



Microbiology bulletin 53

May 2018

Update – USA 0157 outbreak linked to romaine lettuce

On the 1st June the Centre for Communicable Diseases issued an update on the outbreak of E coli 0157 which has been linked to the consumption of romaine lettuce produced in the Yuma growing region in Arizona, as mentioned in last month's bulletin. The communique stated that 197 people from 35 different states have been infected with the outbreak strain. 89 people have been hospitalised with 26 developing haemolytic uraemic syndrome. 5 deaths have been reported.

According to the U.S. Food and Drug Administration, the last shipments of romaine lettuce from the Yuma growing region were harvested on April 16, 2018, and the harvest season is over. It is unlikely that any romaine lettuce from the Yuma growing region is still available in people's homes, stores, or restaurants due to its 21-day shelf life.

French STEC 026 outbreak linked to unpasteurised cheese

In France, another STEC outbreak (this time caused by the serotype 026) has been linked to the consumption of cheese made from unpasteurised milk. Sante Publique France have stated that between February and May of this year 14 children have fallen ill all with the outbreak strain and 6 have confirmed consumption of the implicated Reblochon raw cow's milk cheese. 12 out of the 14 children have developed haemolytic uraemic syndrome and 1 child has died.

Listeriosis outbreaks

In Sweden, an outbreak of Listeriosis which may have claimed the lives of 4 elderly people has been linked to the consumption of contaminated mashed potato which was present in pre-cooked and chilled packet meals. An investigation showed that the cause of the contamination

was the machine which processed the mashed potato, further illustrating the problems in cleaning and sanitising food contact surfaces which may have been colonised by *Listeria* and may have biofilm build-up which protects the organisms from contact with the sanitisers during cleaning.

On a brighter note, the South African Listeriosis outbreak is finally showing signs of being under control, with the number of new reported cases falling since the product re-call was announced. In the 7 weeks post recall, 55 new cases were announced compared to 169 cases reported in the 7 weeks prior to the re-call. The number of laboratory confirmed cases currently stands at 1,024.

ECDC publish Campylobacter report for 2015

I suppose that these things take a while to collate, but the European Centre for Disease Prevention and Control has recently published data on Campylobacter for the year 2015.

In summary, the report concluded that in 2015, 231,650 confirmed cases of Campylobacteriosis were reported in the EU. The notification rate was 62.3 cases per 100,000 population, representing a 4.3% decrease compared with 2014. Human Campylobacteriosis was more common in children below five years of age. The notification rate was slightly higher for males than females across all age groups, and the report confirmed what we already know that Campylobacteriosis shows a clear seasonality, with a sharp peak of cases in July.

Exposure to low levels of antibiotics may confer resistance

A new study by scientists in Sweden indicates that bacteria exposed to small concentrations of antibiotics over time can become highly resistant, a finding the authors say provides

an example of how low levels of antibiotics present in many environments may potentially contribute to antibiotic resistance. The resistance was caused by genetic mutations that haven't been typically associated with antibiotic resistance and were different from those that develop when the bacteria is exposed to lethal amounts of the drug.

The suggestion that even small amounts of antibiotic exposure could be contributing to antibiotic resistance has big implications. Livestock and poultry producers routinely give their animals sub-therapeutic doses of antibiotics to prevent disease, a practice many experts believe contributes to antibiotic resistance. In addition, a growing body of research conducted in recent years has documented the presence of antibiotics and antibiotic residues in rivers, lakes, tidal estuaries, and wastewater around the world, with households, hospitals, pharmaceutical factories, and farms as the likely sources.

Although the extent of environmental contamination from human and animal antibiotic use, and role that this contamination plays in the development of clinically relevant antibiotic resistance, are not yet clear, many experts believe the presence of even trace amounts of antibiotics in the environment is not without consequences.

EU bans imports of poultry from Brazil

In April the EU decided to ban imports of poultry meat from Brazil because of concerns over the levels of Salmonella in the products. The member states voted unanimously to delist over 20 Brazilian establishments which imported meat and processed meat products.

One of the many possible consequences of Brexit is that established food import markets may change and the UK may have to consider sourcing foodstuffs from previously untried regions. If new food providers are to be considered then it will be imperative for importers and buyers to satisfy themselves as to the microbiological quality of the imported product and testing laboratories will need to be aware of this potential demand.

Seaweed helps keep a healthy microbiome

The maintenance of a healthy microbiome has been well documented and mentioned in several of our Micro Bulletins recently, and new research published in Nature has identified key carbohydrates which are naturally present in seaweed as promoting the growth of certain probiotic strains of bacteria.

The researchers took their study to a new level by identifying genes that the target bacteria (Bacteriodes) poses which enable them to digest the carbohydrate present in the seaweed. They then suggested that these genes could be engineered into other strains of gut organisms, so that a diet rich in seaweed could possibly lead to the promotion of many different types of beneficial gut bacteria.

Hepatitis A outbreak in Europe

More than 40 cases of Hepatitis A have been reported in six EU countries, according to the European Centre for Disease Prevention and Control (ECDC).

The 42 cases across Denmark, France, Germany, the Netherlands, Spain and the United Kingdom are infected with one of two distinct Hepatitis A virus genotype IA strains.

The relative homogeneity of the viral strains associated with the outbreak cases suggests that foodborne transmission could be associated with a single food product that is distributed in several EU countries. Person-to-person transmission routes are also being investigated.

Historically, both strains have been found to be epidemiologically associated with Morocco. However, many of the 2018 cases do not have a travel history to this country.

Histamine poisoning caused by Tuna in Luxemburg

Tuna caught in Sri Lanka and sold in Luxemburg has been found to have caused allergic reactions in 5 people due to high levels of histamine.

Histamine toxicity is sometime confused with allergic reactions to certain types of fish, but it is significantly different.

Certain types of fish such as mackerel and tuna, contain naturally high levels of the chemical histidine. This chemical can be converted to histamine by bacteria. In an allergic reaction, the body's mast cells release histamine which triggers allergy symptoms. So if a person eats fish that has high levels of histamine, the response may resemble an allergic reaction to that food.

The most common cause of acute histamine toxicity is the result of inadequate refrigeration which leads to spoiled fish. This causes an overgrowth of spoilage bacteria which in turn convert the naturally present histidine to high levels of histamine.