Risk factors and spatial distribution of extended spectrum β-lactamase-producing-Escherichia coli at retail poultry meat markets in Malaysia: a cross-sectional study

ABSTRACT

Background: The significant role of retail poultry meat as an important exposure pathway for the acquisition and transmission of extended spectrum β-lactamase-producing *Escherichia coli* (ESBL-EC) into the human population warrants understanding concerning those operational practices associated with dissemination of ESBL-EC in poultry meat retailing. Hence, the objective of this study was to determine the prevalence, spatial distribution and potential risk factors associated with the dissemination of ESBL-EC in poultry meat retail at wet-markets in Selangor, Malaysia. Methods: Poultry meat (breast, wing, thigh, and keel) as well as the contact surfaces of weighing scales and cutting boards were sampled to detect ESBL-EC by using culture and disk combination methods and polymerase chain reaction assays. Besides, questionnaire was used to obtain data and information pertaining to those operational practices that may possibly explain the occurrence of ESBL-EC. The data were analysed using logistic regression analysis at 95 % CI. Results: The overall prevalence of ESBL-EC was 48.8 % (95 % CI, 42 – 55 %). Among the risk factors that were explored, type of countertop, sanitation of the stall environment, source of cleaning water, and type of cutting board were found to be significantly associated with the presence of ESBL-EC. Conclusions: Thus, in order to prevent or reduce the presence of ESBL-EC and other contaminants at the retail-outlet, there is a need to design a process control system based on the current prevailing practices in order to reduce cross contamination, as well as to improve food safety and consumer health.