

Metabolism and Nutrition: Feed Ingredient Posters

542 Growth response of broilers to lysine levels and hydrolyzed porcine digestive mucosa (Palbio) inclusion in diet from 1 to 21 d of age. M. Frikha¹, S. Mirzaie¹, H. Irandoust¹, M. Mohiti-Asli¹, C. Chetrit², and G. G. Mateos^{*1}, ¹*Departamento de Producción Animal, Universidad Politécnica de Madrid, Madrid, Spain*, ²*I+D Nutrition and Health Care, Bioibérica S.A., Palafoxs, Barcelona, Spain*.

Palbio (PAL, Palbio 50 RD, Bioibérica, Spain) is a protein concentrate based on hydrolyzed porcine digestive mucosa dried under a fluid bed system over a soybean carrier, currently used in piglet feeds. The digestibility of PAL is very high and the product may be an excellent source of protein for young chicks. An experiment was conducted with 1,280 straight-run one-d-old Ross 308 chicks to evaluate the growth response of broilers to dietary inclusion of PAL. The experiment was conducted as a completely randomized design with 8 treatments arranged as a 2 × 4 factorial with 2 levels of PAL (0 vs. 2.5%) and 4 levels of lysine (1.1, 1.2, 1.3, and 1.4%). All diets contained 3,020 kcal ME/kg and the ratio of indispensable amino acids to Lys was maintained constant. From 21 to 32 d of age all the birds received a common commercial finisher diet without any PAL inclusion. Each treatment was replicated 5 times and the experimental unit was a pen with 32 chicks from 1 to 21 d of age and with 15 chicks from 21 to 32 d of age. Body weight gain (BWG), average daily feed intake (ADFI), and feed conversion ratio (FCR) were recorded weekly. From 1 to 21 d of age, PAL inclusion reduced ADFI ($P \leq 0.05$) and improved FCR ($P \leq 0.01$) and BWG ($P = 0.10$). An increase in dietary LYS level improved BWG ($P \leq 0.001$) and FCR ($P \leq 0.05$). From 1 to 7 d of age, the beneficial effects of PAL inclusion were more evident in the diets with the lower LYS content. From 21 to 32 d of age, when all birds were fed a common diet, no differences between treatments were observed for any of the variables except for ADFI that was higher ($P \leq 0.01$) for the treatment that consumed PAL previously. We conclude that the inclusion of 2.5% PAL in the diet results in improved performance of the birds. Broilers require at least 1.3% dietary LYS to maximize growth performance from 1 to 21 d of age.

Key Words: broilers, lysine, hydrolyzed porcine mucosa

543 Effects of heat treating rapeseed meal on amino acid digestibility in broilers. J. Boguhn¹, A. Helmbrecht², and M. Rodehutschord^{*1}, ¹*University of Hohenheim, Institute of Animal Nutrition, Stuttgart, Germany*, ²*Evonik Degussa GmbH, Animal Nutrition Services, Health & Nutrition, Hanau, Germany*.

The objective was to study effects of extreme feed conditioning on prececal amino acid (AA) digestibility of rapeseed meal (RSM) in broilers. The RSM contained 34% CP and was obtained from a commercial cracking plant. It remained either untreated or was exposed to moist heat (135°C) for 20 or 60 min in an autoclave. A basal diet mainly based on corn, corn starch, soybean meal and wheat gluten was used. The untreated and treated RSM was included at 10 or 20% into the basal diet at the expense of corn starch, resulting in a total of 7 dietary treatments. TiO₂ (0.5%) was used as the indigestible marker. Diets were fed in pelleted form to 3-wk old Ross 308 broilers. Each diet was allocated to 7 pens of 12 birds each and offered for ad libitum intake for 7 d. Birds were asphyxiated by CO₂ exposure. The content of a defined section of the terminal ileum was flushed out, pooled on pen basis, and freeze-dried. Chemical analyses were run using established methods. AA digestibility of RSM was calculated by linear regression analysis. Hence correction for basal endogenous AA was not neces-

sary. Heat treatment reduced the analyzed Lys concentration of RSM from 2.1 (Con) to 1.6 (20 min) and 1.4% (60 min). Average AA digestibility was 73% in the untreated RSM, 57% in the RSM treated for 20 min, and 44% in the RSM treated for 60 min. Heat treatment for 20 min significantly reduced ($P < 0.05$) the digestibility of 7 out of the 17 AA studied. Heat treatment for 60 min significantly ($P < 0.05$) reduced the digestibility of all AA. Most affected among the essential AA were Thr (68, 48 and 39%) and Lys (75, 56 and 45%; for Con, 20 and 60 min, respectively). It was concluded that moist heat applied in feed conditioning will reduce AA digestibility greatly. Details of the technological process contribute to the variation in AA digestibility within same raw material found in the literature.

Key Words: amino acids, digestibility, broilers, heat treatment, rapeseed meal

544 Feeding plant extract to chickens reared under different hygienic conditions: effects on metabolizable energy, nutrient digestibility and endogenous losses. V. Pirgozliev^{*1} and D. Bravo², ¹*SAC, Ayr, Scotland, UK*, ²*Pancosma S.A., Geneva, Switzerland*.

Plant extracts are often added to poultry diets to improve nutrient availability, growth performance and flock uniformity. Although it has been hypothesized that dietary plant extracts work better when fed to birds reared under “less hygienic” conditions, there is a lack of consistent data to support this hypothesis. Two experiments were conducted to investigate whether the response of broilers to supplementation of plant extract, a mixture of carvacrol, cinnamaldehyde and capsaicin (XT, Pancosma S.A.) depend on the rearing condition using dietary apparent metabolizable energy corrected for nitrogen retention (AMEn), coefficients of dry matter (DMD), nitrogen (ND) and fat digestibility (FD), and endogenous secretions (measured as sialic acid (SA)) as response criteria. In Expt. 1, birds were reared in cages (high hygiene) whereas birds were reared in floor pens (low hygiene) with used litter in Expt. 2. In both experiments, a corn-soybean meal control diet adequate in protein (215 g/kg diet) but slightly lower in AME (2890 kcal/kg) than breeders’ recommendation and slightly high in non-starch polysaccharides, achieved by inclusion of ~10% barley and rye were fed to the birds with or without XT (100 g XT/tonne). The birds were allocated to dietary treatments in a randomized complete block design, each diet was fed to 12 cages or 10 floor pens. In Expt. 1, feeding XT decreased ($P < 0.05$) ND, and tended ($P < 0.10$) to decrease DMD ($P = 0.072$) and SA secretions although dietary AME and FD did not differ ($P > 0.05$) between treatment. However, feeding XT to the birds reared on used litter improved FD ($P < 0.05$), and tended ($P < 0.10$) to improve AMEn whereas dietary DMD, ND and endogenous secretions remained unchanged ($P > 0.05$). The current data support the hypothesis from previous research that dietary plant extracts are more efficient when fed to birds reared in less hygienic conditions.

Key Words: plant extract, hygienic conditions, ME, digestibility, chicks, endogenous secretions

545 Prediction model of digestible amino acid in sorghum. M. Sedghi¹, M. R. Ebadi², A. Golian^{*1}, and H. Ahmadi¹, ¹*Ferdowsi University of Mashhad, Iran*, ²*Isfahan Research Center of Agriculture and Natural Resources, Isfahan, Iran*.