



Microbiology bulletin 17

December 2014

FSA release latest results from the Campylobacter survey

As predicted in last month's bulletin, the release of the latest set of results from the Food Standards Agency's yearlong survey into the incidence of Campylobacter in raw poultry has once again projected food microbiology into headline news.

The results to date show:

- 18% of chickens tested positive for Campylobacter above the highest level of contamination (>1,000cfu/g).
- 70% of chickens tested positive for the presence of Campylobacter
- 6% of packaging tested positive for the presence of Campylobacter with only one sample at the highest level of contamination (>1,000 cfu/g)

In total, 1,995 samples of fresh whole chilled chickens have now been tested, with packaging also tested for most of these samples. The data shows slight variations between retailers but none are meeting the end-of-production target for reducing Campylobacter.

The overall figures show an increase in contamination from the first quarter to the second quarter, which prompted predictable headlines in the press, but this is most likely due to the second quarter's samples being taken during the summer

months when an increase in Campylobacter is often seen.

The FSA listed the recent developments in industry and retailer efforts to tackle Campylobacter. These include:

Marks & Spencer and its supplier, 2 Sisters Food Group, have recently developed a five-point plan, an integrated programme of interventions along the food chain to reduce levels of Campylobacter.

Asda and its supplier, Faccenda, have committed to an innovative new steam technology (SonoSteam) that has shown promising results in tests and is now being installed at the Faccenda factory for full scale, in line trials.

Moy Park's development of on-farm biosecurity, which has found cost effective ways of exceeding Red Tractor standards.

A number of retailers have also introduced 'roast in the bag' chickens which help limit cross-contamination by minimising the handling of the raw chicken in the home.

It is likely that these recent interventions to reduce the levels of Campylobacter will not be reflected in the survey results at this stage, but the results from the on-going sampling will allow the FSA and the food industry to see what impact they have had.

Steve Wearne, FSA Director of Policy, said: "These results show that the food industry (especially retailers), need to do more to reduce the amount of Campylobacter on fresh chickens. Although we are

only half-way through the survey, 18% of birds tested had *Campylobacter* over 1,000 cfu/g, the highest level of contamination, and more than 70% of birds had some *Campylobacter* on them. This shows there is a long way to go before consumers are protected from this bug”.

Although the decision to publish a retailer league table is controversial (as the incidence of *Campylobacter* is not necessarily indicative of bad manufacturing or processing techniques), there can be no argument that it has focused the minds of everyone in the industry to tackle the problem.

Chicken juice and *Campylobacter*

Bacteriologists have known for decades that if you want to obtain a wild *Campylobacter* strain for method validation studies, all you had to do was plate out the thaw juice of a defrosted chicken. New research from the institute of food research published last month has shed light on how the protein rich environment enables *Campylobacter* to create a protective biofilm which can aid adhesion and confers protection. Whilst the nutrient rich thaw juice may aid the survival of *Campylobacter*, it will not help it to grow at ambient or refrigeration temperatures, as the bacterium cannot grow below 30°C. The report however recommended further research to investigate the effect of other meat exudates on biofilm formation which may influence the potential survival and growth of other foodborne pathogens.

Bean Sprouts

In the USA, bean sprouts are thought to be responsible for an outbreak of *Salmonella enteritidis* which has affected 68 people. 17 people have been hospitalized, but no deaths have been reported.

Sprouts provide good matrices for microbial localization and growth due to optimal conditions of temperature and humidity while sprouting. Also, the lack of a kill step post-sprouting is a major safety concern. A recent study has evaluated the effectiveness of chlorine dioxide gas treatment to reduce *Salmonella* on artificially inoculated mungbean sprouts. The effectiveness of gaseous

chlorine dioxide (0.5 mg/liter of air) with or without tumbling (mechanical mixing) was compared with an aqueous chlorine (200 ppm) wash treatment. Tumbling the inoculated sprouts during the chlorine dioxide gas application for 15, 30, and 60 min reduced *Salmonella* populations by 3.0, 4.0, and 5.5 log CFU/g, respectively, as compared with 3.0, 3.0, and 4.0 log CFU/g reductions obtained without tumbling, respectively. A 2.0 log CFU/g reduction in *Salmonella* was achieved with an aqueous chlorine wash. The difference in microbial reduction between chlorine dioxide gas versus aqueous chlorine wash points to the important role of surface topography, pore structure, bacterial attachment, and/or biofilm formation on sprouts. The data suggested that chlorine dioxide gas was capable of penetrating and inactivating cells that are attached to inaccessible sites and/or are within biofilms on the sprout surface as compared with an aqueous chlorine wash.

Transferring bacteria through kissing

A team of Dutch researchers have published results of a study on the transfer of oral bacteria through kissing. They recruited 21 couples who happened to be visiting the tourist attraction in Amsterdam. Volunteers were given a probiotic yogurt drink spiked with a marker bacterium. Researchers swabbed their tongues and asked them to kiss their partners. Then the partners had their tongues swabbed. Comparing the contents of the yogurt-drinkers' swabs and their partners' swabs, the researchers calculated that a single kiss can deposit 80,000,000 bacteria from one tongue to another. The men said they kissed their partners an average of 10 times a day, while the women recalled kissing only five times a day. The researchers concluded that the men were most likely exaggerating the frequency of their romantic encounters!!!

Hedgehogs and *Salmonella*

At a recent Public Health England presentation, hedgehogs were identified as a *Salmonella* risk to gardeners. Hopefully this was due to faecal contamination of soil and crops rather than undercooking!!