A microbiological survey of campylobacter contamination in fresh whole UK-produced chilled chickens at retail sale (Y2/3/4)

Area of research interest: Foodborne pathogens
Study duration: 2015-07-01
Planned completion: 1 September 2019
Project code: FS102121
Conducted by: Public Health England (PHE)

Background

The original 'Microbiological Survey of Campylobacter contamination in fresh whole chilled chickens at retail sale' (FS241044) was carried out in 2014/15.

Campylobacter species are the main cause of human bacterial gastroenteritis in the developed world and it is estimated that there are in excess of half a million cases and 80,000 general practitioner consultations annually in the UK. It is likely that eating undercooked poultry or cross contamination from raw poultry meat is an important vehicle of infection. The Food Standards Agency (FSA) agreed with industry to reduce campylobacter contamination in raw chicken. The target was to reduce the percentage of chickens produced in UK poultry slaughterhouses that are contaminated with >1,000 colony forming units (cfu) per gram (g), to 7% or less at retail level.

Research Approach

A UK-wide survey was undertaken to determine the levels of Campylobacter spp. on whole fresh retail chickens. This report represents results from sampling and testing chickens in the fourth survey year under FSA Project FS102121 (2017/2018).

A total of 1769 samples of whole, UK-produced, fresh chicken were tested between August 2017 to July 2018. During the first 4 months, 1044 chickens were sampled from all retailers. The FSA took the decision to test only minor retailers after this period, as it was agreed that the Top 9 retailers would publish results of their own testing on their respective consumer websites. The samples were distributed throughout the UK (in proportion to the population size of each country) and testing was performed by four laboratory sites; three Public Health England (PHE) laboratories and one laboratory in Northern Ireland (Agri-Food & Biosciences Institute, Belfast). Retailers were sampled evenly with their share of free-range and organic chickens taken into account.

Campylobacter enumeration testing on chicken samples was performed using the EN/TS/ISO 10272-2 standard enumeration method applied with a detection limit of 10 colony forming units (cfu) per gram of neck skin.

Results

During the first months of this 4th survey year chickens (n = 1044) were sampled from all retailer groups, including major retailers, with the large majority (98 %) tested from August to October 2017 (hereafter referred to as the first sampling period). Based on this data, Campylobacter spp. were detected in the majority (56 %) of chicken neck skin samples and 7 % of samples had > 1000 cfu per g chicken skin (highly contaminated chicken category). There were significant differences in the proportion of highly contaminated chickens (ranging from 0 to 21 %) between the different types of retailers that could not be explained by differences in remaining shelf-life, chicken weight, sampling period or the type of rearing used. Comparison of individual approval codes (signifying the slaughter house premises) also showed a significant difference in the proportion of chickens with >1000 cfu per g, ranging from 0 to 27 %, and it was noted that some retailers were predominantly supplied by specific approved slaughter premises. There was no significant difference in the proportion of highly contaminated chickens between smaller or larger chickens. There was no evidence of birds with access to range (e.g. free-range and organic birds) being more contaminated than birds reared under standard conditions, but with much fewer free-range and organic birds tested there was limited precision in the comparisons made.

Chickens from smaller retail shops were tested for an entire year, from August 2017 to July 2018 (n = 829). Campylobacter spp. were detected in 75 % of these chicken skin samples obtained from non-major retailer shops, and 15 % of samples had counts above 1000 cfu per g chicken skin. Comparison of individual approval codes showed a significant difference in the proportion of chickens with >1000 cfu per g, ranging from 0 to 24 %. The proportion of samples with > 1000 cfu/g of Campylobacter spp. was not significantly different over the different sampling periods for these samples collected from an entire year from the smaller retail shops. There was no significant difference in the proportion of highly contaminated chickens between smaller or larger chickens nor was there any evidence that birds with access to range (e.g. free-range and organic birds) were more contaminated than birds reared under standard conditions.

Taking into account all samples tested during the 4th survey year, C. jejuni alone was isolated from the majority (78 %) of chicken skin samples from which isolates were submitted for speciation (n = 1024). Campylobacter coli alone was identified in 16 % of samples. Both species were found in 6 % of samples. C coli was more frequently isolated from birds with access to range in comparison to those reared as standard birds.

In the samples tested from non-major retail shops, from the entire year (from August to July 2018), C. jejuni was slightly less prevalent during the summer period compared to the rest of the year but this difference was not statistically significant.

Research Report

Year 4

PDF
View Campylobacter contamination in fresh whole UK-produced chilled chickens at retail sale (Year 4 2017-2018) as PDF(Open in a new window) (682.49 KB)
EXCEL
View Campylobacter year 4 retail survey raw data as Excel(Open in a new window) (233.03 KB)
PDF
View Retail survey protocol - Year 4 as PDF(Open in a new window) (467.39 KB)

Previous Research Reports

Year 3

PDF
View Campylobacter contamination in fresh whole UK-produced chilled chickens at retail sale (Year 3 2016-2017) as PDF(Open in a new window) (819.39 KB)
EXCEL
View Campylobacter year 3 retail survey raw data as Excel(Open in a new window) (566.38 KB)

England, Northern Ireland and Wales

PDF
View Retail survey protocol - Year 3 as PDF(Open in a new window) (384.39 KB)

Year 2

England, Northern Ireland and Wales

PDF
View Retail survey protocol - Year 2 as PDF(Open in a new window) (627.1 KB)

England, Northern Ireland and Wales

PDF
View Report on survey of campylobacter contamination in fresh whole UK-produced chilled chickens at retail: July - September 2015 as PDF(Open in a new window) (446.79 KB)

England, Northern Ireland and Wales

PDF
View Research report: Campylobacter contamination in fresh whole UK-produced chilled chickens at retail: October – December 2015 as PDF(Open in a new window) (493.02 KB)

England, Northern Ireland and Wales

PDF
View Research report: Campylobacter contamination in fresh whole chilled UK-produced chickens at retail: January – March 2016 as PDF(Open in a new window) (208.98 KB)