Title	Prediction of Pathogen Growth on Iceberg Lettuce under Real Temperatures History during Farm-to-Table Distribution
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Abstract

The growth of pathogenic bacteria *Escherichia coli* 0157:H7, *Salmonella* spp., and *Listeria monocytogene* on iceberg lettuce under constant and fluctuating temperatures was modeled in order to estimate the microbial safety of this vegetable during distribution from the farm to the table. We examined pathogen growth on lettuce at constant temperatures, ranging from 5 to 25°C, and hen we obtained he growth kinetic parameters (lag time, maximum growth rate and maximum population density (MPD) using Baranyi's primary model and determined the Ratkowsky's secondary models of square root growth rate. The parameters were similar o those predicted by the Pathogen modeling Program (PMD), with the exception of MPD. The MPD of each pathogen on lettuce was 2 to 4 log CFU/g lower than that predicted by PMP. Furthermore, the MPD of pathogens decreased with a fall in temperature. The relationship between the MPD and temperature was described by a linear equation. Predictions of pathogen growth under fluctuating temperature used the Baranyi primary microbial growth model along with the Ratkowsky secondary model and MPD equation. The fluctuating temperature profile used in this study was the real temperature history during distribution. Overall predictions for each pathogen agreed well with observed viable counts in most cases. However, the prediction concerning *E. coli* 0157:H7 and *Salmonella* spp. On lettuce greatly overestimated growth in the case of a temperature history starting relatively high, such as 25°C for 5 h. In contrast, the overall prediction of L. monocytogenes under same circumstances agreed with the observed data.