

Comparative Evaluation of BAX® System SalQuant™ and Roka Atlas® System A Paired Sample Study

Objectives

This independent laboratory study evaluated comparative methods to determine the enumerable range for *Salmonella* inoculated ground turkey samples. The purpose was to evaluate enumerable range and standard error between methods using ground turkey inoculated samples.

Methodology

Ground turkey samples (325 g) were inoculated with *Salmonella* species in triplicate. Samples (N=21) were prepared at 6 levels of inoculant: 1.0 – 6.0 Log CFU/sample in 1.0 Log increments. The ground turkey samples were not pre-screened for naturally occurring *Salmonella* prior to inoculation; therefore, low levels of *Salmonella* may have been present at study outset. Inoculated samples were combined at a 1:1 matrix to media ratio with 325 mL Buffered Peptone Water (BPW) to create a primary homogenate. A sub-aliquot of 30 mL of the primary homogenate was retained for BAX System SalQuant testing with the remainder of the homogenate reserved for Roka Atlas quantification. Per manufacturer instruction, the Roka Atlas sample homogenate was incubated at 42 °C for 4 hours while the BAX System SalQuant 30 mL homogenate was combined with 30 mL BAX MP with Quant™ Solution and incubated at 42 °C for 8 hours. The incubation step was then followed by PCR analysis. Following PCR, both systems had results quantified using (Log CFU/sample) according to proprietary calculations.

Results

SalQuant results demonstrated consistently accurate quantification across the enumerable range (1.0 - 6.0 Log CFU/sample) with a high level of correlation ($R^2 = 0.9757$) between quantified estimates and prepared inoculation levels. The Roka Atlas demonstrated accuracy at 1.0 and 2.0 Log CFU/sample but reached saturation thereafter, leading to significant underestimation at 3.0-6.0 Log CFU/sample.

Figure 1. BAX System SalQuant and Roka Atlas System compared to known inoculation levels in ground turkey product

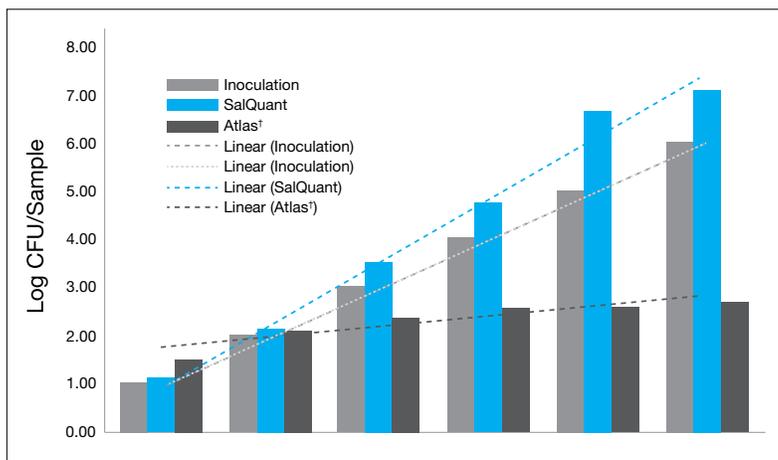
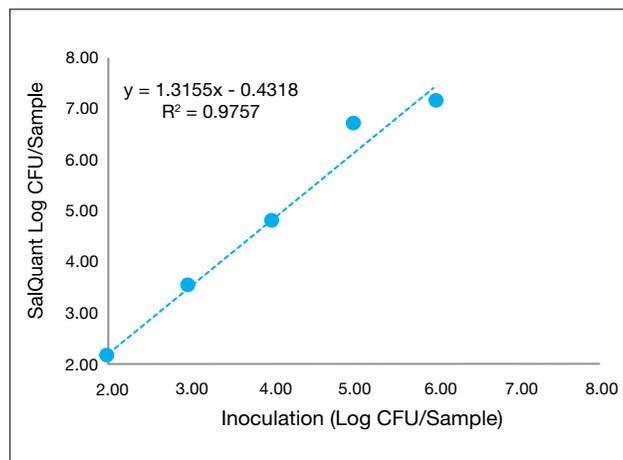


Figure 2. Correlation between BAX System SalQuant and known inoculation levels in ground turkey product



Conclusion

This independent laboratory study demonstrates BAX System SalQuant quantification accuracy through a wide enumerable range, whereas the Roka Atlas system reaches saturation at 2.0 Log CFU/sample resulting in inaccurate quantification at higher levels. These findings indicate that the BAX System is a significantly more reliable method for accurate quantification, trend analyses, and decision making.