Low-cost monitoring of campylobacter in poultry houses by air sampling and quantitative PCR.
The present study describes the evaluation of a method for the quantification of Campylobacter by air sampling in poultry houses. Sampling was carried out in conventional chicken houses in Poland, in addition to a preliminary sampling in Denmark. Each measurement consisted of three air samples, two standard boot swab fecal samples, and one airborne particle count. Sampling was conducted over an 8-week period in three flocks, assessing the presence and levels of Campylobacter in boot swabs and air samples using quantitative real-time PCR. The detection limit for air sampling was approximately 100 Campylobacter cell equivalents (CCE)/m(3). Airborne particle counts were used to analyze the size distribution of airborne particles (0.3 to 10 μm) in the chicken houses in relation to the level of airborne Campylobacter. No correlation was found. Using air sampling, Campylobacter was detected in the flocks right away, while boot swab samples were positive after 2 weeks. All samples collected were positive for Campylobacter from week 2 through the rest of the rearing period for both sampling techniques, although levels 1- to 2-log CCE higher were found with air sampling. At week 8, the levels were approximately 10(4) and 10(5) CCE per sample for boot swabs and air, respectively. In conclusion, using air samples combined with quantitative real-time PCR, Campylobacter contamination could be detected earlier than by boot swabs and was found to be a more convenient technique for monitoring and/or to obtain enumeration data useful for quantitative risk assessment of Campylobacter.

General information
State: Published
Organisations: National Food Institute, Division of Food Microbiology, Division of Microbiology and Risk Assessment, National Veterinary Research Institute
Contributors: Søndergaard, M. S. R., Josefsen, M. H., Löfström, C., Christensen, L. S., Wieczorek, K., Osek, J., Hoorfar, J.
Pages: 325-330
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: Journal of Food Protection
Volume: 77
Issue number: 2
ISSN (Print): 0362-028x
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.63 SJR 0.761 SNIP 0.823
Web of Science (2017): Impact factor 1.51
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.68 SJR 0.769 SNIP 0.811
Web of Science (2016): Impact factor 1.417
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.03 SJR 0.954 SNIP 1.024
Web of Science (2015): Impact factor 1.609
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 1.94 SJR 0.914 SNIP 0.953
Web of Science (2014): Impact factor 1.849
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 2.11 SJR 1.101 SNIP 1.09
Web of Science (2013): Impact factor 1.797
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 2.03 SJR 1.083 SNIP 0.981