



Detection of *Campylobacter*-free broiler herds ante mortem

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Aim of the study

Human *Campylobacteriosis* is a major public health concern in Europe, including Switzerland with 9 million estimated cases per year. As known from other countries *Campylobacter* (*C.*) *jejuni* and *C. coli* from poultry is the main source of human cases in Switzerland as well. Contamination of broiler carcasses occurs at the slaughterhouse by the incoming flock and remains on the meat up to the retail level and thus reaches the consumer. Therefore, identification of *Campylobacter*-positive broiler herds before slaughter is essential for taking measures to avoid carry-over of pathogens via the slaughter process into the food chain

Material and methods

A quantitative real-time PCR (qPCR) that allows simultaneous detection, quantification and differentiation of *C. jejuni* and *C. coli* was recently developed at our institute by Schnider et al. 2010. We optimized and adapted this qPCR to serve an easy, sensitive and quantitative method for *Campylobacter* detection in poultry flocks *ante mortem* by analysis of boot socks. Four different farms were visited repeatedly and boot sock samples were collected and analyzed in parallel to faecal samples and caecal contents as gold standard.

Results and significance

Reliable quantification of the *Campylobacter* load is of major importance for decision makers. The achieved correlation between Ct mean values and CFU/g sample (correlation coefficient= 0.8732, $p < 0.0001$) in all samples is remarkable, whether they were high or low containing *Campylobacter* samples.

On a farm level it has been shown that in comparison to caecal content as the gold standard, boot socks analyzed by this qPCR is an efficient way to detect and quantify *Campylobacter* in broiler herds a few days before slaughter.

Thereby a reliable, sensitive and standardized classification system into negative, low, moderate or high *Campylobacter* colonization of broiler herds *ante mortem* by using boot sock samples is available. Application of this method for systematic monitoring of broiler herds at first instance could give new insights into the quantitative *Campylobacter* load and possible differences in broiler husbandries.

Publications, posters and presentations

Haas, K.; Overesch, G.; Kuhnert, P. (2016) Detection of *Campylobacter jejuni* and *Campylobacter coli* in broilers *ante mortem* by quantitative real-time polymerase chain reaction, 16. Fachtagung f. Fleisch- und Geflügelfleischhygiene, Berlin (Deutschland), 01.-03.03.2016 (presentation)

Haas, K.; Overesch, G.; Kuhnert, P. (2016) Detection of *Campylobacter jejuni* and *Campylobacter coli* in broilers *ante mortem* by quantitative real-time polymerase chain reaction, 74.th Annual Assembly SSM, Bern (Schweiz), 13.-15.06.2016 (poster)

Haas, K. A quantitative real-time PCR approach for assessment of *Campylobacter* colonization in broiler herds *ante mortem*, Dissertation, Vetsuisse Fakultät Universität Bern

Haas, K.; Overesch, G.; Kuhnert, P. (2016) Nachweis der *Campylobacter*-Freiheit von Mastpouletherden *ante mortem*, Informationsveranstaltung des Bundesamtes für Lebensmittelsicherheit und Veterinärwesen (BLV), 28.06.2016 (presentation)

Haas, K.; Overesch, G.; Kuhnert, P. A quantitative real-time PCR approach for assessing of *Campylobacter* colonization in broiler herds *ante mortem*, under review in Journal of Food Protection

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