

FOOD SAFETY & REGULATORY MEASURES

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Isolation and molecular characterization of *Salmonella enterica* strains from poultry in Trinidad

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Statement of the Problem: *Salmonella* is one of the leading causes of foodborne illnesses worldwide impacting on public health in Trinidad. *Salmonella* infections are usually associated with the consumption of contaminated food products and infections in humans generally lead to acute gastroenteritis that may become complicated depending on the strain, serotype and host-specific factors. Changes in agricultural practices and antimicrobial misuse in food producing animals may be accelerating factors for the evolution of more virulent and multidrug-resistant strains. The objective of this study was to identify types of antimicrobial resistance and their associated genes, virulence-associated genes, and to analyze the pulsed-field gel electrophoresis (PFGE) patterns of *Salmonella enterica* serotypes isolated from poultry sale outlets in Trinidad.

Methodology: A total of 1503 caecal samples were collected from different 'pluck shops' in Trinidad and confirmed to be *Salmonella* using standard techniques. PCR-based assays were performed on 88 *Salmonella* isolates to detect 13 virulence-associated genes. Isolates were further assessed for their susceptibility to five antimicrobial agents using tube dilution method to determine the minimum inhibitory concentration (MIC). Resistant isolates were subsequently examined for the presence of 11 resistance genes. PFGE was used, after DNA digestion by XbaI, to investigate the genetic relatedness among *Salmonella enterica* isolates recovered from poultry in Trinidad.

Findings: 11 (84.6%) of the 13 virulence genes investigated were detected and their frequency ranged from 1.3% (sefC) to 84.2% (mgtB). Only 4 (36.4%) of the 11 resistance genes tested for were detected and their frequency ranged from 1.3% (ampicillin) to 63.2% (quinolones). Of the five antimicrobial agents tested for MIC, the range was 7.5 µg/ml (gentamicin), 10-20 µg/ml (streptomycin), 1.25-10 µg/ml (ceftriaxone), 20-80 µg/ml (kanamycin) and 20-40 µg/ml (ampicillin). The PFGE patterns of *Salmonella* spp. of the same serotypes from chickens and ducks sampled from various outlets were distinctly different.

Biography

Nitu Kumar completed her Bachelor's degree and Master's degree in Veterinary Medicine at College of Veterinary Sciences and Animal Husbandry, Chhattisgarh-Indira Gandhi Agricultural University, Raipur, India. She is currently pursuing her PhD in Veterinary Microbiology in Department of Basic Veterinary Sciences at School of Veterinary Medicine, Faculty of Medical Sciences, University of West Indies, St. Augustine Campus, Trinidad and Tobago. Her PhD thesis is entitled "Molecular analysis of *Salmonella enterica* strains carried by poultry entering the food chain in Trinidad".

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