The biocontrol of postharvest disease (Botryodiplodia theobromae) of guava (Psidium guajava L.) by the application of yeast strains

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Abstract:

Antagonistic activity of five yeast strains (Pichia anomala Moh 93, P. anomala Moh 104, Pichia guilliermondii Moh 10, Lipomyces tetrasporus Y-115 and Metschnikowia lunata Y-1209) was evaluated against dipoldia rot of guava caused by Botryodiplodia theobromae. Results revealed that both strains of P. anomala were the most effective antagonists against the pathogen in vitro. Examination of the direct interaction of yeast–pathogen by SEM showed a tenacious adherence between hyphae of B. theobromae and P. anomala Moh 93. There was accumulation of extracellular matrices around the hyphae of the pathogen. Eventually the hyphae of B. theobromae were totally penetrated and destroyed by the cells of the antagonistic yeast. In vivo P. anomala Moh 93 and P. anomala Moh 104 were responsible for the reduction of the disease by 39.1 and 50.0%, respectively. The production of cellulase and pectinase enzymes was significantly inhibited in guava fruit infected with B. theobromae when yeast strains were applied. This study represents a first report dealing with the biocontrol of diopldia rot in guava fruit by the application of yeasts. It strongly recommends the use of specific strains of P. anomala as a safe and effective biocontrol agent against the diplodia postharvest rot of guava fruit.

Keywords:

Biocontrol; Botryodiplodia; Pichia; Lipomyces; Metschnikowia; Guava; Postharvest rot

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