



## Microbiology bulletin 45

August 2017

### **Hepatitis E continues to make the news**

We have covered this topic in the previous two Micro Bulletins but this month there has been more media coverage of the incidence of Hepatitis in raw pork products.

Many news outlets reported that a UK supermarket may have unintentionally infected thousands of people with the Hepatitis E virus transmitted through sausages and pork products.

The reports came after the publication of a Public Health England study into the shopping habits of 60 people who were infected with Hepatitis E, which found that those who had bought ham and sausages from a particular retailer were more likely to have a specific strain of Hepatitis.

As this strain is not found in UK pig herds, the PHE study suggested that the affected products had been produced with imported pork. The report claimed that imported pork infects between 150,000 and 200,000 British people a year, with the products mainly originating from Holland and Germany.

### **Results from FDA fresh sprouted seeds project.**

An analysis of fresh sprouted seeds and the companies that grow them in the US has revealed relatively low numbers in terms of the most common foodborne pathogens.

Out of 825 samples of seeds, water and finished sprouts tested, officials found Salmonella or Listeria contamination in only 14. None of the samples were positive for E. coli.

The 14 positive samples came from eight of the 94 growing operations included in the project, and 10 of the positives came from just four growers. FDA collected the samples from February 2014 through September 2015. Of the 825

samples, 608 came from growing operations, 101 from distributors and 116 from retailers across 37 states.

The FDA report stated that sprouted seeds are especially vulnerable to pathogens given the warm, moist and nutrient-rich conditions needed to grow them. From 1996 to July 2016, there were 46 reported outbreaks of foodborne illness in the United States linked to sprouted seeds. These outbreaks accounted for 2,474 illnesses, 187 hospitalisations, and three deaths.

The fact that there were no detections of E coli in the survey was encouraging as the large European outbreak of E coli 0104:H4 in 2011 which resulted in 4,000 cases and 53 fatalities was shown to have been originated from a contaminated batch of organic fenugreek seeds which had been imported from Egypt. They were then grown at a farm in Lower Saxony in Germany which was established as the source of the outbreak. There was initial confusion however as the preliminary epidemiological reports appeared to identify imported Spanish cucumbers as the source of the outbreak. This was later proved to be incorrect, but not until many consumers had avoided purchasing imported fresh produce from Spain, a move which reportedly cost Spanish exporters the equivalent of \$200 million per week.

### **Salmonella and fresh produce**

A Salmonella outbreak in the US which was linked to imported Mexican papayas prompted an interesting article in the Food Poisoning Bulletin surrounding how Salmonella can infect fresh products such as papayas.

As we well know from the numerous examples of outbreaks associated with the consumption of fresh produce, plants can be contaminated with pathogenic bacteria in the fields by animal agriculture run-off, contaminated irrigation water or by animals and birds defecating in the fields where the

produce is grown. There are also well documented cross contamination risks during the harvesting, processing, and transportation of fresh produce.

In this outbreak, 45 out of 103 patients who provided information about their illnesses to the CDC have been admitted to hospital. That is a much higher percentage (practically double), than the typical 22% hospitalisation rate in other Salmonella outbreaks, which has raised concerns over the virulence of this particular outbreak strain.

### Rechargeable anti-biofilm surfaces

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Biofilms and how to remove them or prevent their formation is an area which continues to generate a lot of research and there have been many attempts to impregnate antibacterial substances either into or on the surface of food contact materials which will inhibit or reduce the likelihood of biofilm build up.

A recent article in the American Society of Microbiology describes a system where by modifying the polymer matrix of plastic films, researchers have developed a rechargeable disinfecting material that can be applied to conveyor belts, food-contact surfaces, utensils and other equipment and surfaces.

The technique involves integrating chemical groups called N-halamines into the plastic. The rechargeable aspect of this technology offers a considerable advantage. It is claimed that, bathing the plastic films in bleach can recharge the N-halamines with chlorine, which is then subsequently released, which kills the bacteria and therefore reduces the potential for biofilm build up.

### Recall of cough syrup due to *Burkholderia cepacia*

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You know that you are getting old when you remember groups of bacteria having previously being known by another name. In much the same way that *Enterobacter sakazakki* was reclassified as a *Cronobacter* in 2007, the *Burkholderia* genus was previously placed in the *Pseudomonas* order of bacteria. The organism has many of the properties associated with *Pseudomonas* in that it can produce a variety of extracellular enzymes which aid attachment to surfaces and allow colonisation of environments where you wouldn't normally expect to find bacteria, such as plastic surfaces.

Although the organism doesn't have traditional virulence factors, it can act as an opportunistic pathogen and can

cause pneumonia in immunocompromised patients with underlying lung disease such as cystic fibrosis. The adhesive properties also mean that the organism can cause problems with implanted medical devices.

Traditionally bacterial classification was performed on the organisms ability to produce specific biochemical or serological reactions, but with the advances made in DNA and molecular identification techniques, we may see other groups of organisms reclassified in the future on the basis of their molecular biology.

### FSA recall extra hot chillies due to aflatoxins

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The FSA have recently announced a recall of a batch of whole extra hot chillies due to levels of aflatoxin above the statutory permitted level.

There are around 14 different types of aflatoxin and although most are produced by *Aspergillus flavus* (hence the name Afla) some are also produced by *Aspergillus parasiticus*. Exposure to high levels of aflatoxins has been associated with hepatic necrosis which may lead to cirrhosis and carcinoma of the liver.

As well as chilli peppers, peanuts, rice, sunflower seeds and spices have all been implicated in outbreaks caused by aflatoxins in the past.

### Food safety consequences of Hurricane Harvey

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The USDA's Food Safety and Inspection Service (FSIS) has issued food safety recommendations for those who have been impacted by Hurricane Harvey.

Despite the obvious problems the residents of the affected regions have encountered, the FSIS have also highlighted potential issues such as disruption to the storage of refrigerated food due to power loss and the potential for contamination of any foodstuffs which may have come into contact with flood water.

### Fipronil in eggs

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Not strictly micro, but the recall of imported egg products due to contamination with the insecticide Fipronil did lead me to unearth one interesting fact. The recall notice by the FSA stated that around 700,000 imported eggs were affected but this only represented 0.007% of the UK consumption. The UK Egg Industry Data confirms that annually in the UK we consume 12,591 million eggs...amazing!!!