Surveillance of Campylobacter ssp. in broiler flocks by PCR on boot sock samples - DTU Orbit (27/09/2019)

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Detection of Campylobacter in feces is traditionally based on microbiological culture from caecum or cloacal swabs at the abattoir, but due to long time for analysis no intervention can be taken. By knowing the status of the flock before it reaches the abattoir, logistic slaughter becomes possible, i.e. to allocate negative flocks before positive to slaughter, as well as channeling negative flocks to the fresh market and use positive flocks for freeze or marinated products. To know the status of the broiler flock before arriving at the abattoir, a Campylobacter surveillance system based on sampling with one pair of boot sock was established. Samples were collected by the farmer app. 10 days before slaughter and send to laboratory for analysis. To detect Campylobacter ssp. in these fecal samples, a PCR based method was established and validated. The assay was developed as a genus specific multiplex PCR with primers targeting 16S rDNA in Campylobacter and primers targeting Yersinia ruckeri. DNA from the later was added to all samples and served as internal control during DNA purification and PCR. Sensitivity of the assay was 100-300 CFU/ml when negative samples were spiked with Campylobacter before DNA purification, corresponding to 103 / gram feces. To evaluate the capability of the sock sample to predict the flock status at slaughter the same flocks were also tested at slaughter by pooling 10 cloacal swabs and analysed using the same PCR method. The accordance of the two sampling method were app 70%. We found some variation in the predictability between farms and how close to slaughter sampling was done. With the combination of a sensitive PCR method and boot socks it is possible to detect Campylobacter in broilers, however due to the colonisation dynamics in the flock, the predictive value increases when approaching the day of slaughter.

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