



BACTERIAL DISEASES

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MULTIDRUG RESISTANT *SALMONELLA* ISOLATED FROM CONVENTIONAL PIG FARMS THAT USE ANTIMICROBIAL AGENTS IN THEIR PREVENTIVE MEDICINE PROGRAMMES

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Introduction

Antimicrobials are commonly prescribed during the pig rearing period in Spain. This study aimed to assess the effects of ceftiofur and tulathromycin treatment in the emergence of cephalosporin resistant (CR) *Salmonella* during the lactation period.

Materials and methods

In four conventional pig farms, a group of 7-day-old piglets were treated with an intramuscular injection of ceftiofur ($n = 40$ per farm), whereas in another four farms piglets were treated with tulathromycin ($n = 40$ per farm). A control group of animals ($n = 30$ per farm) was left untreated in all farms. Moreover, these animals also received amoxycillin, pleuromutilins and tetracyclines throughout the rearing period. Faecal swabs were taken prior to treatment, 2 and 7 days post-treatment and at time of slaughter for culture of *Salmonella* spp. Minimal inhibitory concentration (MIC) determination to 14 antimicrobials, pulsed-field gel electrophoresis (PFGE) and detection of resistance genes comprising five different families of antimicrobial agents were performed in all isolates. Plasmids harbouring CR genes were characterised.

Results

Sixty-six *Salmonella* isolates were recovered from five of eight farms. Forty-nine of them were multiresistant and four contained bla_{CTX-M} genes harboured in conjugative plasmids of the IncI1 family. These four isolates were recovered before treatment with ceftiofur. *tet(A)* (77%), *sul1* (27%), and *tet(B)* (23%) genes were the most prevalent, and 10 isolates also presented *qnrB* genes.

Discussion and conclusions

A direct relation between the use of ceftiofur and the occurrence of CR *Salmonella* was not established. However, multidrug resistant was common, especially for ampicillin, streptomycin, sulphonamides and tetracycline. These antimicrobial agents are used in veterinary medicine and their prescription should be revised in a case-by-case situation.