

Multilocus Sequence Typing for Characterization of Nontyphoidal *Salmonella* Strains in Swine Isolated on Farm and at Slaughter

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Nontyphoidal *Salmonella* are among the leading causes of food-borne disease in the United States. The aim of this study was to compare nontyphoidal *Salmonella* spatially and temporally in pig production and design a source tracking tool for *Salmonella* shedding on farm and contamination at slaughter. In this study, a total of 265 nontyphoidal *Salmonella* spp. were isolated from 20 Iowa herds which were enrolled by cooperative agreement and visited from September 2006 to February 2009. Eleven of the 20 herds had multiple visits. At each farm visit, 30 individual fecal samples were collected. At slaughter, 30 mesenteric lymph nodes were collected. Samples were tested for *Salmonella* spp. using conventional microbiological methods and serotyped at the National Veterinary Services Laboratory (NVSL). All the 265 *Salmonella* isolates were further characterized by multilocus sequence typing (MLST). The MLST scheme used was based on amplification of the internal fragments of seven house-keeping genes using polymerase chain reaction (PCR). The seven genes selected included *thrA* (aspartokinase+homoserine dehydrogenase), *purE* (phosphoribosylaminoimidazole carboxylase), *sucA* (alpha ketoglutarate dehydrogenase), *hisD* (histidinol dehydrogenase), *aroC* (chorismate synthase), *hemD* (uroporphyrinogen III cosynthase), and *dnaN* (DNA polymerase III beta subunit). The sequence data of PCR products were imported into DNASTar seqman software for alignment and trimming. The internet-based MLST database <http://www.mlst.net/> was used for analysis of the *Salmonella enterica* sequence types. Sequence data obtained for each gene was input into the database and a sequence type generated for each strain. Analysis was carried out to compare the similarity of the sequence types of isolates collected from different farms and within the same farm over time, and the similarity between isolates collected on farm and at slaughter.