

Enhancing the efficacy of *Burkholderia cepacia* B23 with calcium chloride and chitosan to control anthracnose of papaya during storage.

ABSTRACT

The efficacy of the combination of *Burkholderia cepacia* B23 with 0.75% chitosan and 3% calcium chloride (CaCl₂) as a biocontrol treatment of anthracnose disease of papaya caused by *Colletotrichum gloeosporioides*, was evaluated during storage. The growth of *B. cepacia* B23 in papaya wounds and on fruit surfaces was not affected in presence of chitosan and CaCl₂ or combination throughout the storage period. The combination of *B. cepacia* B23 with chitosan-CaCl₂ was more effective in controlling the disease than either *B. cepacia* B23 or chitosan or other combination treatments both in inoculated and naturally infected fruits. Combining *B. cepacia* B23 with chitosan-CaCl₂ gave the complete control of anthracnose infection in artificially inoculated fruits stored at 14 °C and 95% RH for 18 days, which was similar to that obtained with fungicide benocideçç. Moreover, this combination offered a greater control by reducing 99% disease severity in naturally infected fruits at the end of 14 days storage at 14 °C and 95% RH and six days post ripening at 28;¼20C, which was superior to that found with benocideçç or other treatments tested. Thus, postharvest application of *B. cepacia* B23 with chitosan-CaCl₂ as enhancers represents a promising alternative to synthetic fungicides for the control of anthracnose in papaya during storage.

Keyword: Antagonists; Biocontrol efficacy; *Burkholderia cepacia* B23; Calcium chloride; Chitosan; Papaya; Postharvest pathology.