

Title Control of postharvest anthracnose of banana using a new edible composite coating
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Abstract

Anthracnose is a postharvest disease of banana caused by the fungus *Colletotrichum musae* that results in major economic losses during transportation and storage. For the management of banana anthracnose, antifungal effects of Arabic gum (AG) (5, 10, 15 and 20%), chitosan (CH) (1.0%), and the combination of AG with CH were investigated *in vitro* as well as *in vivo*. CH at 1.0% and 1.5% had fungicidal effects on *C. musae*. AG alone did not show any fungicidal effects while the combination of 1.0% CH with all tested AG concentrations had fungicidal effects. However, the potato dextrose agar (PDA) medium amended with 10% AG incorporated with 1.0% CH showed the most promising results among all treatments in suppressing the mycelial growth (100%) and conidial germination inhibition (92.5%). *In vivo* analysis also revealed that 10% AG incorporated with 1.0% CH was the optimal concentration in controlling decay (80%), showing a synergistic effect in the reduction of *C. musae* in artificially inoculated bananas. The 10% AG incorporated with 1.0% CH coatings significantly delayed ripening as in terms of percentage weight loss, fruit firmness, soluble solids concentration and titratable acidity. The results showed the possibility of using 10% Arabic gum incorporated with 1.0% chitosan as a biofungicide for controlling postharvest anthracnose in banana.