

Investigation of Active Modified Atmosphere and Nanoparticle Packaging on Quality of Tomatoes

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Abstract : This study investigated the effects of Ag nanoparticle polyethylene film and active modified atmosphere on the postharvest quality of tomatoes stored at 6 °C. The atmosphere composition used in the packaging was 7% O₂ + 7% CO₂ + 86% N₂, and synthetic air (control). The variables measured were weight loss, firmness, color and respiration rate over 21 days. The results showed that the combination of Ag nanoparticle polyethylene film and modified atmosphere could extend the shelf life of tomatoes to 21 days and could influence the postharvest quality of tomatoes. Also, existence of Ag nanoparticles caused preventing from increasing weight loss, a*, b*, Chroma, Hue angle and reducing firmness and L*. As well as, tomatoes at Ag nanoparticle polyethylene films had lower respiration rate than Polyethylene and paper bags to 13.27% and 23.50%, respectively. The combination of Ag nanoparticle polyethylene film and active modified atmosphere was effective with regard to delaying maturity during the storage period, and preserving the quality of tomatoes.

Keywords : ag nanoparticles, modified atmosphere, polyethylene film, tomato

Conference Title : ICFPT 2016 : International Conference on Food Processing and Technology

Conference Location : Paris, France

Conference Dates : August 22-23, 2016