

Title Effect of gaseous ozone exposure on the quality attributes and control of *Colletotrichum gloeosporioides* of papaya during ambient storage

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Abstract

The effect of gaseous ozone to control postharvest decay of papaya, particularly anthracnose caused by the fungus *Colletotrichum gloeosporioides* was investigated. Different concentrations of ozone (0 (control), 1.5, 2.5, 3.5 and 5ppm) were applied for 96 hour at room temperature ($25\pm 3^{\circ}\text{C}$) in a completely randomized design setup with 4 replications. Radial mycelial growth and conidial germination were evaluated *in vitro* after fungal exposition to different irradiation doses. The effects of ozone on disease incidence and severity of papaya which were inoculated with the *C. gloeosporioides* during ambient storage ($25\pm 3^{\circ}\text{C}$, 60% relative humidity) for 14 days were also determined. Significant ($P<0.05$) inhibition in radial mycelial growth of *C. gloeosporioides* was observed in all treatments of ozone as compared to the control during 8 days of incubation at room temperature ($25\pm 3^{\circ}\text{C}$). However, the maximum inhibition in radial mycelial growth and conidial germination was observed in petri plates exposed to 5 ppm of ozone for 96 h (41.20%) and (100%), respectively. Microscopic analysis showed that ozone exposure to 5 ppm caused disintegration of spore. Exposure of fruits to ozone also leads to significant suppression of disease incidence and severity in papaya. Therefore, these results support the application of gaseous ozone as a safe non-thermal food preservation technique for papaya, which can be used successfully as an alternative to chlorination.