

# Chitosan oligosaccharides induced chilling resistance in cucumber fruit and associated stimulation of antioxidant and *HSP* gene expression

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## Abstract

Cucumber (*Cucumis sativus* L.) fruit is susceptible to chilling injury. The effect of postharvest dipping of cucumber fruit in 1% chitosan oligosaccharides (COS) solution was examined for its inhibition of chilling symptoms and effects on biochemical and molecular factors associated with chilling injury. Results showed that COS treatment of cucumbers before cold storage at 4 °C reduced pitting and decay, suppressed membrane lipid oxidation, and increased expression of *SOD*, *GR*, *APX*, *CAT*, *HSP45.9* and *HSP70* genes. In view of the critical role of antioxidant system and HSPs in protecting plants from stress induced damage, we suggest that the stimulation of antioxidant and *HSP* gene expression by COS contributed to enhanced chilling tolerance in cucumbers.