

# Seed browning in pepper (*Capsicum annuum* L.) fruit during cold storage is inhibited by methyl jasmonate or induced by methyl salicylate

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## Abstract

Chilling injury in pepper (*Capsicum annuum* L.) fruit during cold storage and market distribution results in quality loss. In the present study, seed browning, a major chilling injury symptom, was observed in pepper fruit stored at 2 °C, but not at 13 °C. To alleviate this symptom, we applied vapour treatments of 50 µM methyl jasmonate (MeJA) or 250 µM methyl salicylate (MeSA), or a combination of both, and investigated the effect of treatments on seed browning in pepper fruit during cold storage. When treated with 50 µM MeJA, seed browning was highly inhibited and endogenous jasmonic acid (JA) production was increased via earlier activation of JA synthesis-related genes. However, MeSA treatment induced more severe and faster seed browning than the other treatments by decreasing endogenous JA content and by increasing salicylic acid (SA) content. The content of glutamate, sucrose, and galactinol, which are well-known antioxidant metabolites against chilling stress, was higher in MeJA-treated pepper fruit than in MeSA-treated pepper fruit, suggesting the role of MeJA in reducing chilling injury. In conclusion, JA may play an important role in reducing low temperature-induced seed browning in pepper fruit and SA seems to be involved in inducing chilling sensitivity in pepper fruit.