Antimicrobial susceptibility and presence of resistance genes in staphylococci from poultry

The species distribution, susceptibility to 19 antimicrobial agents and presence of selected genes encoding resistance to macrolides, streptogramins and tetracyclines were examined among 118 staphylococcal isolates from infections of poultry in Denmark. Isolates were identified using a combination of conventional biochemical testing and 16S rDNA sequencing. The most common species were Staphylococcus aureus (83), Staphylococcus hyicus (11), Staphylococcus xylosus (9) and Staphylococcus cohnii (6). The isolates were susceptible to most antimicrobials tested. A high frequency of S. aureus (30%) was resistant to ciprofloxacin. Only six (7%) S. aureus isolates and one Staphylococcus saprophyticus were penicillin resistant. Resistance to sulphamethoxazole was observed among 16 (19%) of S. aureus isolates and two coagulase negative staphylococci (CNS). Twenty (24%) of the S. aureus isolates were resistant to erythromycin and 19 of these isolates contained the ermA gene, whereas the remaining isolate contained the ermC gene. Eleven (48%) of the novobiocin resistant CNS were resistant to erythromycin and all these isolates contained the ermA gene. Two isolates identified as S. xylosus, were found to be resistant to streptogramins and both contained the vatB- and the vgaB-genes. Thirty-nine (47%) of the S. aureus isolates, three of nine S. hyicus and eight of the 23 novobiocin resistant CNS were tetracycline resistant and all contained the tct(K) gene. A single S. aureus isolate also contained the tet(M) gene. The present study showed a frequent occurrence of resistance to fluoroquinolones, tetracycline and macrolides among staphylococci isolated from broilers in Denmark, whereas the occurrence of resistance to other antimicrobial agents remains low. Similar genes, encoding resistance to erythromycin, tetracycline and streptogramins to those previously observed, were detected.

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