Title Effect of refrigerated vacuum storage on the shelf life of comingled broccoli, cauliflower, and carrots

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Abstract

The objective of this research was to study the interaction of comingled vegetables (broccoli, cauliflower, and carrots) in a refrigerated 30% vacuum system at various temperatures for 15 days. The vegetables were trimmed, washed, and randomly separated into 200 gram lots. They were placed into vacuum chambers and sealed. Each chamber was labeled with a temperature, sampling day, and treatment identification (vacuum vs. non-vacuum). Samples were stored refrigerated set at 3, 7, and 11°C. Samples were evaluated at (0, 5, 10, and 15 days). Analytical testing included; microbial population, texture, color, and gas headspace composition. There was no evidence that the vacuum treatment had any effect on the mean log total aerobic microorganism count (TPC) for both broccoli and cauliflower. Carrot TPC on day 15, was higher for vacuum compared to non-vacuum treatments (p-value = 0.0063). There was no difference in texture for any treatment factor or vegetable. Data from each vegetable was treated independently for carrots, broccoli, and cauliflower. The color (L*a*b*, chroma, and hue) of all 3 vegetables were significantly different among all treatment combinations. L*a*b*, chroma, and hue were impacted by the atmospheric state of the chamber with the exception of carrot. There was no significant difference in hue for the carrots due to storage treatments.