

Pyrosequencing Analysis of Salinomycin and *Eimeria* spp. Challenge-Induced Changes in Broiler Cecal Microbial Communities

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Abstract :

Eimeria spp. invade and damage the intestinal cell lining of broilers resulting in cell necrosis and secondary bacterial infections. The current work investigates the effect of anticoccidial agents, salinomycin in combination with Roxarsone and *Eimeria*-challenge on the composition of broiler cecal microflora. Three hundred and twenty day-old male Cobb broilers were among four treatment groups: NN (no salinomycin and no *Eimeria* challenge) and NC (no salinomycin plus *Eimeria* challenge) received basal diet with no salinomycin, while SN (salinomycin and no *Eimeria* challenge) and SC (salinomycin plus *Eimeria* challenge) received basal diet with salinomycin. Broilers in groups NC and SC were orally gavaged on d 28 with a mixed *Eimeria* spp. challenge. Body weight and *Eimeria* lesion scores were determined at d 35. Cecal bacterial DNA from broilers at day 28 and day 35 were subjected to 454 pyrosequencing of 16S rDNA for sequence identification. Relative percent abundance and richness of the identified taxa were analyzed. Salinomycin had significant influence on the total number of taxa ($p = 0.02$) and on cecal microbial community structure ($p = 0.002$). The mixed *Eimeria* challenge marginally affected the total number of taxa ($p = 0.06$) and the composition of microbial communities ($p = 0.09$). Broiler age, body weight and *Eimeria* lesion score had no significant effect on the cecal microbial communities. Results from this study indicate that pyrosequencing is effective in understanding the dynamics and functionality of cecal microbial communities in relation to anticoccidial treatment, *Eimeria* challenge and broiler performances.

Key Word :

Coccidiosis, salinomycin, cecal microbiome, pyrosequencing, redundancy analysis

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