

Evolution of faecal contamination and general hygiene in Belgian meat

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Introduction

The faecal contamination is likely the main source of potential human pathogens including *Salmonella*, *Campylobacter* and enterohemorrhagic *Escherichia coli* on animal carcasses and in meat. Leakage from the gastrointestinal tract or contact with the animal skin could cause widespread contamination. In warm-blooded animals, the best indication of faecal contamination is *Escherichia coli*.

In 2002, Belgium has implemented the European Decision of 8 June 2001 (2001/471/EC), which lays down the *Enterobacteriaceae* and total viable counts as regular checks on general hygiene in establishments producing and marketing fresh meat, in the Royal Decree of 4 July 1996. This decree lays down checks of *E. coli* and total viable counts on beef and pork carcasses in slaughterhouses.

For cooked products, the determination of *Enterobacteriaceae* is a better hygiene indicator than *E. coli*.

Materials and Methods

Since 2000, the Belgian surveillance program has assessed the contamination with *E. coli* of meat from beef, pork and poultry. Carcasses of beef and pork consisted on swabs.

The enumeration of *E. coli* (in cfu/g or cm²) has been realised using the AFNOR validated chromogenic Rapid E. coli 2 medium (Bio-Rad, AFNOR BRD-07/1-07/93) with an incubation during 24h at 44°C. The determination of total plate counts followed the NF-V-08-051 method (PCA at 30°C during 48-72h). The enumeration of *Enterobacteriaceae* was realised using the NF-V-08-054 method (VRBG at 30°C during 24h) and the enumeration of *Pseudomonas* using the NF-V-04-504 method (CFC at 25°C during

48h).

Results

This study of *E. coli* contamination allowed the estimation of the sanitary level of Belgian establishments and the follow-up of each establishment.

The percentiles of *E. coli*, *Enterobacteriaceae*, *Pseudomonas* and total plate counts in poultry, beef, pork and meat products are shown in Figure 1-4.

The contamination of poultry with total plate counts and *Pseudomonas* is very high in comparison with *E. coli*. The fecal contamination is very low for beef.

For meat products (ham, pâté, salami), the *E. coli* level in 2000 was very low; the *Enterobacteriaceae* count was then chosen as hygienic indicator for these products. The contamination is still low for *Enterobacteriaceae*.

Figure 1: Percentiles of *E. coli*, *Enterobacteriaceae* and total plate counts in poultry (2002-2003)

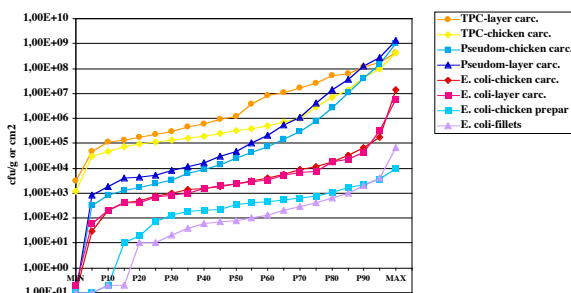


Figure 3: Percentiles of *E. coli* and total plate counts in pork (2002-2003)

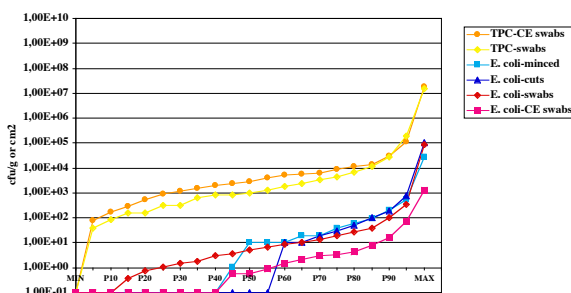


Figure 2: Percentiles of *E. coli* and total plate counts in beef (2002-2003)

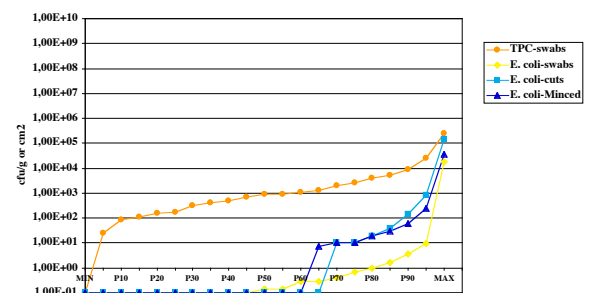
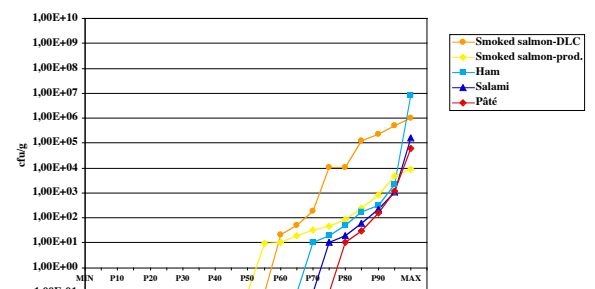


Figure 4: Percentiles of *Enterobacteriaceae* in meat products (2003)



Discussion and conclusion

E. coli and total plate counts are a good mean to evaluate hygienic measure efficacy in meat industry, especially for abattoirs. For internal quality control, companies should use the same sampling method and criteria. They will allow an evaluation of the normal contamination rate of each industry, and of preventive measure efficiency.

Acknowledgements

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