



***Salmonella braenderup* outbreak linked to melons**

In last month's bulletin we reported on an outbreak of *Salmonella braenderup* in Sweden which at the time had affected 14 people. This is now thought to be part of a much wider pan European outbreak linked to the consumption of several varieties of melon.

On the 29th May the Food Standards Agency issued precautionary safety advice regarding honeydew, galia and cantaloupe melons which had been imported from Costa Rica, Honduras and Brazil.

In what has been described as a rapidly evolving international outbreak, it is now thought that over 200 people from 10 different countries have been affected, whilst in the UK, 52 people became ill between March 29 and April 28.

Most UK retailers are believed to have stocked the affected melons but they have now all been removed from sale.

Melons are particularly susceptible to contamination from pathogens such as *Salmonella* and *Listeria* because when the melon is sliced, any organisms present on the surface of the melon will be carried into the fleshy part which provides ideal nutrients for bacteria to flourish. The pH of melons is between 6.0-6.7, so there are no intrinsic inhibitory properties in the product which means that extrinsic factors such as temperature control are required to prevent the growth of potential pathogens. Even keeping the melons in refrigerated conditions will not control the growth of psychrophilic organisms such as *Listeria monocytogenes* and in 2011 there was a devastating Listeriosis outbreak in America associated with the consumption of cantaloupe melons which affected 147 people and resulted in 33 fatalities.

The source of the *Salmonella braenderup* contamination has not been discussed by any of the agencies which have reported on the outbreak, but given the fact that the affected melons have been imported from three different South American countries, possibly suggests that the contamination occurred at the distribution stage rather than issues at the individual farms where the melons were grown.

***Salmonella* and breaded chicken...again**

The issues with breaded chicken products refuses to go away with still more recalls due to the presence of *Salmonella enteritidis*.

On the 1st June the FSA in both the UK and Ireland announced yet another recall by a major retailer of chicken goujons, and on the following day in the USA, the Centre for Disease Control gave details of a multistate outbreak of the same serotype linked to consumption of frozen breaded chicken products. The CDC announcement did not reveal whether or not this outbreak is linked to the European wide issues associated with imported chicken products from Poland.

***Listeria monocytogenes* in Enoki mushrooms...again**

In last year's April Micro bulletin we reported on a Listeriosis outbreak in Australia, New Zealand and the United States which was caused by Enoki mushrooms imported from South Korea. Once again *Listeria monocytogenes* has been detected in this product which is sometimes described as a seafood mushroom. This time the affected products are reportedly imported from both Korea and China, resulting in up to five product recalls in the US over the last couple of weeks. Although symptoms of Listeriosis may not appear until up to 90 days, at the time of the recalls no confirmed illnesses had been reported.

Prompt Hepatitis A link to dates prevented further infections

An article in the journal Eurosurveillance claims that prompt action linking a Hepatitis A outbreak to Medjool dates from Jordan (as reported in April's bulletin) allowed action to be taken before the start of Ramadan, thereby reducing the number of people who would possibly have been affected. Researchers said date consumption was likely to increase in April and May because of Ramadan as dates are a popular food for breaking the fast.

Round up of recent product recalls

Recent product recalls issued by the Food Standards Agency in the UK include a recall by Cheese on the Wey of its Blue Millie cheese because *Listeria monocytogenes* has been found in the product. A major retailer recently recalled its own brand Vegetable Cous Cous because of potential *Salmonella* contamination, whilst in Germany, there has been a recall of Paprika Salami after concerns that it had been contaminated with STEC *E.coli*.

Another 5 new species of *Listeria* discovered

In 2014 researchers at Cornell University announced the discovery of 5 new species of *Listeria* and they have done it again, claiming in a recent article in the International Journal of Systematic and Evolutionary Microbiology to have discovered another 5 new strains. In the study, the researchers collected soil and agricultural water samples from all over the United States. They found 27 *Listeria* isolates that could not be classified to the existing species level, so they conducted whole genome sequencing tests and showed these new species formed five novel distinct clusters. The names for the five new species are *Listeria cossartiae*, *Listeria farberii*, *Listeria portnoyii*, *Listeria rustica* and *Listeria immobilis*. As the name suggest, the last species is non-motile, which is interesting as previously all *Listeria* species were thought to be able to demonstrate motility. The researchers state that understanding the different *Listeria* species is important for comprehending their similarities and that this study will help the food industry get better at identifying *Listeria monocytogenes* and not misidentifying it as something else.

EFSA publish European STEC data

The European Food safety Authority (EFSA) has published data on the incidence of Shiga Toxin E coli (STEC) infections in Europe for 2019. The figure of just over 8,000 confirmed cases was down slightly from 2018, but is still significantly higher than in the previous years prior to 2018. It is thought that the increase is due to a move from culture based methodology to non-culture independent methods such as PCR, making testing more readily available rather than an actual increase in illnesses.

Germany had the most confirmed cases with 1,907 and the United Kingdom had 1,587, which together accounted for 42 percent of all reported infections. Both these countries had fewer infections than in 2018.

Denmark, Finland, Latvia, Iceland and Spain all recorded large increases in 2019 from the year before while infections in Ireland and Sweden declined.

Which is best for washing fresh produce - Chlorine or Peracetic acid?

Over the last few months we have reported on several novel ways to decontaminate and reduce the bacterial loading of fresh produce such as ultrasonic techniques and using cold plasma created ozone streams, but a recently published report in the Journal of Food Protection compares the two more traditional processes of chlorine and peracetic acid (PAA) in washing fresh produce.

The comparison was done at industrial scale, with equipment already present in the fresh-cut industry and using three product types; Iceberg lettuce, carrots and baby salad leaves. Results showed that, with regard to washing water hygiene and final product microbial quality, the use of PAA had a similar efficacy to chlorine.

The report did suggest however that after washing with 80mg/L of Chlorine, the residual Trihalomethanes (THM's) exceeded the legal limits for this potentially carcinogenic by-product, and the report concluded that PAA is a reliable alternative to chlorine disinfection strategies in the fresh-cut industry.

The risks of handling raw meat pet food highlighted in new report

In an on-line article published by the Cambridge University Press an outbreak cluster of E coli O157:H7 associated with the handling of raw pet food is discussed.

In August 2017, a cluster of four people infected with genetically related strains of O157:H7 was identified. The strains possessed the Shiga toxin (*stx*) subtype *stx2a*, a toxin type known to be associated with a severe clinical outcome. One person died after developing haemolytic uraemic syndrome. Interviews with the affected individuals revealed that three of the cases had been exposed to dogs fed on a raw meat-based diet (RMBD), specifically tripe. In two cases, the tripe had been purchased from the same supplier.

Sampling and microbiological screening of raw pet food was undertaken and indicated the presence of STEC in the products. STEC was isolated from one sample of raw tripe but was different from the strain causing illness in humans. Nevertheless, the authors of the report stated that the detection of STEC in the tripe provided evidence that raw pet food was a potential source of human STEC infection during this outbreak.

Feeding RMBD to companion animals has recently increased in popularity due to the belief that it provides health benefits to animals. Although still rare, an increase in STEC cases reporting exposure to RMBDs was detected in 2017. There has also been an increased frequency of raw pet food incidents in 2017, suggesting an increasing trend in potential risk to humans from raw pet food.

The report concludes by issuing recommendations to reduce the risk of infection, which included improved awareness of risk and promotion of good hygiene practices among the public when handling raw pet food.

Wolbachia pipientis treatment of Mosquitoes to prevent Dengue Fever

To end this month's bulletin we look at a paper published in this month's New England Journal of Medicine which describes a trial which has taken place in Indonesia whereby mosquitoes which have been deliberately infected with the harmless bacteria *Wolbachia pipientis* lose the ability to carry the virus which is responsible for Dengue Fever. Once inside the cells of the mosquito, the bacterium can block the virus responsible for causing dengue from replicating, with the *Wolbachia* strain, known as wMel, being effective against all of the four main subtypes of dengue virus that infect humans.

It was shown that the *Wolbachia* bacterium can spread to non-inoculated mosquito populations meaning that potentially this form of biological control can remain effective without the need to constantly re-inoculate the mosquito population with the bacterium.