469P  Anise oil reduces growth of Clostridium perfringens in vitro. J. W. Charal*, M. E. Gutierrez, M. E. Janes, and T. A. Lavergne, Louisiana State University, AgCenter, Baton Rouge, LA.

Previous studies conducted in our laboratory demonstrated that feeding anise oil (AO) to broilers may reduce intestinal lesions after a Clostridium perfringens (CP) challenge. Other studies have reported antioxidant, palatant, and antibiotic effects of AO; however, no one has evaluated its effect on CP which is of importance for the poultry industry. Therefore, this study was conducted to evaluate the effect of AO on growth of CP in vitro. Based on previous research, 5 levels of AO (500, 1,000, 1,500, 2,000, and 2,500 ppm, which did not compromise poulty growth performance), 2 levels of bacitracin methylene disalicylate (BMD; 50 and 100), and 2 levels of salinomycin sodium (BioCox; 60 and 120 ppm), and distilled water for control were used. The strain ATCC 12918 was used as reference and grown in anaerobic conditions. The inoculum was cultured 2 consecutive times for 24 h at 37°C. Three concentrations of CP (1 × 10⁸, 1 × 10⁹, or 1 × 10⁷ cfu/ml) were inoculated in tubes containing 9 mL of reinforced media and 1 mL of the carrier with the antibiotic concentration in duplicate. All tubes were placed in an anaerobic environment and grown for 24 h at 37°C. After 24 h, the tubes were analyzed for growth, then diluted 1:10 in distilled water and compared with McFarland opacity standards to estimate cfu/mL concentrations. Independent amount of cfu inoculated, CP grew up to approximately 1–2 × 10⁹ cfu/ml in control media. Growth of CP was not detectable (ND) with both levels of BMD and BioCox, independent of inoculum concentration. Compared with control, AO linearly reduced CP growth (P < 0.05; 9 × 10⁸, 7.5 × 10⁸, 3 × 10⁸, 1.5 × 10⁸, and ND cfu/ml; with 500, 1,000, 1,500, 2,000, and 2,500 ppm of AO; respectively) when 1 × 10⁹ cfu/ml of CP was inoculated. Further reduction (P < 0.05) was observed when 1 × 10⁸ cfu/ml of CP was inoculated. AO linearly reduced the growth of CP with greater effects when lower cfu of CP were inoculated. However, no bactericidal effect was observed at these levels, in contrast BMD and salinomycin completely inhibited CP growth.

Key Words: anise oil, BMD, BioCox, Clostridium perfringens, reinforced media

470P  Histomorphometric studies on the occurrence of various degrees of white striping in broiler breast fillets. T. Z. Ferreira¹, L. E. Moraes², L. Lorschetter¹, S. L. Vieira*¹, D. Driemeier¹, R. D. Sainz², R. Machado Neto³, and L. Kindlein¹,², Federal University of Rio Grande do Sul, Porto Alegre, Brazil, ²University of California, Davis, ³University of São Paulo, Piracicaba, Brazil.

White striping is a myophathy condition characterized by the occurrence of white bands, which are visible on the surface of broiler breast fillets. We analyzed the histomorphometric characteristics of pectoralis major muscle of Cobb 500 broilers slaughtered at 42 d of age with varying degrees of white striping severity. Representative breast fillets from each degree of severity (normal [NORM], moderate [MOD], and severe [SEV]) were randomly collected (n = 30) in a processing plant and submitted to dimensional morphometric analysis (area, muscle fiber diameter and density) and 3-dimensional measurements (partial volume of muscle tissue) were analyzed. Exploratory analysis of the data was conducted through the correlation matrix, Regression ANOVA and Tukey’s means comparisons (5%). Higher densities (P = 0.004) and smaller diameters (P < 0.001) of muscle fibers were observed in the MOD and SEV degrees compared with NORM, however the partial volume of breast fillets did not differ significantly (P = 0.635) between the 3 groups, probably due to the decrease in the diameter associated with an increase in the number of fibers in muscles with MOD and SEV degrees. Muscle fibers with white striping showed the characteristics of a muscle regeneration process with hyperplastic.

Key Words: broiler, morphometry, myophathy, muscle fiber, white striping

471P  Histopathological and epidemiological study of avian keratoacanthoma. R. Sesterhenn¹, L. C. B. Fallavena², H. L. S. Moraes¹, and L. Kindlein*¹, Federal University of Rio Grande do Sul, Porto Alegre, Brazil, ²Lutheran University of Brazil, Canoas, Rio Grande do Sul, Brazil.

Ulcerative skin lesions in broilers are a common cause of partial and total condemnation of carcasses in slaughter plants, and the avian keratoacanthoma (AK) is one of the most frequent. Inspection services in Brazil tend to group the cutaneous lesions in broilers carcasses in a single category called “dermatosis.” This results in the lack of epidemiological data that could lead to the knowledge of many aspects related to the etiology of these diseases. The aim of this study was to histologically evaluate the AK lesions in broilers slaughtered in 5 slaughterhouses in southern Brazil, as well as to analyze the epidemiological factors involved in its onset. The criteria for the samples collection was the presence of ulcers with a depressed center and raised edges, with appearance similar to moon craters as described by Hafner and Goodwin (2008). A total of 1,373,989 carcasses were evaluated and 363 of these displayed ulcerative lesions. After histopathological analysis, 169 were diagnosed as AK, representing a prevalence of 0.012%. Data from 33 independent variables for association were also collected. From this study, the results were analyzed using PROC LOGISTIC in SAS, with the method of selecting the STEPWISE. Of these 33 variables, season of the year had a significant effect on AK prevalence, with spring higher than the other seasons (P < 0.001). Another variable associated was the presence of multiple skin lesions with AK prevalence of 83% (64/77; P < 0.001). Type of bed also tended (P = 0.12) to alter the incidence of AK (birds reared on sawdust, 100%; wood shavings or sawdust, 67%; only shavings, 42%). Ulcerative lesions disseminated on the carcasses surface were 100% diagnosed as AK, which could represent a criterion to be used by the inspection services for the diagnosis of the cause of condemnation. There was a great variability in the epidemiological factors involved in the onset of ulcerative skin lesions, especially on the season and the prevalence of multiple skin lesions.

Key Words: poultry, broiler, slaughter plant, ulcerative skin lesions, keratoacanthoma


A study was conducted to evaluate the effects of 25-OH cholecalciferol on tibia cell development and the relationship with black bone syndrome. Right tibiae from 24 Cobb 500 male broilers were collected and divided into control group (no supplementation) or supplemented with 25-OH
D₃ (69 mg/ton feed). Bones were weighed, cleaned, length measured, color evaluated for lightness (L*) and redness (a*) and macroscopically analyzed for the occurrence of black bone syndrome (acceptable, intermediate and unacceptable) prior and after cooking. Thickness of the compact bone and number of osteoclasts were analyzed by histology. Data were analyzed by t-test (5%) and Spearman’s correlation. Bones from supplemented birds showed a lower incidence of severe syndrome (36%) when compared with the Control group (65%). After cooking, tibiae showed the same weight in both treatments, 21 ± 3.33g. Birds from control group had greater lightness in uncooked and cooked bones (37 and 33) when compared with supplemented (32 and 30; P < 0.05), respectively. Redness was lowest in control group (12.37) when compared with supplemented group (16.42; P < 0.05) after cooking. The tibias classified as Unacceptable had the thickness of the compact bone lowest than others degrees. However, supplementing 25-OH D₃ did not affect the thickness of the compact bone (1,583 vs. 1,726 mm; P > 0.05), but positively influenced the growth of tibia length (11.33 vs. 10.57 cm; P < 0.05). This shorter bone length found in the animals without supplementation may be due to inadequate mineral demand or low metabolic utilization, due to the high growth rate. This suggests that may be essential the supply vitamin D₃ available in the chickens’ diet of strains with high growth rate. Furthermore, a negative correlation (P < 0.01) was found between the bone’s weight and the number of osteoclasts in control group only. Osteoclast count was higher (P < 0.05) in the animals receiving supplementation (77 ± 1.26) compared with control group (59 ± 1.67). The results indicate that supplementation of vitamin D₃ has active protection function of the skeleton, resulting in greater osteoclasts quantity or activity.

**Key Words:** black bone, bone, vitamin D, poultry, porosity