



Listeria outbreak in Spain

The owners of the food company responsible for a Listeriosis outbreak in Spain were arrested last week and charged with manslaughter. Since August, the outbreak has caused three fatalities and seven miscarriages, and infected over 200 people. The source of the infection was traced to a Seville-based company called Magrudis, which sold the sir loin product called carne mechada under the brand name La Mechá.

The owner and his two sons have been accused of involuntary manslaughter, crimes against health and causing injury to a foetus. According to investigators, the three men knew in February that some of their product had been contaminated, but did nothing to attempt to eliminate Listeria from their facilities and continued producing and distributing their products. Investigators want to find out why the owners of Magrudis did not do this, and why, more importantly they hid the positive test results from health inspectors who visited the factory after the alert was raised.

The product is made with sir loin cooked in its own fat. The lard is then inserted into the meat using an instrument called a larding needle. Health officials in Spain have reportedly isolated Listeria from the instruments suggesting that the bacteria entered the product as a result of post processing contamination.

The outbreak has mostly affected people in the Andalucía region, with the number of suspected cases (people with symptoms compatible with Listeriosis but who have not yet been positively diagnosed) as high as 529.

It is very unusual for Listeria to survive any pasteurisation time/temperature equivalent thermal processes. It can however be reintroduced into the cooked product via processes such as slicing, dicing or (as appears to have happened in this case) through the post cook addition of the cooking fat.

Food poisoning caused by post processing contamination is not uncommon. The very first Salmonella outbreak I was involved with was linked to the consumption of fully baked pork pies. I remember at the time being puzzled as to how Salmonella had survived the thermal process until I realised that the gelatin which was present at the top of the pies had been injected into the product after the pies had been baked and allowed to cool.

Elsewhere in Europe – Salmonella outbreaks (mostly linked to eggs)

United Kingdom

A Guardian newspaper report has revealed that at least 100 people have fallen ill with Salmonella in the past three years after eating British eggs, with 45 illnesses having been reported so far this year. The Food Standards Agency has since published precautionary egg safety and handling advice concerning one flock code due to Salmonella.

Holland

About 30 people are part of a Salmonella outbreak in the Netherlands linked to eggs from Spain.

The Dutch Food and Consumer Product Safety Authority last month advised people not to eat eggs stamped with the code 3-ES-4624944A because of Salmonella contamination.

The affected eggs were supplied to neighbourhood supermarkets, market stalls and catering establishments where they may have been further processed into various dishes. They are not thought to have been sold at large supermarket chains in the country.

Belgium

A Salmonella outbreak at a Belgian school was probably caused by eggs used to make a tartare sauce, according to authorities.

The Federal Agency for the Safety of the Food Chain investigation detected Salmonella in the freshly prepared tartare sauce. Findings from an online survey of students and teachers also reached the same conclusion on the source.

About 200 students and teachers from the school became ill from Sept. 6 onward. Laboratory analyses of stool samples revealed students and teachers had been affected by Salmonella.

Sweden

Authorities in Sweden are investigating a national outbreak of monophasic Salmonella typhimurium which has affected almost 40 people.

The Public Health Agency of Sweden reported that the source of the infections is still unknown although there have been reports linking the outbreak to the consumption of cherry tomatoes.

During September, there was an increase in the number of nationally reported cases of Salmonella.

WGS demonstrates potential link to UK Clostridium perfringens outbreaks

Clostridium perfringens is responsible for an estimated 80,000 cases of diarrhoea in the United Kingdom each year. It is the second most common foodborne pathogen after *Campylobacter* with cases often under reported because of mild illness.

Typical symptoms which occur within eight to 14 hours after ingestion of contaminated food include intestinal cramps and watery diarrhoea without fever or vomiting, and normally last 12 to 24 hours. However, for vulnerable groups such as the elderly living in care homes, a longer-lasting debilitating chronic infection may occur that can be fatal. Enterotoxigenic *Clostridium perfringens* is estimated to cause 55 deaths per year in England and Wales.

Using whole genome sequencing (WGS), researchers at Cambridge University and the Quadram Institute have worked with Public Health England (PHE) to analyse *Clostridium perfringens* foodborne outbreaks over seven years in England and Wales.

A total of 109 samples of *Clostridium perfringens* isolated from disease cases or foods suspected of causing infections in England and Wales between 2011 and 2017 had their whole genome sequenced. This allowed analysis of the genes responsible for toxin production, as well as characteristics that aid infection, such as antimicrobial resistance. Comparative analysis of the different genomes allowed researchers to see how related different strains are, which helps trace where they may have come from.

The team found nine outbreaks associated with care homes in North East England over a period of five years were caused by closely related strains of *Clostridium perfringens*. This indicates a potential common source, although what this was could not be pinpointed.

The study showed the genes that encode the key toxin responsible for causing gastroenteritis aren't limited to the bacterial chromosome but may also be carried on virulence plasmids that can be transferred around bacteria.

Human cases of *Clostridium perfringens* diarrhoea are primarily caused by type F strains (formerly classed as enterotoxigenic type A), which produce enterotoxin (CPE), encoded by a specific gene known as the *cpe* gene.

The researchers stated that more data will help understand how the virulence factors are spread and help to identify reservoirs of persistent bacteria. This will improve intervention strategies and develop ways of preventing outbreaks and infections to protect vulnerable communities.

Novel Salmonella serotype enables outbreak to be traced to contaminated sesame seeds

The detection of related strains of bacteria by whole gene sequencing and other molecular techniques such as Multi Locus Sequence Typing has become invaluable in tracing the sources of food poisoning outbreaks. However in Greece, the identification of a very rare strain of *Salmonella* which was detected by traditional serological techniques enabled the cause of the outbreak to be easily determined without the need to carry out further molecular testing.

In 2016, Greece reported an outbreak caused by a previously undescribed *Salmonella* serotype. Between March and May, 2016, the Greek National Reference Laboratory for *Salmonella* and *Shigella* in Vari, a suburb of Athens, detected 16 *Salmonella* isolates with the antigenic formula O=11, H=z41, e,n,z15. Initial epidemiological investigations did not reveal a link between cases, however results of a case to case study provided evidence for tahini, a paste made from hulled, ground and toasted sesame seeds, as the probable vehicle of infection. Unfortunately, it was not possible to identify a single product brand or place of purchase for the tahini and no food isolate was recovered for testing.

Between May 2016 and April 2017, Germany, Czech Republic, Luxembourg, France and the United Kingdom all reported *Salmonellosis* infections with the same novel serotype. Subsequent testing of jars of sesame seed and products such as sushi containing the affected batches of sesame seed all tested positive for the novel serotype.

Further investigations revealed that the contaminated batch of sesame seeds was imported to Greece from Nigeria.

The World Health Organization Collaborating Centre for Reference and Research on *Salmonella* at the Pasteur Institute in France, confirmed that the isolate was indeed a novel *Salmonella* serotype. The proposed name is *Salmonella vari*.

Irish Norovirus outbreak linked to consumption of food at a leisure center

An outbreak of norovirus in Ireland last month which affected 48 people has been linked to eating food at a leisure facility. The source of some infections were foodborne while others were due to person to person transmission.

Foods commonly involved in norovirus outbreaks include leafy greens such as lettuce, fresh fruits, and shellfish such as oysters. The infectious dose is very small and noroviruses are shed for at least two weeks after gastroenteritis. There is usually a peak of infections in winter. Typical symptoms of infection are quick onset of vomiting, watery, non-bloody diarrhoea with abdominal cramps, nausea and dehydration. Symptoms usually begin 24 to 48 hours after infection and last for 12 to 60 hours.

Health Protection Scotland release parasite data showing decline in Cyclospora infections

A decline in *Cyclospora* infections has been reported in Scotland in 2018 compared with previous years. Only 12 laboratory reports were received by HPS compared to 46 in 2017 and 167 in 2016. The high levels in 2016/17 were associated with outbreaks among travellers returning from holidays in Mexico during the summer months.