

### Accuracy of Molecular Screening Methods for the Detection of *Salmonella enterica* in Production Poultry Rinse Samples

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**Introduction:** Accurate detection methods are essential in the poultry industry to detect *Salmonella enterica* in whole carcass rinse samples as a means to monitor prevalence and verify process controls. Variability in sample preparation and detection method may influence accuracy of results.

**Purpose:** The purpose of these studies was to comparatively evaluate the accuracy of the Atlas<sup>®</sup> Salmonella SEN Detection Assay and the BAX<sup>®</sup> *Salmonella* Assay for the detection of *Salmonella enterica* in carcass rinse samples from multiple processors.

**Methods:** Three poultry processors collected routine rinse samples according to USDA FSIS MLG 4.07 by rinsing each carcass with ~400 mL of Buffered Peptone Water (BPW). A 30 ± 0.6 mL post-rinse aliquot was combined with 30 ± 0.6 mL of sterile BPW and enriched for 20 to 24 h at 35 ± 2°C. Each sample was analyzed by Atlas Salmonella SEN Detection Assay, BAX Assay, and culture methods. For the Atlas Salmonella SEN Detection Assay method, 400 µL of enrichment was transferred into Roka Sample Transfer Tubes. For the BAX method, 1.5 to 2 mL of enrichment was transferred into sterile cryovials and held at 4°C. Samples were processed at Roka Bioscience on the Atlas System according to the approved Atlas System method and by culture according to MLG 4.07. Processors sampled paired enrichments for BAX analysis according to routine procedure. BAX results were disclosed after Atlas Salmonella SEN Detection Assay method and culture results were reported.

**Results:** The Atlas Salmonella SEN Detection Assay method reported one false-negative, whereas the BAX method reported nine false-negative and one false-positive results compared to culture. Percent agreement between culture and Atlas Salmonella SEN Detection Assay and BAX *Salmonella* Assays were 99.31% and 93.06%, respectively. Processors A, B, and C contributed 25.69%, 27.78%, and 46.53% of 144 samples. All discrepant results were attributed to the 25.69% of samples prepared by processor A.

**Significance:** Screening method performance and accuracy may be adversely impacted by the proficiency or complexity of operator handling requirements.

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