ANTIMICROBIALS

RESIDENT POPULATIONS OF ENTEROCOCCI ON POULTRY FARMS IN RESPONSE TO ANTIMICROBIAL USAGE

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Enterococci isolated from four poultry houses during six grow-outs was determined. In two houses, flavomycin, virginiamycin, and bacitracin were used during different poultry grow-outs, whereas the other two houses did not use any antimicrobials. Of the nine species of *Enterococcus* isolated (*Enterococcus faecalis*, *E. faecium*, *E. avium*, *E. casseliflavus*, *E. cecorum*, *E. durans*, *E. gallinarium*, *E. hirae*, and *E. malodoratus*), *E. faecalis* was isolated most frequently from chick boxliners and carcass rinses whereas *E. faecium* was the most frequent isolate in litter and feed. *E. faecalis* and *E. faecium* was isolated most often from the farm and houses, regardless of antimicrobial treatment, indicating that antimicrobial usage had no effect on the resident population of enterococci.

INTESTINAL COMMUNITY STRUCTURE OF CHICKENS IN RESPONSE TO ORALLY ADMINISTERED TETRACYCLINE

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Tetracyclines are common therapeutic antibiotics used in poultry production. This study sought to evaluate the effects of oral administration of tetracyclines on the resistance of poultry commensal bacteria and the intestinal bacterial community structure. The diversity indices calculated from terminal restriction fragment length polymorphism analysis of 16S rRNA amplicons did not indicate significant changes in the cecal bacterial community in response to oxytetracycline. *Enterococcus* spp. and *E. coli* expressed tetracycline MICs of >8 µg/ml and harbored a variety of *tet* resistance determinants regardless of the tetracycline exposure history of the birds. The enterococcal isolates possessed *tetM* (61%), *tetL* (25.4%), and *tetK* (1.3%), as well as *tetO* (52.5%), the determinant known to confer a tetracycline resistance phenotype in *Campylobacter jejuni*. *E. coli* isolates harbored *tetA* (32.2%) or *tetB* (30.5%). Tetracycline MICs remained at < 2 µg/ml for *Campylobacter* isolates before and after tetracycline treatment of the chickens, even though isolates expressing MICs of >16 µg/ml were commonly cultured from flocks that did not receive oxytetracycline. The results imply that complex ecological and genetic factors contribute to the prevalence of antibiotic resistance arising from resistance gene transfer in the production environment.