Listeria – precaution or scaremongering?

In recent times listeria, and especially Listeria monocytogenes, have come in for a fair amount of scrutiny and comments but, have these been fair and reasonable? Do we have a classic scenario of 'a little knowledge is dangerous', especially when it comes to advice being offered by some parties?

Is L. monocytogenes actually an important and serious foodborne pathogen?

In terms of numbers of people affected the answer is probably 'No', but, when we couple these cases to the fact that a relatively high proportion of them have serious outcomes, such as death and abortion, then the answer has to be 'Yes'.

When it comes to biological entities like food poisoning we must accept that a nil risk scenario is unrealistic, but we must endeavour to do all we can to minimise risk.

For some foodborne pathogens, namely those that are associated with large outbreaks, this is probably easier – reduce the major outbreaks and you have a dramatic effect on the number of people affected!

When it comes to food poisoning caused by L. monocytogenes, the proportion of people in isolated cases is much greater and so the impact of the previously described strategy will often be much less.

Myths or fact?

Over the years two opinions have frequently been heard:

- It is not L. monocytogenes so it is not important.
- L. monocytogenes is only present in low numbers so it is not significant.

Both these views have some credence, but to adopt them regardless of context would be foolhardy.

Let us expand on this. When samples of food are tested for listeria five, or more frequently, one colony of listeria, is taken from the plate for typing. This is what your laboratory result reflects.

Thus, if we had a mixed growth of say 90% L. innocua and 10% L. monocytogenes the probability is that, with either of the two cited colony sampling frequencies, the - colony selected would be L. innocua and this is what would go on the laboratory report.

Thus, is it more realistic to adopt a stance that it is L. innocua, but another type of listeria could be present.

In addition, conditions are favouring the presence of listeria and so there is always the possibility that if L. monocytogenes is introduced it will survive. In other words, let us respond with caution to all listeria isolates and not totally disregard the isolation of types that are not L. monocytogenes!

Quantification factor

Secondly, we come to the quantification factor. The approach of saying low numbers are insignificant has one flaw to it.

It would be valid if products were tested at point of consumption but they are not – they are tested at point of production and the producer has little control over how that product is handled once it is purchased.

If product abuse occurs then the so called 'safe' level of L. monocytogenes on the product could assume a whole new dimension. For those companies who undertake shelf-life evaluations this risk is further reduced but, here again, there are weaknesses.

Many small companies do not undertake shelf-life evaluations and the results of such an evaluation can only be extrapolated to a product that has been sold if the purchaser handles that product in a similar fashion to the way it was handled in the original shelf-life evaluation.

Epidemiology of listeria

When we come to look at the epidemiology of listeria in food plants it is very different to the epidemiology of other foodborne pathogens.

Firstly, we can have the scenario, which occurs quite frequently, of a food production facility having its own house or resident strain of listeria.

This is because many cleaning programmes used do not totally eliminate the listeria bacteria from the working environment and this is often because the products being used do not totally remove the biofilms that harbour the organisms.

This can be countered by the occasional use of an acid based product as such products are much better at destroying biofilms.

However, switching to a programme that solely uses such a product(s) is often counter productive because of its impact on other objectives of the programme. Thus, a balanced strategy is required.

Two further key aspects of listeria control are having a facility that is capable of being thoroughly cleaned and appreciating the fact that the temperatures that adequately inhibit the growth of other bacteria will not do the same for listeria.

Small producers

If we consider these points then the small operator is at a disadvantage and one can argue a case that says that such producers lack the knowledge, expertise and resources to put in an effective control programme.

This may be unfair because there are many small producers producing listeria free products. However, is this because of good management or good luck?

This point becomes even more pertinent when you consider many of the products that favour listeria, such as sandwiches, pasta salads, salads and cheeses, as these are often produced by the smaller food businesses.

In addition, these products are often prepared on site of consumption, for example, small cafes where high hygiene standards and a comprehensive understanding of product bacteriology could be lacking.

Storage conditions

Finally, many of these products are not cooked (subjected to a final listericidal process before consumption) and the temperature conditions under which they are stored may be far from ideal, for example, sandwiches in display counters.

So, if we look at the whole listeria story we have some interesting points to reflect on:

- Most of the large food processors and/or their advisers understand listeria and this usually results in a relatively good listeria track record in processors in this sector.
- Most small food processors do not understand listeria and do not have their own advisers.
- Small food processors/retailers tend to operate with foods that have a listeria track record such as sandwich fillings and pasta salads.
- Traditional cleaning strategies are not necessarily the most effective at removing biofilms and the listeria that they harbour and smaller processors/retailers tend to use traditional cleaning strategies.
- Enforcement officers are not always up to date on the complex issues associated with listeria control and, therefore, do not always give the most up to date advice.

If we bring all this together one message comes out loud and clear. Smaller food processors would benefit from simple, easy to action guidelines that would help them to protect their products and businesses from listeria and, in particular, from L. monocytogenes.

To some extent getting the basics right will reduce the risk but this needs to be coupled with specific actions based on an understanding of listeria, such as the periodic use of an acidic disinfectant, if listeria avoidance is to take a step forward. n