

Prevalence and AntibioGram of *Salmonella* Isolates from Poultry in Nsukka, Enugu State

by

Olovo, Chinasa Valerie

ABSTRACT

Poultry and poultry products though major contributors to the human food chain have been widely accepted as important reservoirs of such food borne pathogens as *Salmonella* and have been recognized as one of the most important sources of *Salmonella* infections in humans. This study aimed to determine the prevalence of *Salmonella* in commercial and free range poultry in Nsukka, the antibiogram of the isolates and their genetic analysis. A total of 409 samples comprising 309 samples from commercial poultry (104 poultry droppings, 95 poultry feeds, 92 egg shell swabs and 18 palm swabs from poultry farm handlers) and 100 free range chickens sampled by cloacal swabbing were collected. Out of the 42 isolates obtained from commercial poultry, 14 were urease negative. Seven of the 14 isolates were biochemically identified as *Salmonella* species. For the free range chickens, 21 isolates were obtained with 9 as urease negatives. Three out of these 9 isolates were biochemically identified as *Salmonella*. The antibiotic sensitivity pattern of the *Salmonella* isolates showed that out of the 8 antibiotics used, the isolates from commercial poultry showed a 100% resistance to more than half (75%) of these antibiotics including Gentamycin, Amoxicillin, Augmentin, Cotrimoxazole, Tetracycline and Nalidixic acid. High sensitivity to the antibiotic, Ofloxacin (85.71%) was observed while that of Nitrofurantoin (42.86%) was moderate. The isolates from free range chickens were 100% susceptible to Nitrofurantoin, Gentamycin and Ofloxacin. They also showed a 66.67% sensitivity to Cotrimoxazole, Nalidixic Acid and Tetracycline. However, one of the isolates was resistant to the later three (3) antibiotics. Generally, the antimicrobial susceptibility pattern revealed best spectrum of activity with Ofloxacin for both groups of isolates. The difference in resistance between the isolates from commercial poultry and those from free range birds to all the antibiotics tested was statistically significant at $P < 0.05$. The Multiple Antibiotic Resistance (MAR) index was calculated and ranged from 0.75 – 0.88 for commercial poultry isolates and 0 – 0.38 for isolates from free range birds. Minimum Inhibitory Concentration (MIC) of the isolates from commercial poultry showed that 42.86% of the isolates were susceptible to Ofloxacin (≤ 0.12 $\mu\text{g/ml}$) and the isolates were 100% resistant to both Tetracycline and Gentamycin (32 – 128 $\mu\text{g/ml}$). For the Minimum Bactericidal Concentration (MBC), ranges of 0.5 – 16 $\mu\text{g/ml}$ was observed for Ofloxacin while Tetracycline and Gentamycin were 64 - >128 $\mu\text{g/ml}$. The MIC values obtained for isolates from free range birds lie within the sensitive region of the equivalent MIC breakpoint for those three antibiotics except for one that was resistant to Tetracycline at an MIC value of 16 $\mu\text{g/ml}$. MBC values obtained ranged from 16 – 128 $\mu\text{g/ml}$, 1 – 4 $\mu\text{g/ml}$ and 2 – 16 $\mu\text{g/ml}$ for Tetracycline, Ofloxacin and Gentamycin respectively. While the prevalence (determined after biochemical characterization) of *Salmonella* from commercial poultry was 2.27%, that from free range birds was 3%. The findings from this study revealed that poultry in Nsukka harbor *Salmonella*. It also showed that the isolates from commercial poultry presented a higher resistance pattern to antibiotics tested compared to those from free range birds, possibly, as a result of the indiscriminate use of antibiotics in rearing commercial chickens.