

VPH-PP-05

TITLE

ANTIMICROBIAL RESISTANCE IN COMMENSAL E. COLI ISOLATES RECOVERED FROM DIFFERENT SWINE PRODUCTION SYSTEMS

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CONTENT

Antimicrobial resistance in food-producing animals is nowadays a major threat for food security and public health worldwide. Antibiotic consumption in pig production is higher in the intensive production system than in the extensive and organic ones, what could have an impact on the antimicrobial resistance of indicator bacteria in these farms. Therefore, the objective of this study is to evaluate antimicrobial resistance in commensal E. coli isolates recovered from Spanish swine farms, assessing the effect of its production system.

A total of 111 E. coli isolates obtained from 37 Spanish swine farms, classified as intensive (18), extensive (12) and organic (7), were evaluated by the microdilution broth method using commercial plates (SensititreTM EUVSEC) and were classified as susceptible or resistant for 14 antibiotics of 10 different antimicrobial families according to established clinical breakpoints (EUCAST, 2018). Percentage of resistance among production system was compared using Chi-square test at $\alpha=0.05$ (SPSS Statistica v.24).

In global, isolates were mainly resistant to tetracycline (58.6 %), ampicillin (58.6 %), sulfamethoxazole (54.1 %), trimethoprim (48.6 %) and chloramphenicol (34.2 %). These resistances are slightly higher than those obtained in commensal E. coli from other European countries, such as Denmark (Rosager et al. 2017) or Belgium (Callens et al. 2017). No resistant isolates were found for colistin, tigecycline, meropenem, cefotaxime and ceftazidime. Antimicrobial resistance for ampicillin ($p<0.001$), tetracycline ($p<0.001$), trimethoprim ($p<0.001$), sulfamethoxazol ($p=0.001$), chloramphenicol ($p=0.001$) and gentamicin ($p=0.019$) were significantly higher in intensive swine farms as compared to extensive or organic production systems. Differences were also near to statistical significance for ciprofloxacin and nalidixic acid ($p=0.118$ and $p=0.090$, respectively).

In conclusion, intensive production system seems to have an impact on antimicrobial resistance phenotype of commensal E. coli from swine farms. According to this, interventions to reduce antibiotic use and therefore resistance should focus on intensive swine herds.