For the Danish Bacon and Meat Council the first year of experience with the intensified controlled programme has shown, that as soon as a slaughterhouse is noted for the first time, a major programme is started at the slaughterhouse in order to locate the source of Salmonella contamination. With a sporadic prevalence with 2 or 3 positive samples a month, this work can be very difficult and requires many samples taken over a period of time. This sampling often includes samples from both the unclean and the clean part of the slaughter line.

An increased prevalence of Salmonella may also be caused by introduction of automatic equipment or by education of new staff on the slaughter line, but these circumstances seldom influence the slaughter hygiene for more than one or two months.

The initiatives taken to reduce the Salmonella prevalence are highly individual and vary from slaughterhouse to slaughterhouse. Some are improvements or changes in routines that can be implemented immediately. Other initiatives are long term investments, that takes time to implement.

During the first 14 months after implementation five slaughterhouses out of 19 slaughterhouses members of the Danish Bacon and Meat Council had to start an intensified control programme. Four of these slaughterhouses are out of the intensified programme again and one is still working on it within the time limit. So far, all the slaughterhouses have been able to reduce their Salmonella prevalence on the carcasses within the time limit.

The Salmonella prevalence in pork from slaughterhouses members of The Danish Bacon and Meat Council was 1.7% by the end of 2001. By the end of 2002 the prevalence was reduced to 1.5%. Furthermore the number of Danes with salmonellosis caused by pork was reduced from 166 cases in 2001 to 78 cases in 2002 (Anonymous, 2003).

References:

EXPOSURE ASSESSMENT OF FOODBORNE PATHOGENS IN PORK IN BELGIUM

Y. Ghafir1, L. De Zutter2, JY. François1, M. Cornelis1, M. Jouret2, JM Dumont1, K. Dierick2, G. Daube1

1 University of Liege, Faculty of Veterinary Medicine, Dpt. of Food Sciences, Microbiology, Bat.B43b, Sart Tilman, 4000 Liege, Belgium, Tel.+3243664017, Fax+3243664044, y.ghafir@ulg.ac.be. 2 Public Health Institute - Louis Pasteur, Brussels, Belgium. 1 University of Gent, Faculty of Veterinary Medicine, Food Microbiology, Gent, Belgium 4 Federal Agency for the Safety of the Food Chain (Ministry of Public Health), Brussels, Belgium

Summary: The aim of this study was to assess the exposure of the most incident foodborne pathogens in the Belgian meat production chain. The prevalence of Salmonella, Campylobacter and Listeria monocytogenes were evaluated in carcasses (swabs), retail cuts, minced meat and meat products of pork. The investigation was made each year since 1997, using official methods from the Ministry of Public Health for Salmonella and Campylobacter and the Vidas Listeria monocytogenes method. More than 10 % of each matrix were contaminated with Salmonella. For minced meat and meat products, the contamination rate were respectively round 20 % and 3 – 6 % for Listeria monocytogenes. Under 5 % of minced meat samples were positive for Campylobacter. For minced meat, the contamination has also been assessed according to the location of sampling (agreed, low capacity establishments or retail level). The characterisation of bacterial species allows the comparison between meat and human isolates.
Keywords: *Salmonella*, *Campylobacter*, *Listeria monocytogenes*, meat, surveillance

Introduction: *Campylobacter* and *Salmonella* are the most common causes of bacterial gastroenteritis in terms of reported incidence by the public health services. *Listeria monocytogenes* is regularly implicated in severe foodborne infections. The assessment of their exposure is essential for an efficient risk assessment program.

Materials and methods: Since 1997, the Belgian zoonoses surveillance program has assessed the national contamination with *Campylobacter*, *Salmonella* of carcasses (600 cm$^2$), retail cuts (25 g), minced meat (25 g) of pork, and meat products (ham and pâté, 25 g). The prevalence of *Listeria monocytogenes* is evaluated in pork minced meat since 2000. Round 300 samples were taken for each matrix.

The detection of *Campylobacter* and *Salmonella* have been carried out with official methods from the Ministry of Public Health (SP-VGM003&4), using Preston broth and mCCDA for *Campylobacter* and BPW and Diassalm for *Salmonella*. The detection of *Listeria monocytogenes* has been carried out with the AFNOR BIO-12/3-03/96 Vidas Listeria monocytogenes method followed by a chromogenic medium.

Results: More than 10 % of samples from each matrix were contaminated with *Salmonella*. For minced meat, the contamination rate was round 20 % for *Listeria monocytogenes* and below 5 % for *Campylobacter*. Between 3 and 6 % of ham and pâté were contaminated with *Listeria monocytogenes*. The prevalence and evolution since 2000 are given in Figures 1 and 2.

In 2002, minced meat is more contaminated with *Salmonella* at the retail level than in the producing establishments, unlike *Listeria monocytogenes* which is more present in low capacity establishments.

Discussion and conclusion: *Salmonella* and *Campylobacter* are frequently isolated in pork carcasses and cutting meat. The isolated strains belong to the same serotypes than these isolated from animals and human.

The contamination rate is lower in minced meat, but the contamination with *Listeria monocytogenes* shows that appropriate application of hygiene is a basic requirement for its control.

Acknowledgements: The Belgian Federal Agency for the Safety of the Food Chain (Ministry of Public Health) financially supported this study.

Figure 1: Prevalence of *Salmonella* in pork meat between 2000 and 2002. The "***" shows that the difference between 2000 and 2001 (*** on 2001) or between 2001 and 2002 (*** on 2002) is significant (p < 0.05). Without any mention, the difference is not significant.
IMPROVING THE MEAT INSPECTION BY AN INTEGRATED QUALITY CONTROL SYSTEM

J.M.A. Snijders

University of Utrecht, Faculty of Veterinary Medicine, Department of Public Health and Food Safety, PO Box 80175, 3508 TD Utrecht, The Netherlands. e-mail: J.M.A.Snijders@vet.uu.nl

Summary: Measures concerning the production of microbiologically safe meat can be divided into those guided by the more or less classical, rigid "legislative" approach and by a more flexible "scientific" approach based on risk analysis. Therefore intervention should not unduly focus solely on the abattoir or food processing stages as is done with the classical, rigid "legislative" system, but should also target the risks associated with preharvest production stages. A comparison between the "legislative" and the "scientific" approach shows that properly structured HACCP-like systems, applied from farm to fork, as proposed by the new EU legislation and the Dutch implication of an integrated quality control system offer the best available approach to food safety assurance.

Keywords: HACCP; Databank; Salmonella; sampling; pork; decontamination

Introduction: The infection and contamination of pork and pork products by pathogenic bacteria have often been epidemiologically linked to food borne illness in humans. Risk analysis shows that microbial organisms on pork represent the greatest risk to public health. The level of exposure of consumers to microbiological hazards in fresh pork is unlikely to be reduced significantly by the detection and removal of gross abnormalities in the tissues examined, as is done by the to-day’s meat inspection. Among the agents involved in pork are Salmonella spp., Campylobacter spp., Yersinia enterocolitica and Listeria monocytogenes. Most of the research on pathogens in pork is focussed on Salmonella. Inspection at the end of the production-line is not designed or equipped to detect symptomless carriers of zoonotic agents or residues and may be in some cases even contra-productive regarding the hygienic aspects of the production process (Anon. 2000). In modern