Risk based microbiological criteria for Campylobacter in broiler meat in the European Union
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Quantitative microbiological risk assessment (QMRA) allows evaluating the public health impact of food safety targets to support the control of foodborne pathogens. We estimate the risk reduction of setting microbiological criteria (MCs) for Campylobacter on broiler meat in 25 European countries, applying quantitative data from the 2008 EU baseline survey. We demonstrate that risk based MCs can be derived without explicit consideration of Food Safety Objectives or Performance Objectives. Published QMRA models for the consumer phase and dose response provide a relation between Campylobacter concentration on skin samples and the attending probability of illness for the consumer. Probabilistic modelling is used to evaluate a set of potential MCs. We present the percentage of batches not complying with the potential criteria, in relation to the risk reduction attending totally efficient treatment of these batches. We find different risk estimates and different impacts of MCs in different countries, which offers a practical and flexible tool for risk managers to select the most appropriate MC by weighing the costs (i.e. non-compliant batches) and the benefits (i.e. reduction in public health risk). Our analyses show that the estimated percentage of batches not complying with the MC is better correlated with the risk estimate than surrogate risk measures like the flock prevalence or the arithmetic mean concentration of bacteria on carcasses, and would therefore be a good measure for the risk of Campylobacter on broiler meat in a particular country. Two uncertain parameters in the model are the ratio of within- and between-flock variances in concentrations, and the transition factor of skin sample concentrations to concentrations on the meat. Sensitivity analyses show that these parameters have a considerable effect on our results, but the impact of their uncertainty is small compared to that of the parameters defining the Microbiological Criterion and the concentration on the meat.

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