Enrichment or maceration influence post harvest isolation of Salmonella from mesenteric lymph nodes

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Abstract

Two enhanced microbiological methods were evaluated for recovery of Salmonella species from samples collected at slaughter, with a focus on ileocecal lymph nodes. Samples from one hundred and sixty two animals (vaccinated = 79, non-vaccinated = 83) were collected along with 25 pooled environmental samples (pen, truck, lairage). Animal sample types included ileocecal lymph nodes, peritoneal sponges and shoulder sponges. Initially, swabs from all samples were used to directly inoculate hektoen enteric (HE) plates. Additionally all samples were set up for enrichment in Tetrathionate (Tet) only (Method 1). Two additional methods were utilized on samples previously frozen to attempt to isolate Salmonella species after the initial swab-only culture process yielded all negative results. Lymph nodes were thawed in equal numbers from each group on several occasions, homogenized in Phosphate Buffered Saline (PBS) and enriched using one of the two additional methods:

- Tet and Rappaport-Vassiliadis (RV) (Method 2), or
- Buffered Peptone Water (BPW) + novobiocin and RV (Method 3).

Enriched samples were plated onto brilliant green and XLT4 differential media. Up to three suspect colonies were restreaked onto HE and tested with several biochemical reactions (Kligler's, urease, indole, lysine, oxidase). Positive Salmonella isolates were confirmed by Salmonella serogrouping and serotyping. Salmonella was not isolated from peritoneal and shoulder sponges or from direct lymph node swabs. Salmonella Anatum and S. Muenchen were isolated from two environmental pen samples. Salmonella serogroup C1 was isolated from homogenized lymph nodes using both enrichment methods. Five samples were positive with the BPW + novobiocin and RV method, and 3 samples were positive using the Tet and RV method. All 5 Salmonella positive samples were from animals that were not previously vaccinated (p-value = 0.03, Fisher's Exact Test). Maceration of lymph nodes and use of sample specific culture methods may influence results of food safety investigations.