INDIGENOUS CHICKENS AS SENTINELS FOR ANTIMICROBIAL RESISTANCE TO *ESCHERICHIA COLI* IN SRI LANKA

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Usage of metaphylactic and prophylactic antimicrobial therapy in intensive poultry management has led to development of antimicrobial resistance in *E. coli.* Progressive acquisition of resistance by pathogenic *E. coli* is documented world wide neglecting the development of resistance by non pathogenic commensal flora which serves as a reservoir of resistant genes surviving through selection by numerous antimicrobial regimes. Use of "sentinels" isolated from healthy animal in antimicrobial resistance surveillance is more appropriate in this context.

The objective of the present study was to focus on the appropriateness and validity of employing indigenous free range village chicken of Sri Lanka as sentinels in monitoring antimicrobial resistance in *E. coli* present in commercial chicken.

A total of 75 *E. coli* isolates comprising of 25 from 3 categories of birds ; namely, cloacal isolates of apparently healthy village chicken, cloacal isolates of apparently healthy commercial chicken and heart blood and bone marrow isolates of commercial chicken affected with colisepticaemia were included in this study. Susceptibility of isolates to ampicillin (10 µg), tetracycline (30 µg), enrofloxacin (5 µg), gentamicin (10 µg), trimethoprim sulpha (25 µg) and chloramphenicol (30 µg) was tested by the standard disk diffusion method. Selection of the strength of the disks and interpretation of zone diameter was done as recommended by National Committee for Clinical Laboratory Standards.

Cloacal *E. coli* isolates of commercial layers showed high levels of antimicrobial resistance for all antimicrobials tested; resistance to tetracycline (84 %), ampicillin (72 %) and trimethoprim sulpha (56 %) was the most significant. This indicates the possibility of selecting resistant population as a result of frequent exposure to antimicrobials used as therapeutics, prophylaxis or growth promoters. Development of antimicrobial resistance in commensal should be considered serious as the resistance gene can be exchanged between non pathogens and pathogens.

In general resistance was observed more frequently for tetracycline (58.6 %) ampicillin (56 %) and trimethoprim sulpha (29.3 %). Similarly free range village chicken showed antimicrobial resistance against ampicillin (32 %), tetracycline (24 %), trimethoprim sulpha (8 %) enrofloxacin (4 %) even though they had not been treated with antimicrobial agents. The resistance pattern shown by the *E. coli* of indigenous chicken while refelecting the degree of contamination of environment with antimicrobial resistant bacteria, represents the chronological order in which the common antimicrobials had been introduced for metaphylactic or prophylactic use by the industry. The commensal organism isolated from the cloacae of indigenous, free range village chicken might be the best indicator to be used in antimicrobial resistance surveillances since they reflect the actual degree of resistance.

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