

## Scientific Interpretive Summary

### Quantification of *Campylobacter* from internal and external carcass rinses of broiler chickens

The NZFSA National Microbiological Database (NMD) provides information on the bacterial load of broiler carcasses by enumerating the carcass rinsates. However, the NMD does not provide information on the relative distribution of *Campylobacter* on broiler carcasses. This study was conducted in order to quantify the distribution of *Campylobacter* on various sites of the poultry carcass, and to determine whether any significant differences existed in the relative distribution of *Campylobacter* on chicken between two New Zealand poultry processors (defined as Processor A and Processor B).

Samples taken throughout the trial included 'selected sites' (cavity, neck flap, vent flap, skin remaining on the carcass after portion removal) and 'portions' (parts of the chicken commonly sold as separate pieces including thighs, drumsticks, breasts, wings). Whole bird carcasses were sampled throughout the trial after full evisceration but the exact position on the processing line differed slightly between processors because of safety issues around taking samples. The sampling position was prior to the employment of some major interventions and the results may therefore not be fully representative of the distribution of *Campylobacter* on various sites on the final retail product. After removal from the line, carcasses were portioned and rinsed to provide material for enumeration.

An initial pilot study suggested that the cavity represented the selected site where the highest *Campylobacter* counts were found. Furthermore, following three consecutive rinses of this area, there was very little difference in the bacterial recovery between the first and last rinse. Of the individual portions selected for sampling, the wings had the highest proportion of *Campylobacter* on birds from both poultry processors. The full trial consisted of rinsates taken from at least eight sample sites per bird and of 61 birds in total (this included the 'pilot' birds from which 15 rinsates per bird were sampled and the 'main' trial from which 8 rinsates per bird were sampled).

The total counts on the whole birds from Processor A ranged from 2.18 – 5.70 log<sub>10</sub> CFU. For Processor B they ranged from 1.40 – 5.45 log<sub>10</sub> CFU and in one case the counts were too numerous to count.

The aggregated proportions of *Campylobacter* for each sample site expressed as a percentage of the total counts per processor are displayed in the table below.

	<b>Processor A</b>	<b>Processor B *</b>
<b>Selected sampling sites</b>		
Cavity rinse	44.7%	28%
Neck flap, glove, hook rinse	9.9%	17.6%
Vent flap, glove rinse	11.1%	3.4%
Remaining skin	8.8%	11.2%
<b>Selected portions</b>		
Wings	15.4%	15.22%
Drums	1.5%	2.4%
Thighs	4.4%	11.1%
Breasts	4.3%	11%

\*excludes bird with TNTC results

NB: percentages may not always add up to 100% due to rounding.

In terms of comparisons between the poultry processors, the neck skin was the only site where the shape of the distributions of the *Campylobacter* counts was significantly different. The full trial showed that for individual sample sites, results were consistent with the pilot studies and for most birds the cavity and the wings were the sites with the highest *Campylobacter* counts

This study successfully quantified *Campylobacter* contamination on various sites of broiler carcasses and showed that consistent differences occurred in the relative distribution of bacteria. Although multiple rinses of the same site or portion were only conducted in the pilot, this study suggests that NMD single rinses only remove a proportion of *Campylobacter* organisms from broiler carcasses. This is consistent with literature reports and a project is currently being carried out to further investigate this issue. The relative distribution of *Campylobacter* on broiler carcasses may further change during the dressing process and this possibility will be further investigated.