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TITLE: The benefits of using dig AA and ME matrix values in addition to P and Ca in broiler diets

PRESENTATION TYPE: Oral

CURRENT CATEGORY: Metabolism and Nutrition, Enzymes

AUTHORS (FIRST NAME, LAST NAME): Yueming Dersjant-Li[1], Milan Hruby[1], Emma White[1], Rachael Hardy[1], Ceinwen Evans[1]

INSTITUTIONS (ALL):

1. Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough, United Kingdom.

IS THE PRESENTER A STUDENT AT THE TIME THE ABSTRACT IS SUBMITTED?:

Yueming Dersjant-Li : No

ABSTRACT BODY:

Abstract Body: A phytase that is highly active in the upper GIT of poultry will break down phytate quickly and more completely. Such a phytase releases P from phytate and reduces the anti-nutritional effects of phytate, contributing to dig AA and energy. This study evaluated the possibility of applying dig AA, ME, Ca, dig P and Na matrix values in broilers. A meta-analysis was done using two sets of data: 1) Data collected from 6 trials containing: positive control (PC), negative control 1 (NC1) and NC1+500 FTU/kg of Buttiauxella phytase (NC1+500FTU). NC1 and NC1+500FTU had an average reduction of 0.13% dig P, 0.16% available P, 0.16% Ca, 0.03% dig Lys and 65 kcal/kg ME, and up to 0.03% Na vs. respective PC. 2) Data collected from 3 trials with 3 treatments: PC, negative control 2 (NC2) and NC2+1000 FTU/kg of Buttiauxella phytase (NC2+1000FTU). NC2 and NC2+1000FTU had an average reduction of 0.15% dig P, 0.18% available P, 0.16% Ca, 0.04% dig Lys and 71 kcal/kg ME, and up to 0.04% Na vs. respective PC. Treatment means were compared by Tukey's HSD using JMP 11 (trial as a random effect). The trials were conducted in various regions globally including a semi-commercial scale trial with 700 birds/pen. The PC was formulated based on the industry standards, meeting the minimum requirements of broilers. Diets were mainly based on corn and SBM in pellet or mash form. The average Ca and dig P levels in PC diets were 0.96 and 0.42 in starter (0-10d), 0.87 and 0.38 in grower (11-21d) and 0.78 and 0.34% in finisher (22-42d), respectively. The average ME and dig Lys levels in PC diets were 2976 and 1.22 in starter, 3068 and 1.09 in grower and 3144 kcal/kg and 0.93% in finisher, respectively. For all phases, NC1 showed reduced ($P < 0.05$) ADG and increased FCR vs PC, FI was not affected. NC1+500FTU maintained the same performance vs PC (final BW of 2739, 2976 and 2966g; 0-42d FCR of 1.78, 1.65 and 1.66 respectively for NC1, NC1+500FTU and PC). At day 21, NC2 had 235g lower BW vs PC, while NC2+1000FTU improved BW vs PC ($P< 0.0001$; 785, 1046 and 1020g for NC2, NC2+1000FTU and PC, respectively). NC2 had consistently lower ($P<0.05$) ADG, ADFI and higher FCR in all phases vs PC. NC2+1000FTU had the same performance compared to PC (final BW of 2290, 2832 and 2836g for NC2, NC2+1000FTU and PC, respectively). Data supports the use of dose-dependent AA and ME matrix values in addition to the mineral matrix while maintaining performance at the level of PC when phytase is included at 500 or 1000 FTU/kg of feed in their respective NC diets. Applying Ca, P, AA, ME and Na matrix would result in higher feed cost savings for the producer than limiting the matrix application to minerals only without impacting negatively a flock performance.

AWARDS:

Competition: (none)

Graduate or Undergraduate: (none)

Major Professor: (none)

KEYWORDS: Phytase, Broilers, dig AA matrix, ME matrix, performance.