

Effectiveness of technological treatments for shelf-life extension of ready-to-eat cactus pear fruits

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Abstract

Objective of the present work was to individuate treatments able to extend the shelf-life of ready-to-eat cactus pear fruits. Prolonging the shelf-life of this product could increase its commercial diffusion and allow producers to afford new markets. Two innovative treatments, i.e., washing with electrolyzed water (EW) and conservation under modified atmosphere packaging (MAP), either individually or in combination, were tested. Fruits were obtained by the second flush derived by a delayed green pruning ("scozzolatura"), a treatment which allows growers to pick fruits with a considerable delay during late Autumn and to extend the marketing calendar; namely the fruits were harvested in the first week of December. Electrolyzed water was obtained by a commercial instrument using 1.5 kg of potassium chloride in 100 L of water; the water produced was diluted up to a final concentration of 400ppm and used as sanitizer in alternative to tap water or sodium hypochlorite rinsing treatments. Fruits were rinsed with EW 400ppm or tap water for 15 min and microbiological analyses were performed to evaluate treatment effectiveness on the epiphytic bacterial population, yeast-like fungi, yeasts and filamentous fungi. EW rinsed fruits were also used for ready-to-eat products; fruits were peeled by hand packaged either under modified atmosphere (30% O₂, 70% CO₂) or under ordinary atmosphere, and stored up to 15 days at 4°C. Chemical (pH, TA and TSS) and microbiological analyses (PCA and SDA for total bacterial count and yeast and molds counts, respectively) were performed after 1, 5, 10 and 15 days of storage. Significant chemical differences were not detected among treatments; microbial growth remained below the legal limit with some difference among the treatments. Results indicate that innovative storage methods can allow to extend the shelf-life of minimally processed cactus pear fruits to 12-14 days without compromising overall product quality and appearance.