111 The evaluation of Topmax (ractopamine hydrochloride) in tom finishing turkeys administered at 4.6 g/ton at three different age periods: 15–17, 17–19, and 19–21 weeks of age. S. L. Noll1, J. D. Trites2, J. Brannon1, and W. Weber,1 1University of Minnesota, St. Paul, 2Elanco Animal Health, Greenfield, IN.

A study was conducted to determine the clinical effects of 2% ractopamine hydrochloride (RAC) Type A Medicated Article on growth performance in tom finishing turkeys (576, Nichols, Large White) during 3 different age periods: 15–17, 17–19, and 19–21 wks of age. After a one week acclimation period, turkey finisher toms were fed one of 2 treatments with and without RAC (4.6 g/ton) for the last 14 d before slaughter. The pen of turkeys (10 toms/pen) was the experimental unit and each treatment was replicated 8 times. Toms were allocated to pens one week before the start of the treatment based on body weight. Individual body weights were taken at the start and finish of the 14 d treatment phase. Feed intake was measured for the 2 week period. Data were analyzed using mixed model procedures (SAS). The model included diet treatment, age group and their interaction as a fixed effect with significant effects at \( P < 0.05 \). Turkeys fed RAC, on average, had 0.3 kg increased body weight. Average daily gain of turkeys fed Topmax was improved 9.2% (20.2 g/day) for all age groups. No differences were noted for feed intake among diet treatments. Feed efficiency (feed/gain) of turkeys fed RAC was improved by 6.75% (20 points) during the feeding period compared with the respective non-supplemented control treatments. Feeding of RAC to finisher toms for 2 weeks improved gain and feed efficiency regardless of market age.

Key Words: tom turkeys, ractopamine, performance, age

112 The evaluation of Topmax (ractopamine HCl) administered at 8.2 g/ton to finishing hen turkeys for the last 14 days prior to slaughter at 17 weeks of age. E. A. Heskett*1 and K. K. Krueger2, 1Elanco, A Division of Eli Lilly and Company, Greenfield, IN, 2Diamond K Research, Marshall, NC.

This study was conducted to determine the effects of ractopamine hydrochloride (RAC) Type A Medicated Article on finishing performance in hens (15–17 weeks of age, Hybrid Conventer). Ractopamine (HCl) was fed at 8.2 g/ton in combination with Coban (monensin sodium) at 54 g/ton for the final 14 d before slaughter. The control diet contained monensin at 54 g/ton. Birds were weighed and randomized to produce equal weight pens 15 d (~13 weeks of age) before being placed on respective treatments. The pen (10 hens/pen) was the experimental unit with each treatment being replicated 8 times. Individual body weights and feed intake were measured at the start of treatment initiation, at 7 and 14 d on treatment. Birds were withdrawn from feed 10.5 h before slaughter then processed according to USDA regulations and air chilled. Carcass weight measurements included: intact carcass, standard trimmed carcass, front half (separation at T7-L1) and back half by subtraction. Turkeys fed RAC were 0.54 pounds heavier (2.3% improvement, \( P = 0.084 \)) resulting in an average daily gain improvement of 0.038 pounds (11.9% improvement, \( P = 0.014 \)). No increase in feed intake was observed resulting in a feed to gain (F:G) improvement of 33 points (10.9% improvement, \( P = 0.003 \)). The increase in weight was also observed in the RAC treated birds’ intact carcasses being 0.474 pounds heavier \( (P = 0.044) \) and standard trimmed carcass being 0.451 pounds heavier \( (P = 0.056) \). The use of RAC improved feed to gain ratio and average daily gain. This increased weight resulted in statistically heavier carcass weights.

Key Words: turkey, hen, ractopamine-HCl, finishing, carcass

113 Evaluation of the use of various feed additives administered in the withdrawal feed of broiler chickens vaccinated with a commercial coccidiosis vaccine at day of age. E. A. Heskett*1 and K. K. Krueger2, 1Elanco, A Division of Eli Lilly and Company, Greenfield, IN, 2Diamond K Research, Greenfield, IN.

Day-old straight run Cobb 500 broilers were commercially vaccinated for coccidiosis at the hatchery and assigned to 4 withdrawal diet (d 29–42) treatment groups: T1 - basal ration, T2 - Monteban 63 g/ton (narasin), T3 - Stafac 20g/ton (virginiamycin), and T4 treated with Monteban 72 g/ton in the grower phase (15–28 d) and 63 g/ton in the withdrawal phase. Birds were reared on used poultry house litter (4 grow-outs) and provided food and water ad-libitum. All birds received BMD 50 g/ton (bacitracin methylene disalicylate) in the starter and grower rations with the exception of T4 grower diet. Birds were randomized at placement (day of age). Each pen of birds was mass weighed at day of age, 14, 28 and 42 d of age. Feed intake was measured at d 14, 28 and 42 d. The pen was the experimental unit with each treatment being replicated 12 times. Birds were withdrawn from feed approximately 8 h before carcass measurement collection. For carcass evaluation, 2 males and 2 females from each pen were randomly selected. Broilers coccidiosis vaccinated at day of age and fed narasin in the grower and withdrawal (T4) or withdrawal only (T2) had improved feed to gain ratio of 4 and 3 points respectively as compared with T1 and T3 \( (P = 0.02) \). Final body weights (5.1 to 5.3 lbs.) were not statistically different. Carcass differences are reported by gender. Female birds in the T2 and T4 groups had 0.052 and 0.108 pounds more harvestable pectoralis major over T1, respectively, and 0.049 and 0.105 pounds more harvestable pectoralis major over T3, respectively \( (P < 0.001) \). Male birds in the T2 and T4 groups had 0.084 and 0.09 pounds more total white meat (front half) over T1, respectively, and 0.068 and 0.074 pounds more total white meat over T3, respectively \( (P < 0.001) \). In males, the back half (saddle) was lighter by 0.03 to 0.05 pounds \( (P < 0.001) \). This study demonstrated that the addition of narasin, for the prevention of coccidiosis, resulted in improved feed utilization and increased harvestable pounds of white meat.

Key Words: broiler, coccidiosis, growth, finishing, carcass

114 Changes in the heat stress response of laying hens following antioxidant supplementation. J. N. Felver-Gant*1, S. D. Eicher2, and H. W. Cheng2, 1Purdue University, West Lafayette, IN, 2Livestock Behavior Research Unit USDA-ARS, West Lafayette, IN.

Heat stress (HS) is a major contributor to mortality and other welfare issues in the poultry industry. The objective of this study was to determine the benefits of an antioxidant supplement during HS. One hundred twenty White Leghorns at 32 wk of age were randomly transferred to 2 adjacent rooms. Hens were randomly pair-housed and assigned to a control feed (CF) or a feed including an antioxidant blend (ethoxyquin, propyl gallate, and propylene glycol; Agradro Ultra) at 160 ppm (AF) and then raised for 2 wks at a control climate (C) (24°C, 15.6% RH). Afterward, one room was subjected to a HS climate (H) (33°C, 23.7% RH) for 8 d. Physiological data were taken from 40 hens on d 1 and 8 respectively; and feed intake data were taken on d 1, 3, 6, and 8. Data were analyzed using a Proc Mixed model and slice adjustment. Compared with their controls, H-hens had higher core body temperatures \( (P < 0.01) \) on both d 1 and 8. Compared with their controls, H-CF hens but not H-AF hens had reduced liver wt on d 1 \( (P < 0.05; P > 0.05) \), respectively; and on d 8, liver wt was reduced in both H-CF and H-AF

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hens ($P < 0.05$). However, on d 8, H-AF hens liver wt was greater than the liver wt of H-CF hens ($P < 0.05$). The ratio of ileum weight and length was reduced in both H-CF and H-AF hens compared with their controls ($P < 0.05$) on d 1; while H-CF hens tended to be different on d 8 ($P = 0.08$). H-CF hens ate less than C-CF hens during d 1, 3, 6, and 8 ($P < 0.01$) while H-AF hens ate less than controls during d 3 and 6 only ($P < 0.01$). Partial pressure CO$_2$ (pCO$_2$), HCO$_3^-$, and total CO$_2$ of cardiac blood of H-CF hens was lower than C-CF hens ($P < 0.05$) on d 8. However, only pCO$_2$ was decreased in H-AF hens compared with controls ($P < 0.05$). Low pCO$_2$, HCO$_3^-$, and total CO$_2$ are indicative of respiratory alkalosis or metabolic acidosis that can onset under HS through excess hyperventilation. These data suggest that hens exhibit a negative response under HS. Evidence is provided that hens fed AF have an improved coping capability to HS.

**Key Words:** heat stress, antioxidant, well being, laying hen, blood gas

115 Live performance and energy uplift of 0.5% Azomite Feed-Grit (versus 0%) were evaluated in broiler feeds in two series with increasing levels of metabolizable energy under disease stresses in floor pens. J. L. McNaughton, D. Fodge, W. W. Emerson, M. Hooge*4, 1AHIPharma Research Inc., Salisbury, MD, 2DF International Inc., Rockville, MD, 3Azomite Mineral Products Inc., Kansas City, MO, 4Hooge Consulting Service Inc., Eagle Mountain, UT.

Azomite Feed-Grit (AZO; Azomite Mineral Products, Inc., Kansas City, MO) was included at 0 or 0.5% in broiler diets in 2 series with increasing metabolizable energy (ME) to study live performance and energy uplift effects. The AZO is a hydrated Na-Ca aluminosilicate, from a volcanic ash and an ancient seabed deposit in Utah, which has been shown to improve caloric conversion. Mash feeds were in 3 phases (starter 0–21 d, grower 21–35 d, and finisher 35–42 d) with respective ME levels of 3,086, 3,142, and 3,197 kcal ME/kg and +0, +22, +66, or +132 kcal ME/kg. In the 0.5% AZO series of diets, soybean oil was added to formulas equal to the corresponding 0% control diets. A total of 4,320 straight-run broiler chicks were randomly allocated at 54 chicks/floor pen into 10 replicate pens for each of the 8 treatments (4 with 0% and 4 with 0.5% AZO). Stocking density was 0.0743 m$^2$ (0.8 ft$^2$)/bird on used litter. A live coccidia vaccine was randomized porcine mucosa (Palbio) in diets varying in total lysine (Lys) content was studied in 2 experiments (Exp.). In Exp. 1, 1,200 one-day-old, straight-run Ross 308 chicks were allotted randomly to 8 dietary treatments with 5 pen floor replications of 30 chicks each. The design was completely randomized with treatments arranged as a 4 × 2 factorial with 4 inclusion levels of PAL (0, 2.5, 5.0, and 7.5%) and 2 levels of Lys (1.23 and 1.37%). Birds received their respective experimental diets from 1 to 21 d and then a common diet without PAL from 21 to 37 d of age. Lys level did not affect ADG in any of the periods considered but final BW tended to be higher (2,662 vs. 2,707 g; $P = 0.063$) for birds fed the higher Lys level. The inclusion of PAL tended to improve ADFI ($P = 0.08$) and improved BWG ($P ≤ 0.05$) and FCR ($P ≤ 0.001$) from 1 to 21 d of age. Previous treatment did not affect broiler performance from 21 to 37 d of age. Litter quality was not affected by diet. In Exp. 2, the same diets used from 1 to 21 d in the previous study were used from 1 to 37 d of age. For the entire experiment, birds were kept in cages and each of the 8 treatments was replicated 5 times (7 birds each). Birds fed 1.37% Lys had higher ADFI and ADG ($P ≤ 0.01$) than birds fed 1.23% Lys. The inclusion of PAL improved ADFI and ADG from 1 to 21 d ($P ≤ 0.01$) and from 1 to 37 d ($P ≤ 0.05$) of age, with best results observed with 2.5 to 5.0% PAL. Moisture content of the excreta was not affected by dietary treatment. The results indicate that PAL inclusion improves growth performance of broilers and that the most efficient level of inclusion is between 2.5 and 5.0%, irrespective of dietary Lys level. Moreover, broilers respond better to diets with 1.37% Lys than to diets with 1.23% Lys.

**Key Words:** broiler performance, lysine, hydrolyzed porcine digestive mucosa


The intent of this study was to determine the chemical profile and to explore the impact of replacing canola meal with distillery yeast sludge (DYS) on hematopoeitic, histopathology, growth performance and economies of broiler chicks. Two hundred 40 (240) day-old broiler chicks were randomly divided into 20 experimental units in such a way that each diet was offered to 4 experimental units comprising 12 chicks. Five isonitrogenous (CP, 21%) and isoenergetic (ME, 3000 Kcal/kg) broiler diets i.e., control, DYS5, DYS10, DYS15 and DYS20 were formulated having 0, 5, 10, 15 and 20% DYS replacing canola meal. The trial was 42 d long. Feed intake remained unaltered across all diets. Weight gain of chicks fed control diet was higher ($P < 0.05$) than those fed DYS20, however, it was similar to those fed other diets. Feed conversion ratio was lower ($P < 0.05$) in chicks fed control diet than those fed DYS20, however, it was similar across other diets. Red blood cells, white blood cells, packed cell volume and hemoglobin values remained unchanged with increasing the inclusion level of DYS in the diet. No pathological lesions on heart, kidney and liver were observed across any diet. Feed cost per kg live weight gain decreased ($P < 0.05$) as the level of DYS was increased in the diet. Based on the findings of the present study it was concluded that DYS is economical protein
source and can effectively replace canola meal up to 15% in broilers diet without any deleterious effect on broiler performance, hematology and histopathology

**Key Words:** distillery yeast sludge, canola meal, broilers, weight gain, feed conversion ratio, hematology, histopathology

118 Real-time antibiotic use in broiler production. T. Cummings*, Mississippi State University.
AAAP abstract†

AAAP abstract†

AAAP abstract†

121 Analysis of changes in chicken gut microbial communities and metabolic potential in response to growth promoters. T. J. Johnson*, J. L. Thorsness-Danzeisen, H. Bum Kim, and R. E. Issacs, University of Minnesota.
AAAP abstract†

122 Assessment of egg quality characteristics of laying hen fed raw and enzyme treated cocoa bean shell based diet. M. D. Olumide*‡, O. A. Adebiyi1, O. Abiola-Olagunju1, and A. A. Mako2, 1University of Ibadan, Ibadan, Ibadan, Oyo State, Nigeria, 2Tai Solarin University of Education, Ijebu Ode, Ogun State, Nigeria.

The biggest constraint to poultry production in Nigeria has remained the cost of feed. The high cost of feed ingredients results in increased cost of feed especially the cereals and protein ingredients, therefore is need to investigate some agro-industrial by-products like cocoa bean shell (CBS) that has potential as feed ingredients. Cocoa bean shell is an agro industrial waste that constitute disposal problem to the cocoa processing companies in Nigeria. This study is therefore focused on evaluating the performance, serum biochemistry and hematological parameters of birds feed differently treated cocoa bean shell-based diets. One hundred forty (140) 6 weeks in lay hens were used for this trial with 20 birds per treatment in a 2 × 3 factorial arrangement of a completely randomized design. Significant means were separated at 5% level of significant (P < 0.05). The basal diet contained 2631.06 kcal/kg ME and 16.05% Crude Protein, while the CBS is replacing maize at the different levels. These diets were: A (basal diet) (0% CBS control), B (5% raw CBS), C (10% raw CBS), D (5% Raw CBS with enzymes), E (10% CBS with enzymes), F (5% fermented CBS), G (10% fermented CBS). The birds were offered feed and water ad libitum throughout the experimental period. The CBS is replacing maize at 5 and 10% levels of inclusion. The parameters studied were, feed intake, egg production, feed conversion ratio, mortality rate egg weight, cost of feed, total protein, albumin, globulin, albumin: globulin ratio, glucose, creatinine, cholesterol, red blood cell, white blood cells, packed cell volume and hemoglobin. Significant (P < 0.05) differences were observed in the feed intake of birds on diet D (5% Raw CBS with enzymes) having the mean value of 98.00g compared with birds fed diet G (10% fermented CBS) having a least feed intake of 89.40g. The same trend was observed in the egg weight with of birds fed diet D (65.56g) while the least was observed in birds fed diet B (60.06g). No significant (P > 0.05) difference was observed in most of the serum and hematological parameters, therefore cocoa bean shell can effectively be used in layers diet without any deleterious effect on the performance, blood, and serum indices.

**Key Words:** agro-industrial, cocoa bean shell, constraint, hematological, performance

†This abstract from the American Association of Avian Pathologists (AAAP) is available in the AVMA Convention Notes at www.avmaconvention.org and at www.aaap.info/2011meeting.