Comparison of Four Methods for Detection of Listeria monocytogenes Isolates in Porcine Slaughterhouse and Cutting Facilities in Quebec

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OBJECTIVES/BACKGROUND/ISSUE(S): Health Canada's "Policy on *Listeria monocytogenes* in Ready-To-Eat Foods", implemented in 2011, highlights environmental verification and control of meat processing facilities as important risk-reduction tools. To promote effective implementation of the Policy by the industry, the University of Montreal's Research Chair in Meat Safety (CRSV) aims to provide an accurate description of residual *L. monocytogenes* contamination in pork meat production facilities.

DESIGN/METHOD/DESCRIPTION: In the present study Health Canada has cooperated with the CRSV for the purpose of comparing the performance of detection methods for *L. monocytogenes* at early pork-processing steps, and to collect multiple *L. monocytogenes* isolates for further genetic characterization of bacterial populations in processing plants.

A total of 71 swabs were taken at a meat-processing facility. Samples covered various areas such as lairage, post-evisceration area, cold room and cutting surfaces. The samples were tested in parallel with 3 classical microbiological methods (MFHPB-30, a modification of MFHPB-30, and the CRSV internal method) and a commercial DNA-based screening kit (Dupont BAX for *Listeria monocytogenes*).

OUTPUTS/RESULTS: *L. monocytogenes* was detected in 18% of the samples, which is concordant with results obtained previously in other similar facilities. Most of the positives originated from cutting surfaces, which showed the highest proportion of contaminated samples (77% of all positives). The sensitivity of all cultural methods was the same (92.9%) while that of BAX was slightly lower (85.7%). All cultural methods each missed one positive sample while the BAX system missed two. The internal CRSV method was revealed to be the most efficient cultural method in terms of hands-on-time and costs.

IMPACTS/OUTCOMES/CONCLUSIONS/IMPLICATIONS/NEXT STEPS: This study confirms the validity of results obtained with the CRSV method in prior studies and supports its use in the context of large-scale monitoring of industrial facilities. A number

of *L. monocytogenes* isolates have also been collected and will be genotyped in order to better describe the variability of strains in a single plant.

IMPACT ON THE DEPARTMENT/POLICIES/REGULATIONS: This work will help provide better monitoring tools and a more thorough understanding of the distribution and variability of *L. monocytogenes* in processing plants. This, in turn, will enable the industry to better implement the Listeria Policy by targeting environmental surveillance efforts in the most efficient manner.