

## Abstract

Desorption active packaging systems offer the possibility of increasing storage and shelf life of horticultural products through release of volatile antimicrobial agents to control growth of postharvest pathogens. Hexanal vapour ( a component of tomato aroma) was taken as a model volatile and its activity was tested for fresh tomatoes challenged with ~ 3000 spores of *Botrytis cinerea*. Several ranges of hexanal concentration ( 5-15, 40-70, 100-160 and 200-270 ppm) were continuously applied via a flow – through system to inoculated tomatoes stored at  $20\pm 2^{\circ}\text{C}$  and  $>95\% \text{RH}$  during a 7- day storage period. Inoculated tomatoes with no hexanal treatment were designated as the control. The highest numbers of tomatoes exhibiting fungal growth were found in the control and 5-15 ppm treatments after 2-3 days, whilst of other treatments were effective in suppressing fungal growth throughout the storage period. A hexanal concentration of 40-70ppm appeared the lowest effective treatment and will be used for further development of the controlled release system. Effects of hexanal vapour on intact (non-inoculated) tomato postharvest physiology (respiration and ethylene production) and quality factors (weigh loss, colour, firmness and acoustic stiffness) were also investigated. During the 7-day storage period, respiration rates of intact tomato treated with hexanal at 40-70 ppm were significantly higher than those kept in ambient air. However no effects of hexanal on ethylene generation or other quality factors were apparent. Tomatoes kept under ambient air showed fungal development and a rapid decrease in hue, stiffness and weight.