Evaluation of a thermostable xylanase dose response in broilers fed corn soybean meal based diets

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A floor pen trial was conducted to evaluate dose response of a newly developed hyper-thermostable xylanase (CIBENZA® XYLAVERS®, Novus International, Inc.) in broilers fed corn soy based diets. A 3-phase feeding program was employed: starter (0-18 d), grower (18-35 d), and finisher (35-44 d) phases. Diets were in pellet form except starter diets which were crumbled after pelleting. The study consisted of 9 dietary treatments – positive control, negative control (NC) with 100 kcal/kg less ME, test xylanase added to NC at 125, 250, 500, 1000, 2000 U/kg, or at variable doses for different phases (250, 1000, and 2000 U/kg for starter, grower, and finisher), and a commercial xylanase added to NC at 100 g/ton. Each treatment had 8 replicate pens of 22 male broilers. Body weight, feed intake, FCR, and mortality were determined at 18, 35, and 42 d. On d 16, one bird per pen was sacrificed to measure proventriculus, gizzard, pancreas, gizzard content, and ceca content weight. Carcass parameters were obtained on d 44 from 5 birds per pen. Data were analyzed with one way ANOVA and a P-value ≤ 0.05 was considered significantly different. Body weight was not affected by treatment throughout the trial. Reduction of ME by 100 kcal/kg increased FCR by 3.8 points at d 35 and by 4.4 points at d 42. All xylanase supplemented groups returned numerically better FCR on d 35 and 42, but only test xylanase at 250 U/kg significantly improved FCR (1.568 vs 1.594 on d 35; 1.709 vs 1.732 on d 42). Broilers fed 100 kcal/kg less ME consumed 74 g (2.7%) and 81 g (5.5%) more feed for 18-35 d and 35-42 d; test xylanase at 250 U/kg reduced 18-35 d feed intake by 69 g (2.5%). A reduction of 100 kcal/kg ME was associated with a higher dressing percentage, and xylanase effect on processing traits was not consistent. Test xylanase at 125 and 250 U/kg increased broiler ceca content by 87% and 107% respectively. In summary, the study demonstrated that the effect of the newly developed xylanase in broilers fed corn soy based diets was dose dependent and the moderate dose (250 U/kg) modified hind gut fermentation and improved FCR.

Key words: thermostable xylanase, broilers, growth performance, dose response