
The aim of this study was to examine the effects of 4 herbal products on growth performance of broiler chickens. A total of 150 d – old female broilers (Arbor Acres) were randomly divided into 5 treatments, 3 replicates with 10 birds in each. Treatments included: control (basal diet without feed additives), Digestarom (commercial product of herbal plants), Bioherbal (garlic essence, garden thyme and other essence of herbal plants), Sangrovit (commercial product of herbal plant) and Mentofin (essential oil of eucalyptus and mentol). Treatment consist of the groups that consumed, basal diet (control), basal diet supplemented with 0.03% Sangrovit, 0.015% Digestrom, 0.1% Bioherbal and the group that received 250 mL per 1.000 L Mentofin in drinking water. Water and feed were provided ad libitum throughout the study. In this experiment broilers which consumed Digestarom had highest body weight, but control group had lowest body weight ($P < 0.05$). Birds which received Mentofin had minimum body weight in first week ($P < 0.05$). Feed intake between treatments was not different significantly until 14 d of age ($P > 0.05$), but in 21 d of age Digestarom and control group had highest and lowest feed intake, respectively ($P < 0.05$). At age 42 d feed intake was similar between all treatments ($P > 0.05$). FCR at ages 21 and 42 d did not differ between treatments ($P > 0.05$) but in 35 d, the control group had the highest FCR ($P < 0.05$). The present results indicated that administration of diets with some medicinal plants improve growth performance of broiler chickens.

Key Words: medicinal plants, basal diet, broiler, growth performance

243 Dietary herbal plants and probiotics to modulate fatty acids profile in broiler chicken meat. M. S. K. Sarker*1, M. F. Sharmin2, K. S. Huque1, and C. J. Yang3, Animal Production Research Division, Bangladesh Livestock Research Institute, Savar, Dhaka, Bangladesh, 2Department of Food Science and Technology, Sunchon National University, Jeonnam, South Korea, 3Department of Animal Science and Technology, Sunchon National University, Jeonnam, South Korea.

Two studies were conducted separately with 5 different herbal plants fermenting with multi probiotics (Lactobacillus acidophilus, KCTC 3111; Lactobacillus plantarum, KCTC 3104; Bacillus subtilis, KCTC 3239 and Saccharomyces cerevisiae, KCTC 7915) to assess the fatty acids profile in meat of Ross broiler chicken. In study one, 3 levels (0.5, 1.0 and 2.0%) of 2 herbs (Saliocornia herbacia and Houttuynia cordata) with 4 probiotics were compared with positive and negative control in a trial of 175 broiler chicks. Significantly decreasing trend of saturated fatty acids in meat was observed in higher level of herbs and probiotics inoculation. The unsaturated fatty acids especially EPA (C20:5n3) in 1% and DHA (C22:6n3) in 2% additives in breast and thigh meat were significantly highest compared with other groups ($P < 0.05$). In study 2, similar probiotics and Ross broiler chicks were used but with 3 different plants (Alisma canaliculatum, Laminaria japonica and Cornus officinalis). Significantly highest amount of PUFA and USFA in the meat of Alisma probiotics group was observed compared with other 2 groups ($P < 0.05$). Addition of plants and probiotics can also be sued as antibiotic replacer which was observed in comparison between the positive control (antibiotic) group with others. In both the studies, it is evident that these herbal plants are effective in corporation with multi probiotics to modulate unsaturated fatty acids and decreasing saturation in broiler meat.

Key Words: herbal plants, probiotics, oxytetracycline, fatty acids profile, broiler chicken

244 Evaluation of starting broiler performance in the presence of low-levels of aflatoxin and amelioration of toxicity using a calcium bentonite clay. J. Fowler,* M. Hashim, A. Barrientos-Velazquez, Y. Deng, and C. A. Bailey, Texas A&M University System, College Station.

To evaluate the efficacy of a calcium bentonite clay for the amelioration of the effects of aflatoxin on broiler growth performance and relative organ weight, a total of 288 one-day old Ross x Cobb straight-run broilers were fed a commercial type corn-soy broiler starter diet formulated with 20% DDGS over a 3 week rearing period. Aflatoxin for this trial was introduced into treatment diets by inoculating yellow dent corn and DDGS with live fungal cultures of Aspergillus parasiticus under greenhouse conditions. Four mash basal diets were prepared using various concentrations of clean corn and DDGS and aflatoxin-contaminated corn and DDGS and found to contain 16, 228, 366 and 681 ppb total aflatoxin in the final feed. Each diet was then divided and blended with 0.5% of either a non-binding kaolinite (NBC) or an aflatoxin-binding calcium bentonite clay (4TX), which were spray-applied as a liquid suspension during mixing. Birds were randomly assigned 6 birds to a pen, with 6 pen reps per 8 dietary treatments. Weekly feed consumption and body weights per pen were recorded. At day-21, all birds were killed and weighed individually. The liver, kidney, spleen, and bursa of Fabricius from each bird were weighed and relative organ weights calculated. Data were analyzed as a 2 × 4 factorial design with the 2 sources of clay at 4 concentrations of aflatoxin. Means were separated using Duncan’s Multiple Range Tests. All levels of aflatoxin significantly ($P < 0.05$) increased cumulative feed conversion and decreased broiler productivity index. Relative liver weights were significantly increased by all aflatoxin levels. Relative kidney weights were significantly higher beginning at 400 ppb. The relative spleen and bursa weights were unaffected. The inclusion of spray-applied 4TX clay had no effect on the toxicity of aflatoxin in this trial.

Key Words: aflatoxin, bentonite, performance, organ weight


Fluoxetine (FL), a selective serotonin uptake inhibitor (SSRI), increases serotonin concentrations in central nervous system synapses and has been used to treat depression in humans. A notable side-effect has been BW gain. To study the ability of FL to increase BW gain and feed efficiency (FCR) in broilers, 48 broiler chicks were randomly divided, at hatching, into 3 groups of 16 birds each. Treatments were 0 (CON), 150 (LoD), and 300 µg FL/kg BW (HiD) for 20d. All treatments were administered s.c. in the breast once daily using 0.9% as the excipient.
Individual BW was recorded daily, for 17 d, as well as total pen feed consumption. At 18, 19, and 20 d of age, total bird O2 consumption was measured as an indicator of resting metabolic rate (RMR) and the broilers euthanized. Breast muscle, abdominal fat pad, heart, liver, small intestine and cecal weights were determined. Body weight increased 9% (P ≤ 0.05), feed intake increased 4.5% (P ≤ 0.05), and FCR 11–14% (P ≤ 0.05). There was a marked, non-significant, trend for decreased whole body O2 consumption with increased FL dosage. Fluoxetine may increase growth and feed efficiency by increasing appetite and decreasing RMR.

**Key Words:** broilers, fluoxetine, feed conversion, body weight, serotonin

246 Effects of dietary antibiotics, Calsporin plus QMOS, or antibiotics in combination with either Calsporin or QMOS on live performance of Cobb male broiler chicks on built-up litter. G. F. Mathis*1, B. Lumpkins1, T. T. Lohmann2, and J. Walls1, 1Southern Poultry Research, Inc., Athens, GA, 2Quality Technology International, Inc., Elgin, IL.

Antibiotic growth promoters such as BMD and Stafac are widely used in the broiler industry. Alternative products such as direct-fed microbials and yeast cell wall mannan oligosaccharide with distinctive and different modes of action may be complementary and additive to AGP for enhancing live performance. This pen trial evaluated 5 dietary treatments: negative control (NC), BMD 55 ppm in starter and grower (0–35 d) and Stafac 22 ppm in finisher (35–42 d) (AGP), Calsporin (3 × 10⁴ cfu/g feed) and QMOS (1 lb/ton) (CAL&QMOS), AGP plus Calsporin (AGP+CAL), and AGP plus Calsporin and QMOS (AGP+CAL&QMOS). The objective was to determine affects of various feed additives in combination when added to the diet of growing broilers. A randomized complete block design with 10 blocks, 5 treatments, and 10 pens/treatment was used (LSD; P ≤ 0.05). Each pen received 50 male Cobb chicks on built-up litter, and birds were grown to 42 d of age. European poultry efficiency factor (EPEF) = ((Livability % × BW, kg) × 100)/Age, d × FCR; higher value is better. At 42 d, AGP, AGP+CAL, and AGP+CAL&QMOS increased (P = 0.008) BW compared with NC with CAL&QMOS intermediate. The 0–42 d feed conversion ratio was decreased (P < 0.001) for AGP, AGP+CAL, and AGP+CAL&QMOS compared with NC group with CAL&QMOS intermediate. The 0–42 d mortality was variable (3.6 to 7.2%), but non-significantly different between treatments. Kcal/lb BW and feed expense/lb BW (assuming $300/ton basal feed cost) were lower (P < 0.001) for AGP, AGP+CAL, and AGP+CAL&QMOS groups than for NC group with CAL&QMOS intermediate. The EPEF was greater (P < 0.001) for AGP, AGP+CAL, and AGP+CAL&QMOS than for NC with CAL&QMOS intermediate. At 42 d, best performance for BW, FCR, kcal/lb BW, and EPEF was with AGP+CAL&QMOS. Therefore, a combination of BMD 55 ppm in starter and grower (0–35 d) and Stafac 22 ppm in finisher (35–42 d) along with Calsporin and QMOS is recommended to enhance live performance and profitability of broiler chickens.

**Key Words:** Calsporin, QMOS, BMD, Stafac, broiler

247 Effects of supplementing diets with Calsporin, BMD or Q-MOS plus Calsporin on live performance of broiler chicks. T. T. Lohrmann*1 and M. D. Sims2, 1Quality Technology International Inc., Elgin, IL, 2Virginia Diversified Research Corp., Harrisonburg, VA.

A 42-d pen trial was conducted with 1,740 straight-run Cobb 500 broiler chicks using 4 dietary treatments fed a 3-phase ration program: 1) negative control (NC); 2) BMD 50 g/ton 0–30 d (not in finisher ration); 3) Calsporin (CSP; 300,000 cfu/g feed) and 4) 1x Q-MOS + Calsporin (QMOS+CSP). The objective was to determine affects of various feed additives when added to the diet of growing broilers. QMOS is a proprietary *Saccharomyces cerevisiae* cell wall derived product. There were 16 replicate pens of 30 chicks for Treatments 1,2 and 3, while Treatment 4 had 10 replicates of 30 chicks each. Each pen measured 1.22 × 1.52 m which provided a stocking density of 0.062 m² (0.67 ft²) per bird based on pen dimensions. Chicks were placed on 7.6 cm of clean litter initially, and at 7 d of age 0.91 kg of recycled litter was added to each pen. Maxiban was added at 71 g/ton in starter and 82 g/ton in grower rations. The 42-d BW were respectively 2.047b, 2.036b, 2.164a, 2.228a kg (P < 0.0001; 1-way ANOVA, LSD). The 0–42 d mortality-adjusted FCR were respectively 1.894, 1.877, 1.866, and 1.839 (P = 0.23). The 0–42 d FCR adjusted to BW of NC and using 7:1 BW:FCR were respectively 1.894a, 1.877, 1.866, and 1.839 (P = 0.02). The 0–42 d mortality-adjusted FCR were respectively 1.894, 1.877, 1.866, and 1.839 (P = 0.02). Broilers fed diets supplemented with CSP or CSP+QMOS had significantly improved BW and FCR adjusted using a common BW of NC (7:1 BW:FCR) compared with broilers fed NC or BMD diets, while broilers fed diets supplemented with both QMOS and CAL had the best calorie conversion.

**Key Words:** QMOS, Calsporin, broiler, antibiotic, *Bacillus subtilis* C-3102