

Bacillus amyloliquefaciens HG01 induces resistance in loquats against anthracnose rot caused by *Colletotrichum acutatum*

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Abstract

We aimed to investigate the efficacy of *Bacillus amyloliquefaciens* HG01 in controlling anthracnose rot caused by *Colletotrichum acutatum* in postharvest loquats and to explore the probable underlying mechanisms. We observed that relative to the control, HG01 treatment led to lower incidence of disease and smaller diameter of lesions. In HG01-treated loquats, it was observed that there were significant increases in total phenolic and amino acid contents; moreover, HG01-treated fruit appeared to maintain significantly higher sugar and organic acid contents in comparison with the control. Further, the treatment significantly enhanced the activities of two defense-related enzymes, namely chitinase and β -1,3-glucanase. Additionally, after HG01 treatment, the relative expression levels of the following genes were significantly increased: nonexpresser of pathogenesis-related gene, phenylalanine ammonia lyase 2, peroxidase, ethylene-insensitive 3, and mandelonitrile lyase 1. We also noted HG01 significantly inhibited the growth of *C. acutatum* in vitro, with an inhibition rate of 58.9%. These results suggest that *B. amyloliquefaciens* HG01 can effectively inhibit anthracnose rot caused by *C. acutatum* in postharvest loquat fruit, possibly by directly inhibiting growth of the pathogen, and indirectly inducing disease resistance in loquats.