

# Quantification of *Campylobacter jejuni* in Poultry Processing Rinses Utilizing Shortened Enrichment Times and RT-PCR

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## Introduction:

Currently, prevalence-based data is used to determine process control during animal harvest; however, this does not provide information on the level and subsequent risk of *Campylobacter* contamination. Therefore, it is imperative to be able to detect and quantify *Campylobacter* contamination throughout the harvest process.

## Purpose:

The objective was to develop and optimize a rapid quantification method for *Campylobacter jejuni* (CampyQuant™) in post-chill poultry rinsates using the linear fit equation generated from the BAX® System Cycle Threshold (CT) values to estimate initial concentrations.



## Methods:

Bulk post-chill poultry rinsates (N=13; 30 mL) were aliquoted to 24 oz. Whirl-Pak bags inoculated with 1 to 4 Log<sub>10</sub> CFU/mL of *C. jejuni* (n=3 samples/inoculation level) with one uninoculated sample. After inoculation, 30 mL of pre-warmed (42°C) 2X blood-free Bolton's Broth with 2X supplement was added to each sample and incubated at 42°C for 18h then tested in quintuple with the BAX® Q7 RT-PCR System. These results were then compared to estimate *C. jejuni* concentration in relation to the initial inoculation levels.

## Results:

A linear fit equation was generated using the BAX® Q7 System to estimate *C. jejuni* pre-enrichment concentrations in poultry rinsates. The equation had statical parameters yielding an R<sup>2</sup> of 0.95 and Log<sub>10</sub> RMSE of 0.24. The Mann-U test revealed no difference between observed *C. jejuni* Log<sub>10</sub> concentrations and estimated *C. jejuni* Log<sub>10</sub> concentrations.

## Significance:

BAX® System CampyQuant™ provides an estimations of *Campylobacter* pre-enrichment Log<sub>10</sub> CFU/mL with an enumerable range from 1.00 to 4.00 Log<sub>10</sub> CFU/mL. The study suggests that the BAX® Q7 RT-PCR system can provide the food industry with a rapid, accurate, and efficient alternative method for *C. jejuni* enumeration to ensure that process controls are working adequately to provide safe products to consumers.

CampyQuant™ – Rinsates – 18h – 1.00 to 4.00 Log<sub>10</sub> CFU/mL

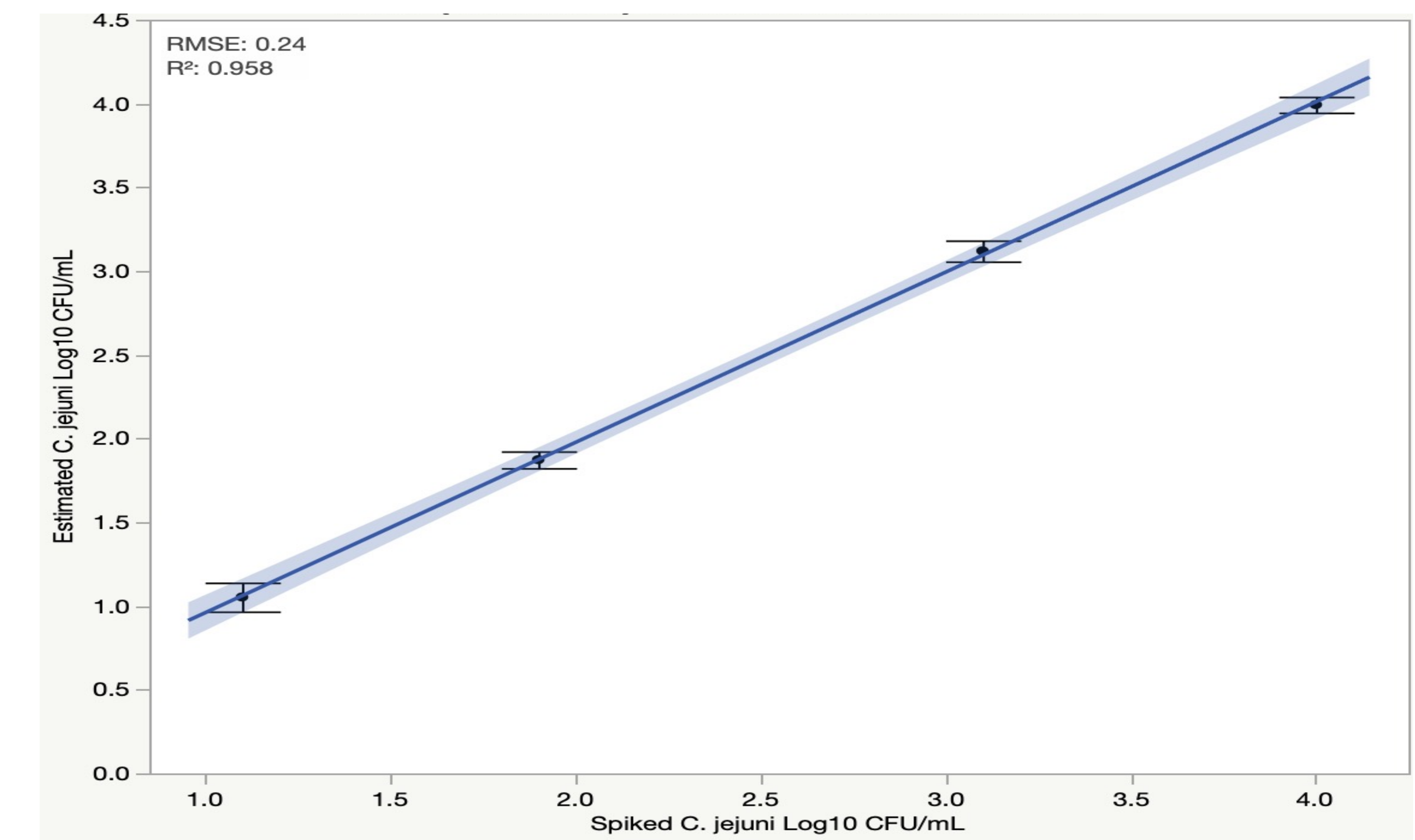


Figure 1. CampyQuant™ estimation of inoculated poultry rinses

Table 1. Average *C. jejuni* levels for pre-enrichment and estimated concentrations using CampyQuant™ equation.

Inoculated Log <sub>10</sub> CFU/mL	Estimated Log <sub>10</sub> CFU/mL	CT Values
0.99	1.06	37.4
1.99	1.87	35.4
2.99	3.12	32.4
3.99	3.98	30.3