

Prevalence of Foodborne Pathogens in Pig and Cattle Carcass Samples Collected from Korean Slaughterhouses

Authors : Kichan Lee, Kwang-Ho Choi, Mi-Hye Hwang, Young Min Son, Bang-Hun Hyun, Byeong Yeal Jung

Abstract : Recently, worldwide food safety authorities have been strengthening food hygiene in order to curb foodborne illness outbreaks. The hygiene status of Korean slaughterhouses has been monitored annually by Animal and Plant Quarantine Agency and provincial governments through foodborne pathogens investigation using slaughtered pig and cattle meats. This study presented the prevalence of food-borne pathogens from 2014 to 2016 in Korean slaughterhouses. Sampling, microbiological examinations, and analysis of results were performed in accordance with 'Processing Standards and Ingredient Specifications for Livestock Products'. In total, swab samples from 337 pig carcasses (100 samples in 2014, 135 samples in 2015, 102 samples in 2016) and 319 cattle carcasses (100 samples in 2014, 119 samples in 2015, 100 samples in 2016) from twenty slaughterhouses were examined for *Listeria monocytogenes*, *Campylobacter jejuni*, *Campylobacter coli*, *Salmonella* spp., *Staphylococcus aureus*, *Clostridium perfringens*, *Yersinia enterocolitica*, *Escherichia coli* O157:H7 and non-O157 enterohemorrhagic *E. coli* (EHEC, serotypes O26, O45, O103, O104, O111, O121, O128 and O145) as foodborne pathogens. The samples were analyzed using cultural and PCR-based methods. Foodborne pathogens were isolated in 78 (23.1%) out of 337 pig samples. In 2014, *S. aureus* (n=17) was predominant, followed by *Y. enterocolitica* (n=7), *C. perfringens* (n=2) and *L. monocytogenes* (n=2). In 2015, *C. coli* (n=14) was the most prevalent, followed by *L. monocytogenes* (n=4), *S. aureus* (n=3), and *C. perfringens* (n=2). In 2016, *S. aureus* (n=16) was the most prevalent, followed by *C. coli* (n=13), *L. monocytogenes* (n=2) and *C. perfringens* (n=1). In case of cattle carcasses, foodborne bacteria were detected in 41 (12.9%) out of 319 samples. In 2014, *S. aureus* (n=16) was the most prevalent, followed by *Y. enterocolitica* (n=3), *C. perfringens* (n=3) and *L. monocytogenes* (n=2). In 2015, *L. monocytogenes* was isolated from 4 samples, *S. aureus* from three, *C. perfringens*, *Y. enterocolitica* and *Salmonella* spp. from one, respectively. In 2016, *L. monocytogenes* (n=6) was the most prevalent, followed by *C. perfringens* (n=3) *C. jejuni* (n=1), respectively. It was found that 10 carcass samples (4 cattle and 6 pigs) were contaminated with two bacterial pathogen tested. Interestingly, foodborne pathogens were more detected from pig carcasses than cattle carcasses. Although *S. aureus* was predominantly detected in this study, other foodborne pathogens were also isolated in slaughtered meats. Results of this study alerted the risk of foodborne pathogen infection for humans from slaughtered meats. Therefore, the authors insisted that it was important to enhance hygiene level of slaughterhouses according to Hazard Analysis and Critical Control Point.

Keywords : carcass, cattle, foodborne, Korea, pathogen, pig

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