



Microbiology bulletin 38

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EU summary report on zoonotic and foodborne outbreaks

It may have the very formal title of “The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2015”, but I find that this report (which has just been published) is a useful document for enabling us to see if the incidents and trends which we are so often familiar with in our own countries are mirrored across the European Union.

The report covers a total of 4,362 food and waterborne outbreaks from the 28 EU countries who jointly supplied the data. *Campylobacter* is the most common pathogen with 229,213 reported cases, human *Salmonella* infections continue their decline (seen since 2008) with 94,625 cases, and incidences of *Listeriosis* are stabilising, as are reported cases of *STEC* infections.

Not surprisingly, these figures bear close comparison with the trends observed in the UK.

The most common foodstuff associated with *Listeria* is smoked fish although it was reported that ready to eat products seldom exceed the EU safety limits and the report confirmed that the majority of *STEC* infections are associated with ruminants.

The report highlights an apparently significant increase in the proportion of cases of *Listeriosis* in the elderly population (over 64) from 56% in 2008 to 64% in 2016. However, this may just be a statistical anomaly due to the increase in life expectancy making this cohort larger.

The full EU summary report can be downloaded at <http://ecdc.europa.eu/en/publications/Publications/EU-summary-report-trends-sources-zoonoses-2015.pdf>

Bacteriophages may have a role in the spread of Antibiotic resistance

We have discussed the possibility of bacteriophages being developed to have a role in human antimicrobial therapies on many occasions in previous bulletins. However new research has shed light on the role that wild or environmental bacteriophages play in the spread of antibiotic resistance due to the facilitated transfer of the antibiotic resistance genes. The authors suggest that the environmental bacteriophages may be an important factor in the spread of antibiotic resistance as they contain a large reservoir of resistance genes which can be spread during the normal phage life cycle. The bacteriophages infect susceptible bacterial hosts into which they either multiply or persist. In the latter case, phages can confer new functions to their hosts as a result of gene transfer, thus contributing to their adaptation (short-term) and evolution (long-term).

<http://www.sciencedirect.com/science/article/pii/S0269749116323478>

On the subject of antibiotic resistance, in November the FSA published a systematic review of antimicrobial resistant (AMR) bacteria in pork, poultry, dairy products, seafood and fresh produce at UK retail level. <https://www.food.gov.uk/science/research/foodborneillness/b14programme/b14projlist/fs102127/a-systematic-review-of-amr-in-pork-and-poultry-dairy-products-seafood-and-fresh-produce>

This resulted in many sensational newspaper headlines around MRSA in raw pork, but thankfully a sense of perspective was given by the science media centre in the following articles.

<http://www.sciencemediacentre.org/expert-reaction-to-mrsa-in-pork/>

Bagged salads and Salmonella

I don't know what the collective noun is for food microbiology headlines, but following close on the heels of the MRSA in raw pork headlines, newspapers (and even the BBC) reported on research into the survival of Salmonella on cut salad leaves in bagged salad.

<http://www.bbc.co.uk/news/health-38026695>

Although the research was correct in stating that the sugars proteins and minerals which will exude in the sap of cut plants will support the growth of bacteria (including Salmonella) it made no mention of the fact that fresh produce when manufactured on a commercial scale is washed in sanitiser, that all commercially bagged salads are gas flushed and that all members of the Enterobacteriaceae will struggle to grow at refrigeration temperatures.

Basically the articles seemed to be saying that if you give bacteria nutrients, sugars, proteins and water they will grow, which I would not consider to be ground breaking research worthy of the publicity it generated.

Campylobacter in poultry

We are eagerly awaiting the 1st set of results (due in January) of the FSA Campylobacter survey in retail poultry as these will be the first results since the changes to the Campylobacter enumeration methodology.

Further afield, an exceptionally small survey (only 40 birds were tested) in New Zealand revealed an incidence of Campylobacter in poultry of 65% (close to the UK figure) but an astonishingly low figure of between 5-11% was claimed in a recent survey on the incidence of Campylobacter in chickens and turkeys carried out in Finland.

B cereus survey in France

A survey looking at the number of foodborne outbreaks attributed to B cereus in France has claimed that from 2007-2014 there were 74 outbreaks which affected 911 individuals. 747 cases were within institutionalised catering contexts. The authors claimed that there was evidence to suggest that this placed B cereus second in the most common causes of foodborne outbreaks in France.

<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=22657>

Salmonella in shell eggs - Update

The number of cases of Salmonella reportedly linked to shell eggs in Poland (mentioned in last month's bulletin) has continued to grow with 10 countries reporting 152 confirmed and 216 probable cases of Salmonella enteritidis.

The outbreak has led to questions being raised in the EU parliament on the threat to member countries by the free flow of goods on the single market.

Cold plasma techniques used to combat viruses in soft fruit

Research in America has looked at the effectiveness of using cold plasma techniques to kill viruses on soft fruit.

There have been numerous outbreaks of viruses (most notably Norovirus and Hepatitis A) associated with soft fruits such as blueberries and raspberries due to contamination at source or the handling involved in harvesting and processing.

Apologies to any chemists who may be reading this, but (to the best of my very limited knowledge), the process of creating plasma, which is considered the fourth state of matter after solids, liquids and gases, is created by breaking apart gas molecules and making a plume of charged electrons and ions. Although this is known to have an antimicrobial effect, the problem with using it as a sanitising step is that the creation process generates heat, which is damaging to the delicate soft fruits.

The American scientists found by simply injecting room-temperature air into the treatment chamber the heat problem was eliminated. They stated that cold plasma is an emerging non-thermal technology that offers the advantage of being chemical and water free, in addition to being able to operate openly and continuously at atmospheric pressure. They claimed that additional research is needed before the cold plasma treatment will be available for commercial-sized operations, but they reported the variety of benefits it provides should make it an affordable tool for the food industry.

Season's Greetings

Finally, it's that time of year so can I wish you all a Merry Christmas and a safe, healthy and prosperous New Year.