

Abstract

Crown rot is the important postharvest disease of banana caused by complex fungi; *C. musae*, *Lasiodiplodia theobromae*, and *Fusarium* spp. are ubiquitous in postharvest storage. Due to the consumer concern on fungicide residue therefore, alternative methods for controlling of postharvest diseases were required. The antifungal activity of cinnamon extracts on these pathogens was observed in vitro at room temperature. Inhibition of conidial germination and mycelial growth was investigated on potato dextrose agar with 0, 100, 500, 1,000, 5,000 and 10,000 ppm of cinnamon extract in compared with 750 ppm carbendazim. The results revealed that cinnamon extracts at 5000 ppm completely arrested the conidial germination and growth of all pathogenic fungi. Conidia of *L. theobromae* was the most sensitive to cinnamon extract at the lowest concentration (100 ppm) with 18.33% of inhibition while *C. musae* and *Fusarium* spp. were 46.67 and 78.33% respectively. However, mycelial growth of *Fusarium* spp. was affected by 1,000 ppm with the inhibition percent of 75.71% but 77.18% and 33.35% for *C. musae* and *L. theobromae*. The ED₅₀ values of cinnamon extracts were 588, 1,950, and 692 ppm for mycelial growth of *C. musae*, *L. theobromae* and *Fusarium* spp. and were 91, 50 and 758 ppm for their conidia. This study indicated that the ED₅₀ value of cinnamon extracts for mycelial growth was higher than that of conidia germination, excepted *Fusarium* spp. and the cinnamon extract at 5,000 ppm has a potential to be used as biological control to reduce crown rot disease of banana.