

Title Postharvest application of *Burkholderia cepacia* supplemented with chitosan and calcium chloride to control anthracnose and improve the storability of papaya

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Abstract

A study was conducted to evaluate the biocontrol potential of *Burkholderia cepacia* strain B23 to control anthracnose and extension of storage life of papaya. This strain of *B. cepacia* was isolated from papaya fruit surface and exhibited strong antagonistic activity towards *Colletotrichum gloeosporioides* during in vitro screening. Combining *B. cepacia* with 0.75% chitosan and 3% calcium chloride gave complete control of the disease in inoculated fruit stored at 14 °C and 95% RH for 18 days, which was comparable to fungicide treatment. However, this combination offered a greater control by reducing 99% disease compared to the control in naturally infected fruits, which was superior to that obtained from the fungicide benocide®. Furthermore, the combination of *B. cepacia*-chitosan-CaCl₂ delayed climacteric ethylene evolution, reduced respiration rate, retained fruit firmness, decreased weight loss and delayed the change in external color without impairing fruit quality during storage at 14 °C and 95% RH for 28 days. These resulted in extension of storage life of the fruits. Nevertheless, the addition of 3% CaCl₂ into the combined treatment significantly increased the fruit Ca content thus improved the nutritional value of papaya.