



Microbiology bulletin 51

March 2018

South African Listeriosis outbreak – Latest update.

The source of the largest Listeriosis outbreak ever recorded has now been identified. Products produced by Tiger Brands such as polony have been identified as causing the outbreak which has so far caused illness in nearly 1,000 individuals and resulted to date in 183 fatalities.

On the 4th March, the South African Health Ministry announced that the outbreak strain (ST6) has been traced to the Tiger Brands enterprise factory in Polokwane and a national recall of all potentially affected products (which was estimated to be 3,500 tons) followed. The National Institute for Communicable Diseases has stated that cases were still expected to be reported up to four weeks or longer after the recall of the implicated foodstuffs, as the incubation period for Listeriosis can be 21 days, with a reported maximum of 70 days. The World Health Organisation has issued a warning to neighbouring South African countries to be on the alert in case there is a spread of the outbreak.

Listeria outbreak in Australia caused by contaminated cantaloupe melons.

An outbreak of Listeriosis in Australia, which has been linked to contaminated Cantaloupe melons grown at a farm in New South Wales has now affected 19 people with 6 reported fatalities.

Cantaloupe melons (or rockmelons) have been associated with several outbreaks of Listeriosis in the past. It is widely believed that the rough surface of the melon facilitates survival of surface Listeria during the commercial sanitisation step before the melons are processed and sliced. Any surviving Listeria are then carried into the fleshy part of the melon which has a neutral pH and a high water activity. Most pathogens are prevented from growing to dangerous levels by temperature control of the product, but

as Listeria can grow in refrigeration conditions, there are no hurdles or barriers for its growth. In 2011 an outbreak associated with the consumption of cantaloupe melons grown at Jenson's Farm in Arizona affected 147 people and caused 33 deaths.

Conflicting news on Campylobacter

The FSA announced the latest set of Campylobacter survey results this month. Comparing the latest 2 sets of quarterly results (July-September and October-December) the FSA stated that the downward trend in chickens being contaminated with the highest level of contamination (>1,000cfu/g) had continued as the levels had dropped from 5.1% to 4.5%.

However Health Protection Scotland revealed figures which show that the number of confirmed cases of Campylobacter rose by 9% in 2017 to nearly 6,000. This increase follows a decline in the number of reported cases seen in the previous 2 years. The apparent increase may be due to enhanced awareness and investigation of people presenting with symptoms of gastroenteritis following the recent publicity surrounding Campylobacter, although the number of reported cases of Salmonella showed no significant change.

Probiotic mixture can protect lambs from STEC infection

A paper recently published in the African Journal of Microbiology Research has shown that a mixture of probiotics fed to lambs can help combat Shiga Toxin E coli (STEC) in experimentally infected lambs. In the study lambs which were administered a mixture of probiotics shed significantly lower ($P < 0.05$) counts of STEC cells in the six weeks post-infection than the lambs that received only STEC cells without probiotics. The authors concluded that that probiotics should be administered to lambs to help

control the STEC organisms and reduce the pathogen burden within the food chain.

Yet another Salmonella outbreak linked to coconut

In the January bulletin we mentioned that an outbreak of Salmonella newport had been linked to the consumption of frozen shredded coconut, and now another outbreak has been reported in the states this time caused by Salmonella typhimurium. This has affected 13 people across several states has been attributed to the consumption of contaminated dried coconut.

We have commented on many occasions in previous bulletins on the ability of Salmonella to persist in low water activity products and to survive in desiccated foods and the association between dried coconut and Salmonella appears to further illustrate this fact.

FSA to launch consultation with the meat industry

On the 1st March the Food Standards Agency and Food Standards Scotland published details of a major review into the sites where meat products are processed and stored in the UK. One of the items listed in the scope of the review is how the current legislation works and the guidance supporting it. This is undoubtedly referring to the many high profile cases recently where several meat processors have been criticised for failure to comply with the FSA vac pack 10 day guidance.

The guidance document states that if there are no hurdles within the product to prevent the potential for growth of non-proteolytic Clostridium botulinum then a shelf life of less than 10 days should be applied. However, it has been routine practice within the meat industry to apply a shelf life which often exceeds the stipulated 10 days as historically it appears that there has never been a problem with non-proteolytic C botulinum in vac packed raw meat. There doesn't appear to be any definitive research as to why this is the case, but it is probably something to do with the high microbiological loading on the surface of raw meat which might suppress the potential for the germination and growth of the C botulinum spores by either lowering the surface pH, the production of bacteriocins, through competition for available nutrients, or (more likely) a combination of these and other factors.

Rather than just relying on historical data to provide evidence of product durability, it seems that in future the accreditation or inspection authorities will require the

processing facilities to have conducted a full microbiological risk assessment to assess the food safety impact before consideration is given to imposing a greater than 10 day shelf life on the product.

What makes the perfect bottle of wine?

I attended an interesting talk recently given by Professor Matthew Goddard from Lincoln University. Both he and his team of researchers at the university have worked collaboratively with the New Zealand wine industry and they have used molecular techniques such as whole gene sequencing (WGS) to analyse the microbiological flora which grows on the grape. They have found that different vineyards have their own specific mixture of bacteria, yeasts and moulds which can be found on the surface of the grape and also in the pressing and fermentation areas of the vineyard. The data they have gathered suggests that this specific and individual mix of microorganisms is unique to each vineyard, and is can identify wine as belonging to a specific vineyard as accurately as an individual's fingerprint.

He claimed that only 5% of the organisms which were identified as being present by the WGS techniques were isolated by traditional cultural techniques. This is obviously slightly worrying but we can only hope that in food microbiology where methods and media have been designed to detect spoilage organisms and pathogens which are specifically found in in this matrix that our isolation and detection rate is considerably higher.

Professor Goddard went on to suggest that a high quality vintage wine is formed not only by the quality of the grape which is in turn influenced by the weather and soil conditions, but also by this mix of microorganisms which are ultimately responsible for driving the fermentation process. Professor Goddard stated that it is the fermentation alone which imparts many of the organoleptic properties which separates the exceptional wine from the average. One possibility which has arisen from this research is that once the perfect mix of microorganisms has been identified it may be possible to sterilise the pressed grape juice obtained from an "average" vineyard, add the mix of microorganisms in the optimal quantities and a premium vintage will be produced every time.

As we are approaching the bank holiday weekend, I hope you have a good break and get time to enjoy a good bottle of quality wine to accompany your Easter eggs.....Cheers!!!