

Title Combination of chitosan and ethanol to control postharvest gray mold of table grapes
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Abstract

Gray mold, caused by *Botrytis cinerea*, is the most important postharvest disease of table grapes. Chitosan, a natural biopolymer with antifungal and eliciting properties, and ethanol, a common food additive with antifungal properties, are both able to reduce postharvest decay of table grapes. The effectiveness of reduced doses of chitosan and ethanol, applied alone or in combination, to control gray mold of table grapes was evaluated. Artificially inoculated single berries or clusters were immersed in chitosan (0.1 and 0.5%), ethanol (10 and 20%), or their mixture. The combination of 0.5% chitosan with 10 or 20% ethanol improved decay control with respect to their single treatments, while combinations of 0.1% chitosan with 10 or 20% ethanol did not improve gray mold control compared to the treatments applied alone. On single berries stored 7 days at 15 ± 1 °C, the highest levels of decay control were observed on grapes treated with the combination of 0.5% chitosan and 10 or 20% ethanol (reductions of 94 and 97% on cv Autumn Seedless and 69 and 73% on Thompson Seedless, respectively, compared to controls). On small clusters stored 60 days at 0.5 ± 1 °C, the highest percent reduction was observed on grapes treated with the combination of 0.5% chitosan and 10 or 20% ethanol (reductions of 47 and 60% in Thompson Seedless, and 70 and 94% in Autumn Seedless, respectively, compared to controls). The tests with small clusters were carried out to simulate commercial prolonged cold storage of table grapes. The combination of reduced doses of chitosan and ethanol improved the control of gray mold of table grapes compared to their application alone, and the effect was at least additive and at times synergistic.