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Salmonella in Peripheral Lymph Nodes of Healthy Cattle at Slaughter

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Abstract

To more fully characterize the burden of *Salmonella enterica* in bovine peripheral lymph nodes (PLN), PLN (*n* = 5,450) were collected from healthy cattle at slaughter in 12 commercial abattoirs that slaughtered feedlot-fattened (FF) cattle exclusively (*n* = 7), cattle removed (or culled) from breeding herds (*n* = 3), or both FF and cull cattle (*n* = 2). Qualitative and quantitative methods were used to estimate prevalence and concentration of *Salmonella* in PLN. Isolates were subjected to a variety of phenotypic, serological, and molecular assays. Overall, *Salmonella* prevalence in PLN from FF and cull cattle was 7.1 and 1.8%. However, burden varied by season in that observed prevalence in PLN collected in cooler or warmer seasons was 2.4 and 8.2%, respectively. Prevalence in PLN from cull cattle in the southwest region of the US was 2.1 and 1.1% for cool and warm seasons, respectively; however, prevalence in FF PLN was far greater in that it was 6.5 and 31.1%, respectively. *Salmonella* was recovered from 289 (5.6%) PLN and 2.9% (*n* = 160) of all PLN tested had quantifiable concentrations that varied from 1.6 to 4.9 $\log_{10}$ colony forming units/PLN. The most common serotypes isolated from PLN were Montevideo (26.9%), Lille (14.9%), Cerro (13.0%), Anatum (12.8%), and Dublin (6.9%). In all, 376 unique isolates were collected from the 289 *Salmonella*-positive PLN. Antimicrobial susceptibility testing revealed the majority (80.6%) of these isolates were pansusceptible; however, 10.7% of isolates were found to be resistant to two or more antimicrobial classes. We were able to document an observed increased in prevalence of *Salmonella* in PLN during the warmer season, particularly in FF cattle from the southwest region of the US. The mechanisms underlying the observed association between season, region, and production source have yet to be elucidated. Nevertheless, these findings increase our understanding of the sources of contamination of beef products and shed light on transmission dynamics that may be useful in targeting these sources.

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