

Bacillus amyloliquefaciens M73 reduces postharvest decay and promotes anthocyanin accumulation in Tarocco blood orange (*Citrus sinensis* (L.) Osbeck) during cold storage

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Abstract

Due to its antifungal effects on a variety of phytopathogenic fungi and growth-stimulating activity, the effects of *Bacillus amyloliquefaciens* M73 on the preservation and especially the anthocyanin accumulation in Tarocco blood orange (*Citrus sinensis* (L.) Osbeck) during cold storage at 4 °C were investigated. Compared with the untreated fruit, *B. amyloliquefaciens* M73 culture supernatant (BMCS)-treated blood orange exhibited the lower percentage of fruit decay and greater desirable darker purple coloration. BMCS-treated fruit also maintained the lower weight loss and richer contents of total soluble solids, vitamin C, titratable acidity and anthocyanins, with higher transcription levels of anthocyanin biosynthesis related genes of *CHS1*, *CHS2*, *F3'5'H*, *ANS*, and *Ruby* in the pulp. The treated fruit had higher activities of peroxidase and polyphenol oxidase that were related to fruit disease resistance, as well as the lower mold count on the pericarp. BMCS treatment did not aggravate the generation of off-flavors during the storage. Our study suggested that *B. amyloliquefaciens* M73 had the potential to be developed into a novel preservative of high efficiency and low cost on maintaining the storage quality and increasing coloration of Tarocco blood orange during cold storage.