Correlation between Salmonella and hygiene indicators in the Danish fresh pork chain - DTU Orbit (20/10/2019)

Correlation between Salmonella and hygiene indicators in the Danish fresh pork chain

Salmonella in pork is estimated to be the source to 200 – 400 registered cases of salmonellosis annually in Denmark. Hygiene performance during handling in all parts of the fresh pork chain will potentially contribute to the safety of the meat. This study describes the occurrence of Salmonella in 1,569 samples from cutting plants, and in 1,232 samples from retail supermarkets and butcher shops sampled from June 2010 to March 2011 and associates this to two hygiene indicators, enterococci and Enterobacteriaceae.

In six large cutting plants, Salmonella was isolated from 1.3 % compared 3.7 % of samples in 12 smaller plants. Process hygiene was described by quantifying Enterobacteriaceae and enterococci in samples and high levels of both were mostly seen for smaller plants. Enterococci counts varied more between plants than Enterobacteriaceae. Occurrence of Salmonella was positively correlated to the number of enterococci. If >10,000 enterococci/g were present, the sample was 14 times more likely to contain Salmonella compared to samples with fewer enterococci.

At retail, Salmonella was found in 0.72 % of cuttings from 278 supermarkets compared to 1.0 % for 134 butcher shops. Among samples, 4 % from supermarkets and 12 % from butcher shops contained enterococci. Samples containing enterococci were six times more likely to contain Salmonella whereas no correlation was found between Enterobacteriaceae and Salmonella in retail samples.

In conclusion, presence of Salmonella was associated with lower hygiene as indicated by high levels of either Enterobacteriaceae or enterococci. A positive correlation between enterococci and Salmonella was observed. In particular, smaller cutting plants had problems with hygiene and produced meat of higher consumer risk. To some extent this was also valid for butcher shops pointing at a need for interventions targeting smaller enterprises.

General information
Publication status: Published
Organisations: National Food Institute, Division of Food Microbiology, Danish Veterinary and Food Administration
Contributors: Hansen, T. B., Sandø, G., Aabo, S.
Number of pages: 6
Publication date: 2013
Peer-reviewed: Yes
Event: Paper presented at 5th International Cold Chain Management Workshop, Bonn, Germany.
Keywords: Pork chain, Salmonella, Hygiene indicators, Hygiene performance
Source: dtu
Source ID: u::8358
Research output: Contribution to conference › Paper – Annual report year: 2013 › Research › peer-review