



One Health Diagnostics™

Detection of *Campylobacter* from Boot Swabs Using Hygiena's BAX® System Real-Time PCR Assay

Julie Weller, Christine Chapman, Deja Latney, David Luedeke, and Andrew Mason
Hygiena®, 2 Boulden Circle, New Castle, DE 19720

BAX® System Q7

BAX® System X5

foodproof®

microproof®

INTRODUCTION:

Prevalence studies have demonstrated a strong association between pre- and post-harvest loads of *Campylobacter* in poultry (1). Regulatory testing of *Campylobacter* in poultry has largely focused on processing plants; however, if an integrated approach was used to analyze both on the farm and processing samples, strategies to control and reduce *Campylobacter* can be improved.

PURPOSE:

The purpose of this study was to evaluate the BAX® System Real-Time PCR assay for the detection of *Campylobacter* species from boot swabs compared to culture.

REGISTERED TRADEMARKS:

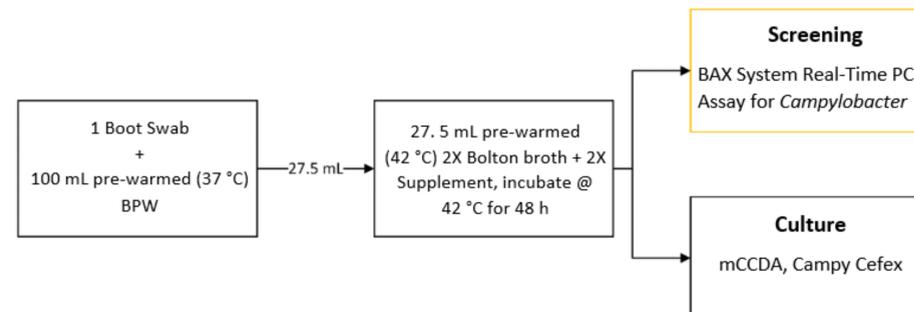
BAX® is a registered trademark of Hygiena for its line of equipment, reagents and software used to analyze samples for microbial contamination.

METHODS:

Eighteen boot swabs were provided by an industry partner and evaluated for naturally occurring *Campylobacter*. Samples were enriched within 48 hours of collection using 100 mL of pre-warmed (37 °C) BPW. After briefly homogenizing, 27.5 mL was transferred to a 50 mL conical tube and 27.5 mL of pre-warmed (42 °C) double-strength Bolton broth with 2X supplement was added. Tubes were tightly capped and incubated aerobically at 42 °C for 48 hours.

Samples were analyzed by real-time PCR and confirmed by culture regardless of presumptive result using modified Charcoal Cefoperazone Deoxycholate Agar (mCCDA) and Campy Cefex Agar.

FLOW CHART:



RESULTS:

Campylobacter was detected by real-time PCR in 9/18 samples at 48 hours. All PCR results matched culture with 100% agreement. See table 1.

Statistical significance using the probability of detection (POD) determined there were no differences between PCR and culture.

Table 1. BAX System Method Paired Study Results for Boot Swabs

MPN/Test Portion	0.69
N	18
FN	0
FP	0
Method Agreement	18
Σdi	0
dPOD	0
sd	0
SE dPOD	0
95% CI	-0.15, 0.15

Table Legend:

MPN/Test Portion = Most Probable Number is based on the POD of BAX System fractional test portions
N = Number of test portions
FN = Number of false negatives
FP = Number of false positives
Σdi = The difference of the replicates tested by the BAX method and reference culture method
dPOD = Difference between the mean of differences
sd = The standard deviation of the differences
SE dPOD = The standard error of the dPOD
95% CI = If the confidence interval of dPOD does not contain zero, then the difference is statistically significant at the 5% level

SIGNIFICANCE:

Overall, these results demonstrate the ability of the BAX System to accurately detect *Campylobacter* from boot swabs providing the industry with a way to assess prevalence and implement effective farm management practices.



REFERENCES:

1. Berghaus, R. D., Thayer, S. G., Law, B. F., Mild, R. M., Hofacre, C. L., Singer, R. S. 2013. Enumeration of *Salmonella* and *Campylobacter* spp. in Environmental Farm Samples and Processing Plant Carcass Rinses from Commercial Broiler Chicken Flocks. *Appl Environ Microbiol.* 79(13): 4106-4114.

