

Impact of interventions during food production on microbial biodiversity

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Effectiveness of immersion treatments with citric and acetic acids against *Campylobacter jejuni* in poultry**Gonzalez-Fandos E.¹, Perez-Arnedo I.¹, Martinez-Laorden A.¹**¹University of La Rioja, Food Technology, Logrono, Spain

Raw poultry is a well-recognized source of *Campylobacter jejuni* and many surveys have confirmed the presence of this pathogen on fresh poultry. There is a great interest in reducing surface microbial contamination of poultry, with particular regard to reducing the levels of pathogens.

The aim of this study was to evaluate the combined effect of different mixtures of citric and acetic acids on the growth of *Campylobacter jejuni* in poultry legs stored at 4°C.

Fresh chicken legs were inoculated with *Campylobacter jejuni*. After the inoculation, the chicken legs were dipped into a mixture containing either 1% citric acid and 1% acetic acid or 2% citric acid and 2% acetic acid. Control legs were treated with distilled water. Surface pH values, sensorial characteristics and *Campylobacter jejuni*, mesophiles and psychrotrophs counts were evaluated after treatment (day 0) and after 1, 3, 6, 8, 10, 13, and 15 days of storage at 4°C.

Significant differences ($p < 0.05$) in mesophiles and psychrotrophs counts were found between the legs treated with a mixture of citric and acetic acid and the control legs after treatment. The control legs had the fastest increase in mesophiles counts. The lowest mesophiles counts were observed in those samples treated with 2% citric acid and 2% acetic acid. Legs washed with a mixture of 2% citric and 2% acetic acid solution showed a significant ($p < 0.05$) inhibitory effect on *Campylobacter jejuni* compared to control legs, being about 1.09 log units lower after treatment. After 3 days of storage, *Campylobacter jejuni* counts in samples treated with 2% citric acid and 2% acetic acid were 1.55 log units lower compared to control samples.

In conclusion, immersion of chicken legs in a mixture of 2% citric acid and 2% acetic acid solution can reduce *Campylobacter jejuni* populations on fresh poultry.

Keywords: Food safety, pathogens, poultry, organic acids, *Campylobacter*