

Title Extending shelf-life of fresh-cut pumpkin (*Cucurbita Maxima*): Effect of pretreatments and storage conditions

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Abstract

To maintain high quality and to extend the shelf life of minimally processed pumpkin (*Cucurbita Maxima*), the potential benefits of a mild heat treatment, exposure to 1-MCP, calcium dips, and controlled atmosphere were evaluated. For each trial, quality attributes were monitored during storage including firmness, color, overall appearance, respiration rate and ethylene production. Heat treatments did not affect firmness of pumpkin cubes, influenced negatively appearance and color, although controlled respiration rate during storage at 5 °C. Exposure of pumpkin to 0.5 ppm of 1-MCP for 6, 12 and 24 hours at 5°C after cutting resulted effective in delaying firmness loss, color change (L*,a*,b*), and respiration rate but did not influence ethylene production. These effects were more evident when 1-MCP was applied for 24 h. In a third experiment, the effect of this treatment was also compared to the effects of calcium lactate dips (2.5% for 1 min), alone or in combination. Results showed an higher effect of calcium lactate than of 1-MCP treatment on firmness and visual score but only at the last evaluation days, while no difference were detected until 7 days of storage, most likely due to the higher initial firmness value of the fruits used. In the last experiment, the effects of dipping in calcium lactate (2.5% for 1 min) and storage in air, 3% O₂ in nitrogen, 15% CO₂ in air and 3% O₂+ 15% CO₂ in nitrogen for 9 days at 5 °C were investigated. Both calcium treatment and controlled atmosphere delayed firmness loss. All Ca-treated samples presented higher firmness value than untreated samples; in addition samples held in 15% CO₂ in combination with calcium treatment showed best overall appearance score and lower respiration rate compared to all other samples. No significant effects were observed on color attributes.