

KAMPILOBAKTĒRIJU (*CAMPYLOBACTER* SPP.) SASTOPAMĪBA CŪKĀM LATVIJĀ (PIRMAIS ZIŅOJUMS) OCCURRENCE OF *CAMPYLOBACTER* SPP. IN PIGS IN LATVIA (PRELIMINARY REPORT)

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ABSTRACT

The aim of the study was to detect the occurrence of *Campylobacter* spp. in pigs. Rectal swabs from 129 pigs were obtained, representing 13 pig herds. Samples were collected during July-October, 2007. Samples were analyzed according to the method of the International Organization of Standardization (Anonymous, 2006). All isolated cultures were found to be presumptive for *C. coli* species. As further molecular testing was not performed, bacterium was defined as *Campylobacter* spp. The overall occurrence of *Campylobacter* spp. was 38%. The highest occurrence was found in Latgale region (65%) and the lowest in Zemgale region. None of the herds tested positive for *Campylobacter* spp. in small private farms. The occurrence of *Campylobacter* spp. in conventional farms varied from 20 to 90% This is the first report on the occurrence of *Campylobacter* spp. in pigs in Latvia. More comprehensive data are needed to evaluate the overall situation in the country. Since *Campylobacter* spp. is a zoonotic pathogen and possibility of introduction of bacterium into food chain is not excluded, additional attention should be paid to the distribution of these bacteria.

KEY WORDS: pig, herd

INTRODUCTION

Campylobacter spp. became the most common bacteria isolated from humans with gastroenteritis during the last 20 years in European Union (EFSA, 2006). Campylobacteriosis is characterized by self-limited diarrhea and sometimes with post-infection complications as bacteremia. Human campylobacteriosis is usually caused by *C.jejuni* followed by *C.coli* (Skirrow, 1994). *C.coli* is less relevant species and it is often ignored, however it is most likely than *C.jejuni* exhibit antimicrobial resistance properties (Pezzotti et al., 2003). It has also important economical impact since it may cause significant number of hospital bed days (Tam et al., 2003).

Campylobacter spp. is widely distributed in environment and animal production, hence retail foods, especially poultry, were found to be positive up to 100% for *C.jejuni*. Retail meat becomes contaminated with *Campylobacter* spp. during handling of contaminated meat and as a result of cross-contamination from other ready-to-eat products (Humphrey et al., 2007). The animals during initial stages of processing as slaughtering are recognized as the most important vector for introduction of bacterium into food chain (Malakauskas et al., 2007).

Occurrence of *Campylobacter* in pigs could be important since red meats are found to be contaminated at the high rates at retail and even pork is implicated in human infection cases in Northern countries (Siemer et al., 2005). Identification of sources of *Campylobacter* is important for public health protection.

The aim of study was to determine the occurrence of *Campylobacter* spp. in pigs at slaughtering.

MATERIAL AND METHODS

A total amount of 129 rectal swabs were collected during July-October, 2007 in two Latvian slaughterhouses. Samples originated from 13 different pig farms in Latvia.

Samples were transferred in tubes containing Caryblair medium (EUROTUBO, Deltalab, Spain) and transported to the laboratory. Sample material was streaked onto CCDA agar (Campylobacter blood-free selective agar, CM0739, OXOID, Basingstoke, Hampshire, UK) and incubated at 42 °C for 48 h in microaerophilic atmosphere using commercial gas generating kits (Campygen, CN0035A, OXOID, Basingstoke, Hampshire, UK) in Anaerojar (OXOID, Hampshire, UK). Presumptive colonies were transferred onto blood agar and MacConkey agar (MacConkey Agar, CM0007, OXOID, Basingstoke, Hampshire, UK) and incubated in microaerophilic condition at 42 °C for blood agar and aerobically at 37 °C for MacConkey agar. If no bacterial growth was observed onto MacConkey agar, cultures from blood agar were confirmed with Gram staining, catalase and oxidase reaction and hippurate hydrolysis. Gram negative, catalase and oxidase positive, hippurate hydrolysis negative isolates were suspected to be *C.coli*.

RESULTS AND DISCUSSION

Results on occurrence of *C.coli* in pig herds are shown in Table 1. The overall occurrence for *Campylobacter* spp. was 38%. The highest occurrence of *Campylobacter* spp. was observed in Latgale region (65%), while the lowest in Zemgale region (23%). None of the herds tested positive for *Campylobacter* spp. in small private farms. The occurrence of *Campylobacter* spp. in conventional farms varied from 20 to 90%.

1.tabula/Table 1

Kampilobaktēriju (*Campylobacter* spp.) sastopamība cūku ganāmpulkos Latvijā Occurrence of *Campylobacter* spp. in pig herds located in Latvia

Reģions/ Location	Paraugu skaits/ No. of samples	Pozitīvo paraugu skaits(%)/ No. of positive samples (%)
Kurzeme	68	26/38
Latgale	20	13/65
Zemgale	26	6/23
Vidzeme	15	6/40

The occurrence confirms previous reports that *C.coli* most frequently than other *Campylobacter* species are isolated from pigs (Malakauskas et al., 2006; Nesbakken et al., 2003; Pezzotti et al., 2003) and in this study isolates are recognized as *C.coli*. This pathogen has a higher colonization potential for pigs than *C.jejuni* and other *Campylobacter* species and pigs serve as a source of this bacterium (Leblanc Maridor et al., 2008).

From 13 farms, only three were negative for *Campylobacter* spp. All of negative herds were small private animal herds (till 10 animals per herd), so it is possible that managing practice can cause a protective effect on introduction of bacterium into pig herds. As *Campylobacter* spp. can be introduced into pig herds, further risk analysis should be undertaken to estimate the significance problem.

The obtained occurrence is lower than it was reported previously for *Campylobacter* spp. in pigs: from 63.5 % in Italy (Pezzotti et al., 2003) to 100% in Norway (Nesbakken et al., 2003). Results of our study do not completely reflect the common situation in pig population in Latvia. The occurrence could change with increased amount of samples, seasonal and other

conditions. The purpose of this study was to present first data on the occurrence of *Campylobacter* spp. in pigs in Latvia.

As *C.coli* was often found in animals (from conventional pig farms) and due to a zoonotic nature of this pathogen, results should be undertaken into consideration when Good Agricultural Practices (GAP) or Good Manufacturing Practices (GMP) are implemented. The removal of gastrointestinal tract and other slaughtering procedures may facilitate possibility to contaminate carcasses with *Campylobacter* spp.,

CONCLUSIONS

1. This is the preliminary report on the occurrence of *Campylobacter* spp. in pigs in Latvia, thus active discussion between State authorities and agricultural specialists are essential for developing of preventive measures on farm level.
2. Our findings showed the significance of the problem for agricultural practice, so this study should be continued to get more comprehensive information on distribution of *Campylobacter* spp. in pig population.

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