

Abstract:

Reduced O₂ plus elevated CO₂ (2% O₂ + 10% CO₂) was very beneficial in maintaining the visual quality of fresh-cut sweet corn kernels and reduced sugar and flavor losses during 10 days storage at 5 °C compared with storage in air. The main benefit of this controlled atmosphere (CA) was to prevent after cooking browning. Preliminary results indicate that after cooking browning is not associated with a Maillard reaction since 5-hydroxymethylfurfural (HMF), the characteristic intermediate compound produced during the Maillard reaction, is not present in cooked sweet corn kernels exhibiting browning. There were no significant changes in the total soluble phenolics content during storage in air or CA, but the soluble phenolic levels decreased with cooking, which suggests that the after cooking brown color may be due to as yet unidentified insoluble phenolic-protein complexes in the cooked sweet corn tissue. The total aerobic microbe count increased with storage and the increase was significantly greater in air. This suggests that the browning could be a response of the sweet corn tissue to the microorganisms, or it may be associated with some product of microbial enzyme activity.