-01 alone or in combination with a low dosage of TS significantly reduced postharvest decay without impairing any of the other fruit quality parameters. The combination of *B. amyloliquefaciens* HF-01 and TS could be an alternative to synthetic fungicides for the control of citrus postharvest diseases.