

Title Determination of acceptability and shelf life of ready-to-use lettuce by digital image analysis
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Abstract

The potential of digital measurement of browning to determine the acceptability and shelf life of ready-to-use (RTU) lettuce was investigated. Shredded lettuce was treated either with or without 48 °C chlorine water (100 ppm) before being washed with 4 °C chlorine water and packaged in plastic bags. The packaged lettuce was then stored at 4 and 10 °C. A human panel visually evaluated the lettuce samples seven times over 18 days using a loss of quality scale from 1 to 5. The same samples were photographed, and the images were analyzed for percent brown area and changes in colour composition with image analysis software (Northern Eclipse). Both the human evaluation and image analyses revealed significant differences among the treatments, with similar trends. Percent brown area as determined by image analysis was a much better indication of lettuce quality than values of colour composition changes. Image analysis of browning corresponded well with storage days, i.e. shelf life. The correlation coefficients between percent brown area and shelf life ranged from 0.9194 to 0.9941, for four different treatments. Also, percent brown area was highly correlated with human visual evaluations. The image analysis of browning is a reliable research tool for objectively and quantitatively determining the quality and shelf life of RTU lettuce, and should also be suitable for use by the food processing industry.