

## ABSTRACT

Prevalence of Methicillin Resistant *Staphylococcus aureus* (MRSA) in pigs, broilers and workers at slaughter houses in Trinidad and Tobago and their resistance to other antimicrobial agents

Alva Marie Stewart-Johnson

Methicillin resistant *Staphylococcus aureus* (MRSA), a major cause of zoonotic infections, has emerged globally in livestock. People with occupational contact with food producing animals are at high risk of colonization. The aim of this study was to determine the prevalence of MRSA in pigs, broilers and workers at slaughter houses throughout Trinidad and Tobago and their resistance to other antimicrobial agents.

Nasal and skin behind the ear swabs from pigs, choanal, cloacal and pharyngeal swabs from broilers and nasal swabs from humans were enriched in Mueller Hinton broth with 6.5% sodium chloride followed by secondary enrichment in phenol red mannitol broth with 75 mg/L aztreonam and 5 mg/L ceftizoxime. Enriched samples were then plated on both CHROMagar MRSA and Brilliance MRSA. All incubation was at 37°C for 18 to 24 h. Suspect MRSA isolates were identified as *Staphylococcus aureus* (SA) using standard biochemical procedures, then confirmed as MRSA by using the penicillin-binding protein (PBP2a) test kit and polymerase chain reaction (PCR) to detect the *MecA* gene. Resistance of the *S. aureus* and MRSA isolates to 16 antimicrobial agents was determined using the disc diffusion method.

Of the 929 pigs, 287 broilers and 91 humans sampled, MRSA were isolated at a frequency of 0.9% (8/929), 0.7% (2/287) and 1.1% (1/91) respectively. All *S. aureus* isolates exhibited resistance to one or more of the 16 antimicrobial agents and the highest frequency of resistance was observed in pigs. All MRSA isolates from pigs and broilers were resistant to ceftazidime, penicillin and ampicillin.

The study demonstrated that pigs, broilers and workers at slaughter houses in Trinidad and Tobago harbour MRSA and multidrug resistant *S. aureus*. This is of public health significance as occupational exposure of humans can lead to an increased risk of infection and therapeutic failure.

Keywords: antimicrobial resistance; broilers; Methicillin Resistant *Staphylococcus aureus* (MRSA); pigs; slaughter house workers; West Indies