



Large decrease in EU foodborne outbreaks in the latest zoonosis report

The European Food Safety Authority (EFSA) and the European Centre for Disease Control (ECDC) have jointly published their annual Zoonosis report which backs up the data already released from individual countries in illustrating a significant drop in zoonotic and foodborne infections across the EU in 2020.

The report states that the impact of the Covid-19 pandemic has caused the number of reported foodborne outbreaks to fall by an incredible 47% compared to the previous year.

Campylobacteriosis was the most reported zoonosis in the EU in 2020, with 120,946 cases compared to more than 220,000 the previous year. It was followed by Salmonellosis, which affected 52,702 people compared to 88,000 in 2019.

The report suggested that the factors behind the large decrease in cases include changes in health seeking behaviour, restrictions on travel and on events, the closing of restaurants, quarantine, lockdown, and other mitigation measures such as the use of masks, physical distancing, and hand sanitisation.

The next most commonly reported diseases were Yersiniosis (5,668) and infections caused by Shiga-toxin-producing *E.coli* (4,446).

As *Yersinia enterocolitica* is primarily transmitted via contaminated food (typically pork), it seems surprising that in the UK we don't test for this pathogen more often. The requirement to test for *Yersinia spp* is not included in many industry standard specifications and criteria. This may be because detection using traditional methodologies can prove problematic as *Yersinia spp* have been shown to persist in a nonculturable but viable state in many food samples. This coupled with their ability to grow and thrive at refrigeration temperatures suggests that their contribution to foodborne disease might be underreported.

Listeriosis was the fifth most reported zoonosis (1,876 cases), mainly affecting people over the age of 64. As in previous years, Listeriosis had the highest case fatality and hospitalisation rates.

A foodborne outbreak is defined as an event where at least 2 people contract the same illness from the same contaminated food, and *Salmonella spp* was once again the most frequently detected organism being responsible for 23% of all recorded outbreaks.

Stuffed Medjool dates recalled due to Salmonella

The Food Standards Agency announced the recall of the popular Christmas staple, Medjool stuffed dates due to the presence of *Salmonella*. This is the second recall of this product this year, as in April and May batches of Medjool dates were recalled due to the presence of Hepatitis A.

More Listeria issues associated with Enoki mushrooms

Having had issues in April 2020 and June this year, once again Enoki mushrooms imported from Korea have been the subject of product recalls in the US due to the presence of *Listeria monocytogenes*.

It is not known if the production process of growing and harvesting enoki mushrooms (known as a seafood mushroom) lends itself to an increased risk of *Listeria* contamination or if historical issues have resulted in enhanced surveillance, but either way, this is a product which has been subjected to numerous recalls over the last 18 months.

Salmonella in feeder mice used to feed pet reptiles

In the September bulletin we reported on the PHE advice notice which had linked feeder mice to *Salmonella* in humans, and in the last week the FSA has issued further advice following several product recalls of frozen mice. There have now been almost 900 cases of illness linked to specific batches of frozen mice which has resulted in the recalls of the affected products.

Swedish Salmonella outbreak is over

In Sweden, a monophasic *Salmonella typhimurium* outbreak has been declared over, despite the source of the infection remaining unidentified.

Whole gene sequencing identified 40 cases as having a common source which officials believe was a food with a wide distribution that had been on the market for a limited time due to the geographical spread of patients and the fact that people fell ill in the space of a month.

FSA rank foodborne pathogens

To prioritise funding and resources the FSA have ranked foodborne pathogens in order of their detrimental effect on UK society. Criteria used to assess them included the estimated number of annual cases, public concern, total cost to society per year and estimated annual fatalities. The survey showed that the organisms which have the highest impact are *Norovirus*, *Listeria monocytogenes*, *Campylobacter*, *Salmonella* and *Cl perfringens*.

Higher levels of *Campylobacter* seen in chickens purchased from smaller outlets

The Food Standards Agency has released details of a UK-wide survey which sampled just over 1,000 chickens from August 2019 to October 2020. It looked at levels of *Campylobacter* on whole fresh retail chickens from independent shops, butchers, and smaller retail chains.

Campylobacter was detected in 59.6 percent of the chicken neck skin samples, and 12.8 percent of them were above 1,000 cfu/g, which is above the FSA target which has a maximum acceptable level of no more than 7 percent of birds with counts of more than 1,000 cfu/g. This continues to be higher than levels found in samples tested from the 9 major retailers in the UK.

The percentage of highly contaminated samples in the latest survey was significantly more in larger chickens weighing more than 1.75 Kg (3.8 pounds) compared to smaller birds. Although the report did not offer an explanation for this, I believe it may be because the *Campylobacter* enumeration is carried out on the neck skin sample only, as this is where the bacteria will be concentrated during the slaughter process. It is therefore difficult to obtain a consistent sample across all sizes of birds as the percentage of neck skin left on the birds at retail may vary across the size range, with a higher percentage of neck skin normally present on the larger birds.

New report illustrates the incidence of *Listeria spp* in unprocessed raw vegetables

We know that *Listeria spp* are ubiquitous in the natural environment, but a study published in the current Journal of Food Protection has indicated the actual levels of *Listeria spp* in unprocessed raw vegetables.

The article describes how a total of 290 samples of raw veg were collected, with 96 and 17 samples positive for *Listeria spp.* (33.1%) and *L. monocytogenes* (5.9%), respectively. The prevalence of *Listeria spp.* varied by commodity: spinach (66.7%), peas (50%), corn (32.2%), green beans (22.2%), and carrots (13%). *L. monocytogenes* prevalence was determined in corn (13.6%), peas (6.3%), and green beans (4.2%) arriving at processing facilities.

Although the paper acknowledges that thermal processes such as blanching (which is widely used in frozen vegetable processing to inactivate enzymes and stabilize products in preparation for freezing), is an effective microbiological kill step, it concludes by stating that the prevalence and pathogen concentration data from the raw commodities found in the study can provide industry with information to conduct more accurate quantitative risk assessments, and a baseline to model and target appropriate pathogen reduction steps during processing.

Separate custodial sentences for food hygiene breaches

A former chef was given a four-month suspended jail sentence and was ordered to carry out 100 hours of unpaid work in the community and pay costs of £4,000 after being found guilty of placing unsafe food on the market in October 2018 which caused 1 fatality and caused 31 other people to be ill in Northamptonshire.

The court heard that the mince in a shepherd's pie had been initially inadequately cooked and was then stored overnight before being reheated again. It was revealed that inadequate cooking, cooling, and reheating of various ingredients led to the dish becoming contaminated with *Clostridium perfringens*.

In a separate case in Wiltshire, a 10-month custodial sentence was given to a man who pleaded guilty to 39 food hygiene offences having reportedly operated an unauthorised meat cutting operation at his two car wash premises. Environmental Health Officers found a lack of clean food rooms, no hot water supply, no washing facilities, no control of pests, and no basic welfare facilities for food handlers at the two car wash sites.

Biological control of *Listeria* on cantaloupe melons

A paper published in this month's Applied and Environmental Microbiology journal describes how *Bacillus amyloliquefaciens* was shown to act as a biological control agent to reduce and inhibit the growth of *Listeria monocytogenes* on cantaloupe melon rinds. DNA sequence analysis of the *B. amyloliquefaciens* genome revealed six gene clusters that were predicted to encode genes for antibiotic production; however, no plant or human virulence factors were identified, suggesting that it can be an effective biological control agent for the reduction of *L. monocytogenes* growth on intact cantaloupe melons under both pre and postharvest conditions.

And finally....

It's been another challenging year for every single one of us, but from a scientific perspective I've found it fascinating to observe how Covid has changed the public's perception and understanding of topics, such as how microorganisms are transmitted, how genetic mutations can influence pathogenicity and how our immune system works. Who would have thought that we would be discussing our vaccination status to friends and colleagues as introductory small talk instead of talking about the weather, and that relatively complex immunological interactions and the implications of spike protein mutations would be the mainstay of the 10 O'clock news. As stated in the lead article, Covid and its associated lockdowns has brought about a global reduction in the number of food poisoning outbreaks, so hopefully one small benefit from the pandemic may be a lasting increased awareness of the dangers that microorganisms pose, including those which impact on food safety.

Perhaps that may prove to be an unrealistic aspiration, and we mustn't lose sight of the roll that all of you play in ensuring the safety of our communities. In the last couple of months in the UK the prompt and timely identification of pathogens in ready to eat products by our ALS colleagues has led to product withdrawals and has therefore had a positive impact on public health and has possibly prevented serious outbreaks from developing, so well done to all and keep up the outstanding work.