



## Effects of slaughter operations on the contamination of chicken carcasses with *Campylobacter* and indicator bacteria

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### Key words

Broiler carcasses, slaughter process, total viable counts, Enterobacteriaceae, *E. coli*, *Campylobacter*

### Aim of the study

For implementation of control measures at the slaughterhouse level, identification of operations increasing or decreasing microbial loads on carcasses is required. The aims of this study were i) to examine broiler carcasses at selected process stages for *Campylobacter*, total viable counts (TVC), Enterobacteriaceae, and *E. coli* and ii) to propose, based on the data, a quantitative process hygiene criterion for *Campylobacter*.

### Material and methods

Broiler carcasses from three slaughter plants were examined at selected process stages (scalding, defeathering, evisceration, washing, chilling). At each plant and stage, 90 chicken carcasses (pooled neck and breast skin) from 30 flocks were sampled (10 sampling days).

### Results and significance

*Campylobacter* results after scalding differed between the three plants (mean counts of carcasses with  $\geq 2.3$  log KBE/g: 2.3-3.3 log KBE/g; proportion of flocks with  $\geq 2.3$  log KBE/g: 30-50%). Defeathering tended to increase the results (0.3-0.6 logs), whereas mainly minor changes occurred at the following stages (mean counts of chilled carcasses: 2.5-3.3 log KBE/g; proportion of flocks with  $\geq 2.3$  log KBE/g: 20-43%). Mean TVC from the three plants were reduced after defeathering (1.2-1.7 logs) and washing (0.2-0.4 logs), but were hardly affected by evisceration and chilling. With regard to Enterobacteriaceae and *E. coli*, certain plant-specific effects were evident (e.g. increase after evisceration in two plants, decrease after washing in one plant). Mean TVC, Enterobacteriaceae counts, and *E. coli* counts on chilled carcasses from the three plants ranged from 4.2-4.4, 2.9-3.5, and 2.7-3.4 log KBE/g, respectively. No reliable interrelationships were found between counts of indicator bacteria and *Campylobacter*.

Based on these data, slaughter operations increasing or decreasing microbial loads on carcasses could be identified and a proposal for a quantitative process hygiene criterion for *Campylobacter* on broiler carcasses was prepared.

### Publications, posters and presentations

Althaus, D.; Stephan, R.; Zweifel, C. (2014). Mikrobiologische Prozessanalyse der Geflügelschlachtung in drei Schlachtbetrieben. Rundschau für Fleischhygiene und Lebensmittelüberwachung, in press.

Stephan, R. (2014). Mikrobiologische Prozessanalyse der Geflügelschlachtung. Presentation at the BVL, June 20th, 2014.

Stephan, R.; Zweifel, C. (2014). Proposal for a process hygiene criteria *Campylobacter* for broiler carcasses. Submitted to the BVL July, 15th 2014.

Zweifel, C.; Althaus, D.; Stephan, R. (2014). Effects of slaughter operations on the contamination of chicken carcasses with *Campylobacter* and indicator bacteria. Poster. Annual Meeting of the DVG Lebensmittelhygiene, Garmisch-Partenkirchen, September, accepted.

Zweifel, C.; Althaus, D.; Stephan, R. (2014). Effects of slaughter operations on the contamination of chicken carcasses with *Campylobacter* and indicator bacteria. Food Control, in preparation.

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