Title Combined technologies to inhibit enzymatic browning and preserve quality of fresh-cut artichoke hearts

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Citation ISHS Acta Horticulturae 942:385-390.2012.

Keywords *Cynara scolymus* L.; minimal processing; modified atmosphere packaging; antioxidant solutions; phenolics; sensory quality

Abstract

During the last years, consumers demand convenient products, easy to prepare and with high sensory and nutritional quality. Fresh-cut fruit and vegetables have been developed to satisfy that demand. The industry of that sector is highly competitive and continuously needs technological solutions. Minimally processed artichokes are a very interesting product, but after cutting heads are highly susceptible to enzymatic browning, resulting in loss of nutritional and sensory quality. This research studied the effect of two active modified active packaging (MAP) (air as control) combined with two antioxidant solutions (chlorinated water as control) to prevent browning and slow down quality loss in purple artichokes (*Cynara scolymus* L. 'Salambo'). Heads were hand harvested and immediately air pre-cooled at 5°C. In a disinfected cold room at 5°C outer bracts were removed and top and bottom were cut. Obtained hearts were immersed in a chlorinated water solution (100 ppm Na ClO) for 1 min. Before packaging, the artichokes hearts were dipped for 3 min. into two different solutions: a) lemon juice (60% v/v) and b) oxalic acid (0.02% w/v) + ascorbic acid (1% w/v). Two hearts were placed in polypropylene (PP) baskets of 500 ml and thermally sealed at the top m thickness. Active MAPs were 4 kPaμwith an oriented PP film of 35 O_2 + 20 kPa CO_2 + 76 kPa N_2 and 80 kPa O_2+ 20 kPa N_2. After 6 d at 5°C weight loss, sensory quality and phenolics content were evaluated. A whiteness index (WI) combining L*, a*, and b* parameters was calculated to analyse colour changes, the higher the index, the lower the browning. Sensory quality was acceptable for all the treatments. High O_2 MAP combined with lemon juice showed the highest WI. Total phenolics were better kept in high O_2 MAP combined with antioxidant solutions. The use of these substances under superatmospheric oxygen could be a good option for keeping overall quality of artichoke hearts up to 5 d at 5°C.