

FOOD SURVEY INFORMATION SHEET

OCTOBER 2014

A MICROBIOLOGICAL SURVEY OF PRE-PACKED READY-TO-EAT SLICED MEATS AT RETAIL IN UK SMALL TO MEDIUM SIZED ENTERPRISES (SMEs)

Key Findings

- *Listeria monocytogenes* was detected in 3.8% of samples and *Listeria* spp. were detected in 7.0% of samples.
- *Enterobacteriaceae* were enumerated from 36.2% of samples and the mean count (\log_{10} cfu/g) was 2.96 ± 1.47 .
- *E. coli* were enumerated from five samples (0.48%).
- The mean temperature of the samples was 6.80°C, with 71.3% of samples above the industry guideline of 5°C and 32.7% being stored above 8°C.
- Samples came from a diverse range of processors and chemical analyses indicated conditions appropriate for the growth of *Listeria* species.
- *Listeria* was isolated from the products of 27% of the producers sampled. Product from 23 processors showed a mean *Listeria* prevalence of 25%, indicating significant hygienic shortcomings in the production processes.

Summary

Between April 2012 & January 2013, 1049 samples of pre-packed ready to eat (RTE) sliced meats purchased in small to medium sized enterprises (SMEs) in the UK were examined to detect and/or enumerate *Listeria monocytogenes* and other *Listeria* spp. Samples were also examined to determine numbers of the hygiene indicator organisms *Escherichia coli* and *Enterobacteriaceae*, as well as for a range of physical characteristics: salt content, water activity and pH. The temperature of the surface of packs of meat in the SMEs at the time of sampling was measured and recorded, as were a range of other details including 'use-by' date and storage instructions.

Overall, *Listeria monocytogenes* was detected in 3.8% of samples and *Listeria* spp. were detected in 7.0% of samples. *Enterobacteriaceae* were enumerated from 36.2% of samples and the mean count (\log_{10} cfu/g) was 2.96 ± 1.47 . *E. coli* were enumerated from five samples (0.48%). The mean temperature of the samples was 6.80°C, with 71.3% of samples above the industry guideline of 5°C and 32.7% being stored above 8°C. The mean pH of the samples was 6.09, and the mean a_w was 0.98. The mean remaining shelf-life was 13.8 days, and 75.1% of samples had 14 days or less of shelf-life remaining.

Samples came from a diverse range of processors and chemical analyses indicated conditions appropriate for the growth of *Listeria* species. *Listeria* was isolated from the products of 27% of the producers sampled. Product from 23 processors showed a mean *Listeria* prevalence of 25%, indicating significant hygienic shortcomings in

the production processes. Therefore a number of processors appear to be manufacturing pre-packed ready to eat sliced meats of unacceptable quality, based on Guidelines issued by the Health Protection Agency in 2009.

The survey found that most of the meat products were stored at temperatures higher than the recommended industry guidelines, and this, combined with the relatively high prevalence of *Listeria monocytogenes*, in comparison with the previous FSA survey, could put consumers at risk. There is a need to inform and train retail SME staff about appropriate maintenance and control of refrigerated display cabinets. The manufacturers producing unacceptable RTE meats were investigated and appropriate corrective actions taken.

Background and approach

The primary objective of the survey was to determine the prevalence and levels of bacterial contamination in ready-to-eat (RTE) cooked and cured sliced meats at retail sale in small to medium sized enterprises (SMEs).

The survey also aimed to identify potential risk factors associated with RTE sliced meats on sale in SMEs. The survey did not aim to gain specific data on seasonality patterns of *L. monocytogenes* contamination in the sampled products.

The Food Standards Agency 's Foodborne Disease Strategy (FDS) for 2010-2015 proposes a pathogen-specific approach to reducing foodborne disease rates in the UK and *L. monocytogenes* has been identified as one of the priorities for action. This is because infections with this organism (listeriosis) are associated with a high rate of mortality. It is therefore important that sources of exposure to this organism are pinpointed and factors contributing to infections identified. The types of food in which *Listeria* can be found are diverse and there are several key foods that have been implicated in the transmission of listeriosis, including cooked sliced meats.

An HPA study of human listeriosis in England (2001-2007) found that the study cases (particularly the elderly who are a high risk group) were more likely to purchase foods from smaller convenience stores than the general population and so this survey was designed to focus on small and medium sized retailers.

A previous FSA survey of retail cold sliced meats with particular reference to *L. monocytogenes* (B18024) was based on market share and therefore the majority of samples were collected from the large retailers. In addition this survey also covered fermented and cured meat products that were excluded from the previous FSA survey.

Information from this survey and investigations of RTE sliced meats will be used to build up a representative picture of the prevalence of *L.monocytogenes* contamination in foods across the UK.

The Agri-Food & Biosciences Institute, Belfast (AFBI) co-ordinated the survey and samples were collected by dedicated sampling officers based on the geographical distribution of premises sampled during FSA study B18024. Sampling officers were

provided with a postcode within a sampling cluster and instructed to purchase samples in appropriate premises within the vicinity. Samples were representative of the UK market for cooked sliced meats with premises selected at random in England, Scotland, Wales and Northern Ireland. Seasonal effects or prevalence within countries were not investigated in this survey.

A range of information concerning the cooked sliced meat was collected including details of where the sample was bought (shop name and location), product name and description, manufacturer details and EC approval number, price, country of origin, use-by date and temperature at storage at retail premises. The samples were analysed for number of *Enterobacteriaceae*, *Listeria* species and *E.coli* present (indicators of hygiene) the number of *Listeria monocytogenes* present (pathogen of concern) along with a physicochemical analysis of salt content, water activity and pH.

Microbiological analysis

Microbiological analyses were undertaken in an ISO 17025:2005 accredited laboratory (UKAS 1279). Samples were analysed for the presence of *Enterobacteriaceae*, *Escherichia coli*, *Listeria* spp. and *Listeria monocytogenes*, using appropriate ISO methodologies.

Chemical analysis

Chemical analyses were undertaken in an ISO 17025:205 accredited laboratory (UKAS 1887). pH values, water activities (a_w) and salt concentrations in samples were determined using appropriate ISO methods.