

Title Sodium silicate changes morphological of *Trichothecium roseum* in vitro and in vivo with inoculated muskmelon fruit

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Abstract

Pink rot caused by *Trichothecium roseum* is one of the most important postharvest disease of muskmelon in China. Postharvest sodium silicate (Si) dipping shows effectively decay suppression in muskmelons. In this paper, the effect of Si on growth and histology of *T. roseum* was studied in vitro and in vivo with inoculated muskmelons (cv. Yindi) treated with Si at 100 mM. In vitro assay indicated that Si significantly inhibited mycelial growth and spores germination, destroyed the integrity of cell membrane of *T. roseum*. The inhibiting effect was enhanced with the concentration of Si increasing. Some morphological changes were observed by scanning electron microscopy (SEM) both in vitro and in vivo, such as intertwisting hyphal, distortion and swelling with excessive branching. Ultrastructural alterations of hyphae were also found using transmission electron microscopy (TEM). The changes involved non-membraneous inclusion bodies assembling in cytoplasm, increasing of vacuoles in the cell, cell organelle dissolved, cell membrane crimple, considerable thickening of the hyphal cell walls, and cell wall disruption. It is suggested that Si could directly inhibit growth of *T. roseum* by changing morphological of mycelium.