diets, containing high levels of wheat, with enzymes capable of degrading non starch polysaccharides.

Key Words: Turkey, Glucanase, Xylanase, Metabolizable Energy, Wheat

64 Effect of endo-xylanase enzyme supplementation on the performance of tom turkeys fed wheat-based rations. C. W. Parks, N. H. Odetallah*, and P. R. Ferket, Department of Poultry Science, North Carolina State University, Raleigh, NC.

Excessive dietary levels of non-starch polysaccharides in wheat-based diets reduce growth performance in turkeys because they impede digestion and nutrient absorption. This problem can be alleviated by appropriate enzyme mixture supplementation. An experiment was designed to compare the efficacy of three endo-xylanase enzyme mixtures and control supplemented to wheat-based diets for commercial BUKA male turkeys from 7 to 140 days of age. The basal diets were formulated to meet 95% of NRC (1994) recommendations for amino acids and metabolizable energy. The turkeys were randomly assigned to 40 pens of 12 birds and one of 4 experimental enzyme treatment groups: (C) control, (L) Lyxansan Forte®*, (N66) Natugrain Blend-66®, and (N33) Natugrain Blend-33® (BASF Corp., Germany). Body weight (BW), feed:gain ratio (FCR), feather condition, and mortality rate were evaluated at 4-week intervals. BW at 112 d was improved by 7% (P<0.05), 4% (P<0.1), and 1.5% (P<0.15) for treatments N66, L, and N33, respectively. These increases in BW were associated with corresponding increases in feed consumption. Only marginal treatment effects were observed on BW at other ages. FCR was improved by N66 and L during 28-49 d only (1.60 and 1.62 vs. 1.68, P<.10). All enzyme treatment significantly improved feather condition and reduced the incidence of feather pecking at 98 d with N66 resulting in the greatest reduction in the incidence of feather pecking (4.2% vs. 23.5%, P<0.005). Poor feather condition and increased incidence of feather pecking are often associated with marginal nutrient deficiency. Treatments N66 and N33 resulted in lower 7-120 d mortality rate than the L and C treatments (3.3% and 5.0% vs. 9.1% and 10.0%, P<0.05). Appropriate enzyme mixture supplementation of wheat-based diets was demonstrated to improve some aspects of growth performance and livability, with Natugrain Blend 66® was shown to be superior to the other enzyme mixtures.

Key Words: Turkeys, Growth characteristics, Wheat, Enzyme, Endo-xylanase

65 Caecal Bacterial Concentrations in Turkey Hens Fed Corn or Wheat Based Diets With and Without Supplemental Enzymes. M. E. Persia*, B. A. Dekorthy, and M. S. Libburn, The Ohio State University, Wooster, OH.

In two experiments, commercial turkey hens were fed diets containing either wheat or corn as the primary cereal grains. In the first study, caecal contents were collected from 6 hens per dietary treatment and pooled into replicate groups (n=3). A Most-Probable-Number (MPN) enumeration technique was employed to estimate total and starch degrading caecal bacteria concentrations. All bacterial concentrations are reported as geometric means (number of bacteria/gram caecal content). No significant differences were noted due to dietary treatment in total bacteria concentrations (corn, 37.2×10³; wheat, 53.3×10³) or starch degrading caecal bacteria concentrations (corn, 11.2×10²; wheat, 9.7×10³). In Experiment 2, a commercial enzyme cocktail containing xylanase, protease and amylase was added to wheat and corn based diets. The diets were fed from 3 to 15 wk of age. The MPN enumeration method was again used to determine the total and starch degrading bacteria, additionally xylan degrading caecal bacteria concentrations were determined (n=2). There were no significant differences due to cereal source. Enzyme treatment had no effect on caecal total bacteria (enzyme, 31.3×10³; no enzyme, 42.3×10³) or starch degrading bacteria (enzyme, 16.2×10³; no enzyme 8.8×10³). There was a non-significant (P<0.13) reduction in xylan degrading bacteria (enzyme, 3.0×10³; no enzyme 5.6×10³). In summary, total and starch degrading caecal concentrations are not significantly affected by differences in cereal grain source or enzyme supplementation, but xylan degrading caecal bacteria may be somewhat reduced by exogenous enzyme supplementation.

Key Words: Turkey, Enzyme, Corn, Wheat, Caecal bacteria
of *E. maxima* at the gut level by measuring plasma carotenoid concentrations. Ionophore sensitivity profiles of eight *E. maxima* field strains were determined using the traditional evaluation of efficacy parameters, including lesion scores, weight gain and feed conversion. The results demonstrated that Avatec-mediated, infected chickens had a significant (P<0.05) improvement in carotenoid concentrations when compared to infected, non-medicated controls (INCs). In the sensitivity trials all six ionophores yielded significantly (P<0.05) lower lesion scores, as compared with the INC’s. The Avatec regimen, however, resulted in a significant improvement of the three assessment parameters, relative to the same from the other five ionophore treatments.

**Key Words:** Coccidiosis, *Eimeria maxima*, Ionophores, Carotenoids, Broilers

### 69 Morphological characterization of acute cecal and distal ileal inflammation following challenge of neonatal chicks with *Salmonella enteritidis* or *Eimeria tenella*. A. P. McElroy1, R. W. Moore1, H. D. Danforth2, C. B. Jones1, B. M. Hargis1, and D. J. Caldwell1, 1Texas A&M University, Texas Agriculture Experiment Station, College Station, TX, 2USDA/ARS/LPSI/PBEL, Beltsville, MD.

Previous work has indicated an association of acute lower intestinal inflammation, regardless of cause, and resistance to *Salmonella* colonization and organ invasion. Presently, day-of-hatch broiler chicks were either unchallenged (control) or challenged with 10⁶ CFU *Salmonella enteritidis* (SE) or 10⁵ sporulated *Eimeria tenella* (ET) oocysts for collection of histological samples from the distal ileum and cecum 24, 48, 72 or 96 h post-challenge. Samples were fixed in buffered formaldehyde, paraffin embedded and sectioned (7 μm) for routine staining with hematoxylin-eosin. As compared to controls, tissues from chicks challenged with either pathogen revealed a mild inflammatory infiltration of the lamina propria of ceca as early as 24 h post-challenge. The observed cecal infiltration, consisting primarily of polymorphonuclear cells, also included a large number of apparent eosinophils in tissues from SE-treated chicks. Histopathologically, the observed challenge-induced inflammatory response of the ceca was present at each sample collection time during the 4 days evaluated. Ileal inflammation was not subjectively observed until 48 h after challenge and persisted throughout the 4 day evaluation period. Morphometrically, marked significant increases in cecal lamina propria thickness were observed in response to SE (24-96 h) or ET (48 or 96 h). Small increases in ileal lamina propria thickness were observed following ET challenge and larger increases following SE challenge. The rapidity of onset of this inflammatory intestinal response provides anatomical evidence of previous postulates about inflammatory mechanisms of induced *Salmonella* resistance in neonatal chicks.

**Key Words:** *Salmonella*, *Eimeria*, lamina propria, inflammatory response

### 70 The Effects of ts-11 Strain of *Mycoplasma gallisepticum* in Commercial Layer Hens. S. L. Branton1, B. D. Lott1, J. D. May1, and W. R. Maslin2, 1USDA, Agricultural Research Service, South Central Poultry Research Lab., Mississippi State, MS/USA, 2College of Veterinary Medicine, Mississippi State University, Mississippi State, MS/USA.

In each of two trials, 80 commercial pullets were separated into two treatments with four replicates of 10 chickens in each treatment. Forty pullets were designated as controls and received no inoculation while the remaining 40 pullets received the ts-11 strain of *Mycoplasma gallisepticum*. Hen-day egg production, egg weight, eggshell strength, Haugh unit score, pipping incidence, and blood/meat spot incidence were monitored and recorded in each trial through an entire laying cycle. Further, eggs from all treatments were collected daily, Monday-Thursday, and individually weighed. No significant difference was observed between the treatments for 45-week means of egg production, for any of the monitored egg or eggshell quality parameters, or for egg size distribution.

**Key Words:** Chicken, Disease, Egg production, Quality, Size

### 71 Interaction between *Lactobacillus reuteri* and aflatoxin in broiler chickens. F. W. Edens1, W. M. Hagler1, I. A. Casas2, and H. El-Nezami3, 1North Carolina State University, Raleigh, NC USA, 2BioGaia Biologics, Inc., Raleigh, NC USA, 3Royal Melbourne Institute of Technology, Melbourne, Victoria, Australia.

Aflatoxins (AF) are produced by *Aspergillus flavus* and *A. paraciticus* growing on corn, peanuts, cottonseed and other popular feed stuffs. B1, B2, G1, and G2 are the most common AF encountered in the feed industry. Feed refusal and BW depression, decreased blood metabolite concentrations, dysfuctional immune responses, decreased hematologi- cal profiles, elevated hepatic enzyme activities and hepatic lipid levels are but a few of the signs associated with aflatoxicosis in poultry. AF can be a potent carcinogen for the liver and intestines in a wide variety of models. Strains of *Lactobacillus rhamnosus*, which have the ability to detoxify AF in vitro, share many of the probiotic properties reported for *Lactobacillus reuteri*. Therefore, it was hypothesized that L. reuteri may be capable of adsorbing AF and alleviating signs of aflatoxicosis in chickens. In 4 mL were tested in vitro to determine binding affinity for AF (10 μg/mL) that was added to tubes with the different L. reuteri strains. The L. reuteri strains with AF were sampled immediately and at 2, 4, and 24 h after incubation at 37 C. Samples were washed four times, the L. reuteri cells were pelleted, and each wash medium was saved for later analysis. Resuspended pellets and each of the washings were diluted with acetominite before being subjected to HPLC analysis for AF. The human L. reuteri strain adsorbed roughly 50% of AF, and the porcine L. reuteri strains adsorbed about 40% after 24 h of incubation. The chicken strain adsorbed slightly more AF than did the turkey strain. When L. reuteri-adsorbed AF was injected into the isolated duodenal loop of chickens the AF-L. reuteri complex remained stable after 10 min in vitro, with L. reuteri in drinking water and AF (0, 1.0, and 2.5 ppm) contaminated feed. AF in rice powder was blended into broiler starter feed and was provided ad libitum. AF at 2.5 ppm depressed BW at 21 d, but L. reuteri co-treatment prevented as great as a BW depression. The data indicate that L. reuteri has the potential to partially alleviate the signs of aflatoxicosis in broiler chickens.

**Key Words:** Lactobacillus reuteri, Aflatoxin, Chicken, Turkey


Labelled thymidine 3H autoradiographic studies were conducted to investigate the binding mechanism of aflatoxin B1 (AF B1) for DNA and the effect of reduced glutathione, cystein, beta carotene and sodium selenite on this mechanism. Colchicin was also used for determination of mitotic activity of the hepatic cells after repeated dosing with AF B1. A total of 40 albino rats were divided into two groups. The first group adminstered 6 doses of AF B1 only, while the second group given the same doses of AF B1 and treated with the above mentioned chemotherapeutic agents. Quantitative autoradiography revealed that reduced glutathione, cystein, sodium selenite and beta carotene significantly inhibited AF B1 binding to DNA in rat’s liver. Such inhibition was probably responsible for the inhibition of hepatic damage in chronic aflatoxicosis and for the anticarcinogenic effect. Moreover studies of the mitotic activity using colchicine demonstrated that the used chemotherapeutic agents inhibited cell turnover, regenerative and reparative hyperplasia and cell proliferation in the liver, thus participating in the prevention of the process of carcinogenesis resulting from the action of AF B1 on the DNA of the hepatic cells. Hence it was concluded that the above mentioned chemotherapeutic agents could be used for protection of Albino rats against the carcinogenic effect of AF B1.

**Key Words:** Autoradiography, Aflatoxin B1, Rat’s liver

### 73 An Improved Method for the Evaluation of Chemical Disinfectants. R. D. Wyatt1, R. L. Stevens1, and C. L. Hofacre2, 1Dept. of Poultry Science, The University of Georgia, Athens, GA, 2Dept. of Avian Medicine, The University of Georgia, Athens, GA.

An improved method for the evaluation of chemical disinfectants was developed. It involves the controlled application of a known microbiological inoculum on the surface of stainless steel followed by the controlled application of a known chemical disinfectant to the inoculated surface.
Following a specified contact time between the inoculated surface and the chemical disinfectant the viability of the inoculum is assessed. This method was developed to closely correlate with the conditions of disinfectant use in poultry hatcheries and processing facilities. In the first series of experiments, the bactericidal activity of seven commercial disinfectants against Staphylococcus aureus ATCC 6538 and Salmonella choleraesuis ATCC 10708 was evaluated. Each disinfectant was evaluated using the manufacturer’s recommended dilution rate with the contact times varying from 0.5 to 10 min. In a second series of experiments, the utility of this method for determination of possible synergism between two chemical disinfectants comprising the active ingredients in a single disinfecting solution was investigated. In the first series of experiments, the contact time required to kill the bacteria when the disinfectants were investigated using the manufacturer’s recommended dilution rate with the combined biocidal activity of two chemicals. This improved method was found to be repeatable, exhibited low variability with day-to-day and operator-to-operator use. Furthermore, this method appears to be adaptable for use with other microbial contaminants and a wide array of chemical disinfectants.

Key Words: Disinfectant, S. aureus, S. choleraesuis, Antimicrobial, Synergism.

74 Construction of a mutant Marek’s disease virus (MDV) having the green fluorescent protein fused to phosphoprotein-38 (pp38). M. Parcells*, R. Dienglewicz, and Y. He, Dept. of Poultry Science, University of Arkansas.

Marek’s disease (MD) is a highly transmissible pathology of chickens characterized by paralysis and the rapid onset of T-cell lymphomas. MD is caused by a acute-transforming herpesvirus called Marek’s disease virus (MDV). Despite years of study and the control of MD through vaccination, the mechanism of MDV-induced transformation as well as several key steps in the virus replication cycle remain unknown. To study the molecular basis of MDV pathogenesis and oncogenesis, we have been employing a reverse genetic approach constructing viruses having specific disruptions and insertions. We have previously reported the construction and characterization of mutant MDVs containing an insertion of a green fluorescent protein (GFP) expression cassette. Recently, we have described a lymphoblastoid cell line (LBCL) using a GFP-insertion mutant MDV. The utility of this system is that it allows the direct examination of early events crucial to the transmission of MDV.

Key Words: Marek’s disease, Recombinant, pp38.

75 Comparative analysis of glycoproteins encoded by virulent, very virulent and hyper-virulent Marek’s disease virus strains (vMDVs, vvMDVs, and hvMDVs). C. E. Shamblin*, C. J. Schmidt*, and M. S. Parcells*, 1Dept. of Poultry Science, University of Arkansas, 2Dept. of Animal Science, University of Delaware.

Marek’s disease (MD) is a lymphoproliferative disorder of chickens characterized by paralysis, immunosuppression and the rapid appearance of T-cell lymphomas. The etiologic agent of MD is an acute-transforming, cell-associated herpesvirus called Marek’s disease virus (MDV). MD is currently controlled through expensive vaccination programs employing serotypically related attenuogenic (SB-1, HVT), or attenuated- oncogenic (CVI-988) MDVs. Recently, strains of MDV have been isolated from commercially vaccinated, contaminated chickens. These strains have been termed very virulent- Marek’s disease viruses (vv+MDV), or hypervirulent Marek’s disease viruses (hvMDVs). Several observations have suggested possible glycoprotein changes in these strains: (1) one of the hvMDV strains confers the ability of co-infecting vaccine virus (HVT) to be transmitted horizontally at a greater frequency, suggesting that cells may be co-infected by these viruses, a condition usually prevented by glycoprotein-mediated interference; (2) cell lines established from hvMDV-induced tumors tend to have immature T-cell immuno-phenotypes, suggesting that the hvMDVs may be accessing different cell populations; and (3) hvMDVs have been isolated from vaccinated chickens indicating that they have evaded the immune response elicited by vaccination (glycoproteins being a key target of the elicited immune response). To gain insight into the possible means by which these new strains of MDV are evading vaccine-induced protection, we have focused on the examination of the glycoprotein-encoding genes of several MDV strains. Using published sequence data for the designing of primers, we have PCR amplified the following glycoprotein-encoding genes from MDV strains GA (vMDV), RB1B (vMDV), and three hvMDV strains: gB, gC, gD, gE, gH, gI, gK, gL, and Orf-1. These were cloned into plasmid vectors and the DNA sequence of these genes was determined by fluorescent automated sequencing. The information obtained from this research promises to provide insight into the mechanism of pathotypic shift for the hvMDV strains and a rational basis for the generation of new, more efficacious vaccines.

Key Words: Marek’s disease virus, PCR, vv+MDV.

76 Sequence analysis of two recent variant infectious bursal disease virus isolates. T. V. Dormitorio1*, M. M. Corley1, J. J. Giambrone1, and D. J. Jackwood2. 1Auburn University, Auburn, Alabama, 2Ohio State University, Wooster, Ohio.

Infectious bursal disease virus (IBDV) serologic variants were isolated recently from vaccinated flocks in California (1179) and Georgia (VI). Nested polymerase chain reaction (PCR) was used to amplify the variable VP2 gene region of the isolates. Sequence data obtained from the PCR products were analyzed using the PGENE Software. 91.74% and 93.08% homology, respectively. The two new isolates were 93.75% similar to each other. The dendrogram plot revealed that isolate VI from Georgia was very closely related to variant Del-E (97.3% homology). In contrast, 1179, although 96.4% related to Del-E, formed a separate lineage from the other previously isolated variants. Both variants have threonine at position 222 in the hydrophilic region, which is proline in all classic strains. Isolate 1179 was different from VI and all other virulent strains in that there was a change from glycine to tryptophan in the heptad motif sequence, SWSASGS, which is hypothesized to be involved in virulence. showed that, isolate VI lost two HaeIII and one SpeI site in comparison with 1179 and the other previously published variants.

Key Words: IBDV, PCR, Sequence Analysis.

77 Safety of Three Intermediate IBDV Vaccines Administered In OVO. J. J. Giambrone1*, T. V. Dormitorio1, and T. P. Brown2. 1Auburn University, 2University of Georgia.

In ovo vaccination is fast becoming a common route for administration of infectious bursal disease virus (IBDV) intermediate vaccines in combination with Marek’s Disease vaccine. However, there is little research as to the safety of these products given by this route. Two experiments were done using SPF broiler eggs. One hundred twenty fertile, 18-day-old embryos were used. Vaccinated embryos were hatched in the same incubator, but different trays, and then placed in Horsefall-Bauer isolation units. Hatched chicks were given feed and water ad libitum. The three commercial intermediate IBDV vaccines were studied. All were given at the recommended dosage. 0.5ml of each vaccine was given to a group of 30, 18-day-old embryos in the yolk sac. Twenty five embryos were not vaccinated. At 7 and 21 days of age, 10 chicks from each of the four groups were killed and their bursae taken for histopathologic observation. Additional data collected from each group were hatchability of fertile embryos, and mortality for hatchling chicks. Data from each experiment showed that all of the vaccines could cause
early subclinical immunosuppression when given to embryos without maternal antibody, since they caused significant microscopic lesions in the bursae (mean lesion scores of 4 on a scale 1 to 4). However, all bursae from the vaccinated birds did show significant regeneration at 3 weeks of age (mean scores of 2 to 3).

Key Words: IBDV, In Ovo, Vaccines, Safety

78 Comparison of Mortality, Response to Vaccination, and Incidence of Tibial Dyschondroplasia in Three Strains of Tom Turkeys. R. M. Fulton1, A. P. Rahm2, M. W. Orth2, and K. D. Roberson2, 1 Dept. of Pathology, Michigan State University, 2 Dept. of Animal Science, Michigan State University.

This study involved monitoring the daily mortality, response to vaccination for New Castle disease and incidence of tibial dyschondroplasia (TD) in BUTA Big 6 (B), Hybrid Large White (H) and Nicholas 700 (N) commercial tom turkeys that were part of a strain evaluation trial at Michigan State University. Cause of mortality was determined by necropsy. Major categories consisted of cardiovascular disease (CVD) (round heart, perirenal hemorrhage and aortic rupture), musculoskeletal abnormalities (angular limb deformities) and trauma (broken bones and/or dislocated joints). Most of the mortality in this study was due to CVD. Round heart accounted for most (30% B, 40% H and 35% N) of the CVD mortality. Vascular disease accounted for 2%, 3% and 8% mortality in B, H and N respectively. Musculoskeletal abnormalities accounted for 12%, 8%, and 16% of mortality, due to culling, in B, H and N respectively. Trauma occurred secondary to handling and was responsible for 10%, 13% and 9% of mortality for B, H and N. To determine if there was a difference between strains in response to vaccination, birds were vaccinated for New Castle disease at 6 and 9 weeks-of-age. Blood was drawn 10 days after each vaccination and titers were determined by ELISA. There was no difference between turkey strains in titers for either observation period. To determine if there was a strain difference in incidence and severity of TD, the right and left tibiotarsus from 30, 10-week-old turkeys were collected and split longitudinally. Tibial dyschondroplasia lesions were assigned a score from 0 to 4. The incidence of TD in all strains was low where no B, 3 H and 4 N turkeys had lesions of TD. There was no difference in incidence or in severity between strains.

Key Words: Turkey, Mortality, Titers, Tibial dyschondroplasia, Vaccination

80 Investigation of E. coli Condemnations in the Ontario turkey industry. B. Sanei*, E. Martin, I. McMillan, and B. Hunter, University of Guelph.

This project was designed to investigate the importance of E. coli related condemnations in the Ontario turkey industry. Condemnation records from over 11,000 shipments of turkeys were examined from the 4 main Ontario turkey processing facilities for the period 1991-1997. Data were manually entered into a data-base program and analysed with SAS software. The main objective of the study was to determine patterns of carcass condemnation in commercial turkeys considering class of turkey, specific reasons for condemnation, and temporal distribution of condemnations. Patterns of carcass condemnation in commercial turkeys for those conditions related to E. coli infections and identifying farms with problems with E. coli condemnations were also studied. The results showed that condemnations accounted approximately 1.5-1.7 % of all turkeys shipped. Birds raised in the winter months consistently had the highest condemnation rate, ranging from 1.7-4.2 % of the birds shipped. Tom turkeys had the highest rate of condemnations, followed by hens and the smaller broiler turkeys. Condemnations in toms were particular high in 1991-1996, being 5.2 % and 4.2 % respectively. Air sacculitis, cellulitis, cyanosis, hepatitis and septicaemia were the most common reasons for condemnation. Air sacculitis was responsible for between 14-37 % of all condemnations.

Key Words: E. coli, Condemnation, Turkey

81 Ovarian steroidogenesis in single and multiple ovulating turkeys. S. Buchanan* and P. M. Hocking, Roslin Institute, Midlothian, Scotland.

Breeding male-line (ML) turkeys that have been selected for high meat yield have multiple ovulating ovaries. The ovary of the ML strain has 3 times as many yellow follicles and a residual ovary weight 5 times that of unselected traditional-lines (TL). Mature follicles produce progesterone while smaller follicles and the residual ovary produce oestradiol. However the ML strain has a lower plasma oestradiol concentration than the TL and there is no significant difference in plasma progesterone. The aim of this experiment was to compare the ovarian output of oestradiol and progesterone of the TL and ML strains. Female turkeys (n=24) were killed five weeks after photostimulation. All ovarian follicles greater than 8 mm were removed and individually incubated for 3 hours at 39°C in Medium 199. Follicles smaller than 8 mm were classified according to size (1-3, 3.5 or 5-8mm) and incubated in groups of 4. Students t-tests and ANOVA were used to test significance of results. There was no significant difference in total progesterone output from the mature follicles between the ML (14.3±3.00ng) and the TL (8.6±2.88ng). The total output of oestradiol was significantly greater in the ML (11.5±1.06ng) compared to the TL (6.1±0.57ng), P<0.001. When considered relative to body weight, to account for differences in blood volume, the oestradiol output was greater in the TL (1.0±0.10mg/kg) than the ML (0.59±0.048mg/kg), P<0.001. There was no significant difference in progesterone output relative to body weight between the TL (1.51±0.487mg/kg) and the ML (0.75±0.163mg/kg). Oestradiol output in small follicles increased significantly as follicle size increased, (P<0.001) and was significantly greater in the TL than in the ML (TL 28.4, 73.6, 119.6pg; ML, 11.9, 24.3, 64.1pg, per follicle, SED=12.38, P<0.001). There was no significant difference in progesterone output between the different small follicle sizes or between the ML and TL. (TL 13.2, 6.6, 46.5pg; ML, 11.7, 23.8, 31.2pg, per follicle, SED=21.75). The results suggest that steroidogenesis of the ML ovary may be impaired.

Key Words: Turkeys, Oestradiol, Progesterone

Monday, AM, Arkansas Ballroom D, PHYSIOLOGY


The effect of Sulfaquinoxaline (SQO), when used over a prolonged period for anticoccidial prophylaxis or as a growth promotant, on the hepatorenal performance were investigated. To determine the effect on the withdrawal period various tissue levels of SQO were also measured. A total of 180 one day old chicks were administered a prophylactic dose of SQO for 35 days. Hematological studies revealed anemia. Impairment of hepatorenal performance were manifested by a significant decrease in the concentrations of total serum protein and albumin, as well as an increase in AST, ALT, creatine, and uric acid. Chronic hepatopathy and nephropathy were observed in most chickens. Hypoglobulinemia and depletion of lymphoid cell populations in the lymphoid organs indicated immunosuppression. Higher concentrations of SQO residues were found in the kidney, followed by the liver and muscles. The SQO withdrawal period was extended from 15 to 18 days. It was concluded that the prolonged administration SQO has a deleterious effect on the hepatorenal functions, causes immunosuppression and lengthens the withdrawal period of the drug.

Key Words: Sulfaquinoxaline, Prophylaxis, Broiler Chickens