Persistence of vancomycin-resistant enterococci (VRE) in broiler houses after the avoparcin ban

The glycopeptide growth promoter avoparcin was banned from animal production in the EU in 1997 due to concern for the spread of vancomycin-resistant enterococci (VRE) from food animals to humans. In recent Norwegian and Danish studies, extensive occurrence of VRE on broiler farms and in broiler flocks after the avoparcin ban has been reported. The present study was undertaken to investigate the epidemiology of VRE on broiler farms in the absence of the selective pressure exerted by avoparcin. Environmental samples were obtained from five broiler houses after depopulation, cleaning, and disinfection of the houses between rotations, and two consecutive broiler flocks from each house were sampled by taking cloacal swabs from the broilers at the time of slaughter. A total of 69 vancomycin-resistant Enterococcus faecium isolates obtained from broiler flocks and broiler houses were subjected to molecular typing by pulsed-field gel electrophoresis (PFGE). Forty-one PFGE-profiles were observed. VRE with indistinguishable or highly similar PFGE profiles were isolated from consecutive broiler flocks and from environmental samples from the houses in which the flocks were reared, whereas VRE-isolates from different broiler houses and from flocks reared in different houses appeared to be genetically unrelated. These findings indicated that VRE was transmitted between consecutive broiler flocks by clones of resistant bacteria surviving in the broiler houses despite cleaning and disinfection between rotations. Thus, the extensive occurrence of VRE in broiler flocks after the avoparcin ban may be explained by persistence of VRE in the broiler house environment.

General information
State: Published
Organisations: National Food Institute, Division of Microbiology and Risk Assessment, Division of Poultry, Fish and Fur Animals, National Veterinary Institute
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Pages: 355-361
Publication date: 2002
Peer-reviewed: Yes