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ABSTRACT (Poult. Sci 96(E-Suppl. 1):

295 Effect of xylanase, probiotics and their combination on broiler performance, intestinal lesion observation in responseto *Eimeria* and *Clostridium perfringens* challenges.

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This study was conducted to evaluate the effects of xylanase (Xylamax, BioResource International Inc.), probiotics, and their combination on performance and under mild subclinical challenge with 2 *Eimeria* species and *C. perfringens* in broilers raised to 42d. A total of 2,496 Ross 708 broiler chicks were assigned to 48 floor pens with 52 birds per pen. A total of 6 dietary treatments were used in the starter (0–21 d), grower (22–35 d), and finisher (36–42 d) phases. Treatment diets were corn-soy based and contained 1) no xylanase or probiotics (control), 2) xylanase only, 3) probiotic A only, 4) probiotic B only, 5) xylanase plus probiotic A, or 6) xylanase plus probiotic B. Data were analyzed as randomized complete block design. When compared with control at 42d, the xylanase, probiotic A, and probiotic B improved ($P < 0.05$) BW gain by 93, 94, and 53 g, respectively, and FCR by 4, 4, and 6 points, respectively. When compared with control at 42 d, the combination of xylanase and probiotic A or probiotic B improved ($P < 0.05$) BW gain by 142 or 147 g, respectively and FCR by 9 or 11 points, respectively. The combination of xylanase and probiotic A or probiotic B reduced ($P < 0.05$) body weight coefficient of variation from control (15.09%) to 8.27% or 8.22%, respectively at 42d. The combination of xylanase and probiotic A or probiotic B reduced ($P < 0.05$) gross lesion scores in small intestine at 42 d compared with control (1.21) to 0.43 or 0.26, respectively. The combination of xylanase and probiotic A or probiotic B reduced ($P < 0.05$) *C. perfringens* count at 42d from control (4.06) to 2.51 or 2.57 log10 cfu/g of digesta respectively. Results suggest that the xylanase and probiotics alone can improve broiler performance and reduce the disease severity due to *Eimeria* and *C. perfringens* challenges, and that the effect of xylanase and probiotics are additive.

Key Words: broiler, xylanase, probiotics, *Clostridium perfringens*, *Eimeria*