

The effect of combining microbial phytase, protease, and xylanase on performance of broiler chicks fed diets containing reduced levels of available phosphorus, amino acids and energy

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A 42d experiment was conducted to evaluate the effects of supplementation of microbial 6-phytase (CIBENZA® PHYTAVERSE® G10) in combination with a protease (CIBENZA® DP100) and xylanase (CIBENZA® XYLAVERSE®) in broiler chicks fed reduced levels of available phosphorus (aP), amino acids (aa), and energy corresponding to matrix values assigned for each of the products using Corn-SBM-Canola meal-Rice bran mixed diets. A total of 2016 Ross-308 male chicks were assigned under randomized complete block design to 9 treatments with 8 pens/treatment and 28 chicks/pen. Treatments consisted of reduced levels of aP, aa/CP and energy from the positive control (PC) diet. Test diets included: T1 (negative control, NC); T2 (T1+phytase at 500U/kg diet); T3 (T1+protease at 300,000U/kg diet); T4 (T1+xylanase at 250U/kg diet); T5 (T1+phytase + protease); T6 (T1+phytase + xylanase); T7 (T1+ protease + xylanase); T8 (T1+phytase + protease + xylanase); T9 (industry levels of aP, aa/CP, and energy) (PC). For T1 the energy was reduced by ~90kcal, CP by ~5%, Lys by ~4%, TSAA by ~5%, and Thr by ~7%, across phases compared to T9. The data were analyzed using 1-way ANOVA and the means were separated using protected t test at $P \leq 0.05$. End of the trial outcome indicated a significant treatment effect for cumulative FCR (adjusted for mortality & culls) (cFCR) ($P < 0.05$) but not for cumulative weight gain, feed intake, and mortality ($P > 0.05$). cFCR for the PC was better ($P < 0.05$) than all the treatments except T5. cFCR for T2, T4, T6, T7, and T8 were similar and not different from the NC (T1) ($P > 0.05$). T3 (protease) improved ($P < 0.05$) cFCR compared to the NC but not different from T5. Supplementing the combination of phytase and protease (T5) resulted in a significant improvement ($P < 0.05$) in cFCR compared to T1 and similar ($P > 0.05$) to the PC (T9). In summary, under the experimental conditions tested, the data from day 42 indicates that the combination of phytase and protease leads to improved cFCR which is similar to the PC than the enzymes supplemented separately or in other combinations.

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