

The Lebanese LSIDCM

Epidemiology of multi drug resistant organisms in pigs in Lebanon

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Abstract

Introduction: Livestock are nowadays considered potent reservoirs of multi drug resistance. Enteric resistant organisms in animals can be transmitted to humans and be causative agents of infections with therapeutic challenges. The aim of this study is to determine the prevalence of multi drug resistant organisms in Lebanese swine farms.

Methodology: In May 2017, 94 fecal samples were collected from pigs in the south of Lebanon. Three media supplemented with cefotaxime, ertapenem, colistin were used for the screening of ESBL, carbapenemase producers and colistin resistance respectively. MALDI-TOF was used for bacterial identification. Double disk synergy test, ampC disk test and carpa np test were used for the detection of ESBL, ampC and carbapenemase producers respectively. RT-PCR was performed for the screening of beta lactamase and *mcr* colistin resistance genes.

Results: 77/94 fecal samples, showed growth on the medium supplemented with cefotaxime. In total 111 strains were isolated: 94% were identified as *E.coli*, 6% other organisms such as *E. fergusonii* and *K. pneumoniae*. Phenotypic tests showed that 72% of isolated strains were ESBL producers while 28% were ampC beta lactamase producers. RT-PCR analysis revealed that bla_{CTX-M} was present in 45% of isolated strains, bla_{TEM} in 26% and bla_{SHV} in 10%. In parallel, 22 colistin resistant *E.coli* strains and 1 *K.pneumoniae* carrying *mcr-1* were isolated.

Conclusions: This study showed the importance of swine farms as reservoirs of resistance in Lebanon. The emergence of colistin resistance in pigs is worrying. A re-evaluation of antibiotic consumption in pigs is therefore warranted.

Key words: pigs; ESBL; *Escherichia coli*; *mcr-1*.

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