

The Lebanese LSIDCM

Multi drug resistant organisms in chicken farms and their surrounding environment

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Abstract

Introduction: Chicken farms are nowadays regarded as reservoirs of multi-drug resistance. Studies have shown that resistant organisms can be readily transferred from animals to their surrounding ecosystem. The aim of this study is to determine if any link exists between the prevalence of multi-drug resistance in chicken farms and their surrounding environment.

Methodology: In May-2017, 200 fecal swabs were collected from a chicken farm in Lebanon. Fecal samples from six workers and 41 environmental samples surrounding the farm were also taken. Three different selective media were used for the screening of multi-drug resistant and colistin resistant organisms. MALDI-TOF was used for bacterial identification. Double disk synergy test and ampC disk test were used for the screening of ESBL and ampC producers respectively. Furthermore, RT-PCR was performed for the detection of beta lactamase and *mcr* colistin resistance genes.

Results: In chicken, 315 *E.coli* strains were isolated: 53% were ESBL/ampC co-producers, 27% ampC and 42.5% *mcr-1* positive isolates. Furthermore, 29 *K.pneumoniae* harboring *mcr-1* were also isolated. In workers, ESBL producing *E.coli* were detected in 4/6 workers whereas *mcr-1* carrying *E.coli* were detected in all workers. In the environment, ESBLs and *mcr-1* positives were detected in 95% and 7% of the samples respectively. RT-PCR revealed the detection of *B*-lactamase genes in all samples at different rates.

Conclusions: This study showed a relatively high prevalence of ESBL and *mcr-1* positive isolates in chicken and their environment. MLST is in progress to determine if any link exists between multi-drug resistant organisms in these ecosystems investigated.

Key words: *mcr-1*; chicken; ESBL.

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