

**Title** Effect of chitosan coating on the control of anthracnose and overall quality retention of papaya (*Carica papaya* L.) during storage

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#### **Abstract**

The potential use of chitosan, as an antifungal agent to reduce anthracnose disease on papaya during storage was investigated. Chitin extracted from locally available prawn waste was used to prepare N,O-carboxymethyl chitosan. The effective concentration of chitosan formulation (from 0.1 to 3%) to inhibit radial mycelial growth was selected via a series of experiments on potato dextrose agar. The selected effective chitosan concentration was then tested on papaya var. Rathna. In vitro studies revealed complete inhibition of radial mycelial growth of the pathogen at 1% chitosan and above. Chitosan at a concentration of 1% in vivo significantly reduced both disease incidence and severity on papaya fruit. Significant changes were observed in chitosan- treated fruit with respect to fruit firmness, rate of respiration and CO<sub>2</sub> concentration in the internal cavity of the fruit while other physicochemical and organoleptic characters of the fruit were not affected. Chitosan at a concentration of 1% showed improved fruit firmness after ripening, protected the fruit from decay and kept the fruit quality at an acceptable level (with 80% marketability) throughout the storage period of 14 days at 13.5°C and 95% relative humidity followed by two days at ambient temperature (28 ±2°C).