Effect of climate and farm environment on Campylobacter spp. colonisation in Norwegian broiler flocks

Campylobacteriosis is the most frequently reported zoonosis in the EU. A recent report states that between 50% and 80% of the human campylobacteriosis cases could be attributed to broiler as a reservoir. The current study was conducted to investigate associations between the presence of Campylobacter spp. in Norwegian broiler flocks and factors related to the climate and the farm environment. Data from 18,488 broiler flocks from 623 different farms during 2002–2007 were included in the study. A logistic regression analysis was conducted where Campylobacter spp. status of a broiler flock at the time of slaughter was defined as the dependent variable and farm was modelled as a random effect. The following factors were found to increase the probability for a broiler flock to test positive for Campylobacter spp.: daily mean temperature above 6°C during the rearing period, private water supply, presence of other livestock farms within a distance of 2km, presence of other broiler farms within a distance of 4km with flocks positive for Campylobacter spp. within 30 days prior to slaughter, heavy rainfall 11–30 days prior to slaughter, region and year. Daily mean temperature below 0°C reduced the probability. The study emphasises the importance of the farm environment and the climate for the occurrence of Campylobacter spp. in broiler flocks. The farm environment is probably a part of the Campylobacter spp. pathway into and between broiler flocks where farmyard run-off and humans or flies entering the houses might constitute vehicles transporting the organism. Fly activity is temperature-driven and flies might be a part of the explanation of the increased risk for Campylobacter spp. related to increased temperature demonstrated in the study.

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