

# Inhibitory effect of postharvest yeast mannan treatment on *Alternaria* rot of tomato fruit involving the enhancement of hemicellulose polysaccharides and antioxidant metabolism

Qianqian Li, Fang Xie, Yumei Zhao and Jiankang Cao

Scientia Horticulturae 277: 109798. (2021)

---

## Abstract

In order to study the effects of yeast mannan (YM) treatment on postharvest infection of tomatoes, the fruit were vacuum-infiltrated and coated with different concentrations of YM. The YM treatment at 1.0 g L<sup>-1</sup> effectively reduced the decay of tomatoes caused by *Alternaria alternata*, and suppressed fruit color change and ethylene biosynthesis during storage. The YM-treated tomatoes retained a high level of tightly bonded hemicellulose (TBH) in cell wall materials, and compared to the control, the TBH possessed many structural polymers rich in xylose and mannose. YM treatment reduced lipid peroxidation and hydrogen peroxide accumulation in tomato by enhancing the activities of antioxidant enzymes including peroxidase, superoxide dismutase and catalase. The alleviation of oxidative stress by YM helped inactivate the nonenzymatic cleavage of TBH polysaccharides in the cell wall architecture, which could enhance fruit resistance against pathogenic infections and thereby suppress postharvest quality deterioration of tomatoes during storage.