Title Evaluation of shelf-life and sensory quality of fresh-cut slices processed from different apple cultivars stored under controlled atmosphere (CA) condition

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Abstract

The fresh-cut produce has shown a rapid growth in recent years with the apple slices as one of the fastest growing segments in this category. Preserving the quality of this nutritious and read-to-eat snack is critical for its sustained growth. The main sensory attributes of a food product are color, texture and flavor; however, color of apple slices is the most important quality criterion for the consumers. The present study, in order to extend the availability of fresh-cut apple slices, utilized fruit from 3- and 6-mo controlled atmosphere (CA) storage. Our objective was to assess the feasibility of processing acceptable quality fresh-cut slices from apples stored under CA conditions. Apples from 6 varieties (Cameo, Empire, Gala, Honeycrisp, Jonagold, Jonathan) were washed (150 ppm chlorine) and sliced using a commercial corer/slicer. Slices were then sanitized (75 ppm chlorine), treated with 5% NautureSeal™ (calcium ascorbate), packaged in polyethylene bags and stored at 4 °C. The slices were evaluated for color, texture, Brix, pH, titratable acidity and microbial quality at d 3, 10, 17 and 24. Sensory evaluation (browning, texture, off flavor) was conducted using a trained panel. Anti-browning treatment with NatureSeal™ was effective in preserving the color quality of apple slices from all varieties as no significant differences were observed in Hunter "L", "a" and "b" values up to day 17. Slices from Honeycrisp apples (3-mo CA) had the highest sensory scores for color and texture. Apple slices from both 3-and 6- mo CA stored apples had significantly lower sensory scores for color and increase in off-flavor after 24-d storage. Brix, pH and titratable acidity were not affected during storage. Microbial load (bacteria, mold, yeast) of all slices were within acceptable limits. These results indicate that CA stored apples can be used for fresh-cut slices with acceptable quality up to 17 d at 4 °C.