

Title Quality and shelf-life of washed fresh-cut asparagus in modified atmosphere packaging
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Abstract

Fresh-cut asparagus is one of the most popular fresh vegetables for healthy consumption. However, the level of microbial load in the raw vegetable can cause food poisoning and shorten its shelf-life of asparagus. The objectives of this work were to determine the effect of chlorinated and ozonated water in the washing process to reduce the microbial load on fresh green asparagus and the effect of modified atmosphere packaging (MAP) on asparagus quality. Washing at 10 °C for 15 min with chlorinated water (100 mg/L free Cl₂) reduced aerobic plate count which had higher efficiency on microbial reduction than the use of ozonated water (0.1 mg/L O₃). No significant differences on the amount of *Escherichia coli* contamination among washing methods were found. Asparagus in modified atmosphere packaging retarded the deterioration process. Changes in hue angle followed a first-order kinetic reaction. Temperature dependence of the kinetic rate constant during storage time of asparagus obeyed the Arrhenius relationship with an activation energy (E_a) 29.33 ± 4.60 kJ/mol. The shelf-life prediction equation was related well with real practice. The combination of appropriate washing process and MAP increased the food safety, maintained the quality and prolonged the shelf-life of asparagus.