

Effects of lactic acid and lauricidin on the survival of *Listeria monocytogenes*, *Salmonella enteritidis* and *Escherichia coli* O157:H7 in chicken breast stored at 4 °C

ABSTRACT

Lauricidin and lactic acid were evaluated for their effects on growth and survival of *Listeria monocytogenes* (L55), *Salmonella enteritidis* (S552) and *Escherichia coli* O157:H7 (E19) inoculated onto raw chicken breast. Fresh, raw chicken breasts were purchased immediately after slaughter and transported on ice to the laboratory within 20 min. Each chicken breast was decontaminated by briefly dipping in 70% ethanol and passed through a flame of a Bunsen burner and then allowed to cool. The decontaminated chicken breast was dipped in TSB broth, at room temperature (25 °C) for 15 min, containing approximately 10^9 CFU/ml of *L. monocytogenes*, *S. enteritidis* or *E. coli* O157:H7. Initial counts of *L. monocytogenes*, *S. enteritidis* or *E. coli* O157:H7 counts in chicken breast immediately after dipping in TSB broth were in the range of 10^7 – 10^8 CFU/g. After inoculation, the chicken breasts were kept at room temperature for 20 min to allow attachment. Each inoculated chicken breast (25 °C) was dipped in 0 (control – sterile water), 0.5%, 1%, 1.5% or 2% of lauricidin (w/v) or lactic acid (v/v) for 10, 20 or 30 min and then individually placed in oxygen-permeable polyethylene bags. Breasts were subjected to microbiological analyses after treatment (day 0) and after storage for 2, 5, 7, 10 and 14 d at 4 °C. Initial counts of *L. monocytogenes*, *S. enteritidis* and *E. coli* O157:H7, in chicken breast treated with lauricidin decreased by 2.90, 1.31 and 2.27 logCFU/g, respectively. Lauricidin was more effective in reducing *L. monocytogenes* population than *S. enteritidis* and *E. coli* O157:H7 population. Dipping chicken breast in lauricidin for 30 min caused a significant reduction of *L. monocytogenes*, *S. enteritidis* and *E. coli* O157:H7 population compared to 10 and 20 min dipping. Initial *L. monocytogenes*, *S. enteritidis* and *E. coli* O157:H7 counts on chicken breast treated with lactic acid decreased by 1.97, 1.71 and 2.59 logCFU/g, respectively. Lactic acid caused a higher reduction in initial *S. enteritidis* and *E. coli* O157:H7 counts compared to lauricidin.

Keyword: Poultry, Pathogen, Decontamination