

Efficacy of methyl thujate in inhibiting *Penicillium expansum* growth and possible mechanism involved

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Postharvest Biology and Technology, Volume 161, March 2020, 111070

Abstract

Fungal infection causes severe diseases on fruits and vegetables, eventually leading to postharvest loss, and thus it is urgent to explore safe substances to control postharvest diseases and elucidate the underlying antimicrobial mechanisms. Here, it was found that a monoterpenoid substance, methyl thujate, was effective in inhibiting mycelial growth of *Penicillium expansum* and reducing its virulence on harvested fruit dose-dependently. Moreover, dual-fluorescence staining and flow cytometry assay suggested that methyl thujate significantly decreased cell vitality, impaired membrane integrity, induced ROS accumulation and abolished mitochondrial membrane potential in *P. expansum*. As a consequence, membrane peroxidation and cytoplasmic content leakages occurred. In summary, methyl thujate could inhibit mycelial growth of *P. expansum* and reduce its virulence on harvested fruit, which is promising for controlling postharvest decay.