Salmonella Persistence within the Peripheral Lymph Nodes of Cattle following Experimental Inoculation

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Abstract

Utilizing a transdermal method of inoculation developed in our laboratory, the duration of infection of Salmonella in the peripheral lymph nodes of steers was examined. Thirty-six Holstein steers (mean body weight of 137 kg) were inoculated with Salmonella Montevideo (day 0) on each lower leg and both sides of the back and abdomen. Calves were euthanized beginning at 6 h and subsequently on each of days 1, 2, 4, 7, 9, 11, 14, and 21 post-inoculation (four animals each time). The subiliac, popliteal, and superficial cervical (prescapular) lymph nodes were collected and cultured (quantitatively and qualitatively) for the challenge strain of Salmonella. The challenge strain was detected via direct culture within the lymph nodes at 6 h post-inoculation and on each subsequent necropsy date. Salmonella levels in lymph node were 0.8 to 1.8 log CFU/g. Lymph nodes were generally positive after enrichment culture throughout the experiment. Salmonella elimination appeared to begin approximately 14 days post-inoculation. However, elimination was not completed by day 21; therefore, a second experiment was conducted identical to the first except that the time from inoculation to necropsy was extended. Salmonella was recovered via direct culture on each of the necropsy days, and results in general were similar to those of experiment I, except that on days 20, 24, and 28 isolates from serogroups C2 and E1 were identified in addition to the inoculation strain C1 in multiple animals. The data from both experiments indicate that after a single inoculation event, Salmonella would be completely cleared by approximately 28 days. Further research with expanded times between inoculation and necropsy is required for verification.

Journal of Food Protection®, Number 6, June 2016, pp. 896-1055, pp. 1032-1035(4)

*This peer-reviewed journal article was based in part on the following checkoff-funded Project Summary: Salmonella in the Peripheral Lymph Nodes of Cattle: Host, Agent and Environmental Factors