Occurrence of Campylobacter in foods from animal origin in Belgium since 1997

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Introduction

Campylobacter is the most common cause of bacterial gastro-enteritis in terms of numbers of reported incidence by the public health. The prevalence and the level of contamination are essential for an efficient risk assessment program but all the different species have not the same virulence potentiality.

Material and Methods

Since 1997, the Belgian zoonosis surveillance program has assessed the contamination with Campylobacter in cattle, pig, poultry, rabbit and fish. The number of sample was approximately 120 in 1997, 150 in 1998 and 1999 for each matrix. Each year, the analyzed sample amount has been adjusted to obtain semi-quantitative results. The matrices investigated and the sample size investigated are shown in table 1. The detection of Campylobacter has been carried out with the official method from the Ministry of Public Health (SP-VG M003). Briefly, this method consist of an enrichment into Preston broth incubated 48h at 42°C under micro-aerophilic atmosphere followed by a streaking of a 10μl onto mCCDA. After an incubation time of 24h and 120h, plates were read for the presence of typical colonies, a biochemical or PCR confirmation was performed in order to confirm the presence of Campylobacter. The antibiotic resistance profile of the isolates was established by MIC method (results not shown).

Results and discussion

In cattle, calf, rabbit and fish, the study has been stopped after one year of investigation due to the very low prevalence (Fig. 1).

In pork, the prevalence seems to be at a constant level (carcasses: 15-21%; Retail cuts: 3-13%; Livers: 28-33% and minced meat: 2-6%) and isolated strains belonged to the same biotypes (C. coli: 42-71%; C. jejuni: 5-39% and among other biotypes (9-32%), A. cryaerophila (3-14%) is the most common) (Fig. 2 and 4).

In poultry, the prevalence is also at a constant but higher level (broilers: carcasses: 71-76%, livers: 62-75% and breasts: 52-83%; layers: carcasses: 82-92%; turkeys: carcasses: 73-87%). C. jejuni is the major biotype in poultry (49-93% in turkeys) (the low result may be due to the loss of several isolates), 63-79% in layers and 66-84% in broilers) with C. coli (7-47% in turkeys, 16-36% in layers and 15-34% in broilers). Other biotypes such as C. lari and A. cryaerophila have also been detected (Fig. 3, 5 and 6).

In pork, the analysis of the dilution (25- or 250-fold) led nearly to negative results except for carcasses in 1999 (prevalence of 0% in 0.1g). In poultry, the 25-fold dilution has almost no inference on the contamination rate of broiler and layer carcasses and of broiler livers. Other matrices lowered with a ratio of 3,0 (turkeys) and 3,8 (broiler breasts) for the 25-fold dilution but for broiler breasts, the reduction rate for the 250-fold dilution is the same than for the 25-fold dilution.

Conclusion and discussion

• Campylobacter is frequently isolated from pork and poultry.
• Isolated strains belong to same species and have same antibiotic resistance profiles that isolated strains from human.
• An advanced analysis of the results is needed in order to precise the sources of human campylobacteriosis.
• The rate and the level of contamination, and thus the risk, is higher in poultry than in pork.
• These results should be used to take preventive measures in order to lower the contamination rate of Campylobacter and the resistance to antibiotics.
• These results should be compared with those of other European countries.

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