

13 Opportunities to enhance performance and efficiency through nutrient synchrony in concentrate-fed ruminants. N. A. Cole*, *USDA-ARS-CPRL, Bushland, TX.*

Synchronization of the ruminal degradation of carbohydrates and CP is projected to increase ruminal microbial protein synthesis, and improve N use efficiency. Attempts to synchronize the fermentation of dietary carbohydrates and CP have met with mixed results, suggesting that either ruminal nutrient synchrony is not important, or that N recycling to the rumen can offset a lack of synchrony. We hypothesized that in high-concentrate diets N utilization could be improved by synchronizing the supply of nutrients in one segment of the gut with those in another segment (i.e., synchronize a ruminal N deficiency with a lower gut N excess, etc.) via oscillating the dietary CP between deficient and adequate concentrations. With corn-based diets and oil-seed based natural protein supplements, N retention has been greater in lambs or steers fed oscillating CP concentrations (at 48-h intervals) than in animals fed a constant CP percentage. Effects of

oscillating CP on cattle performance have been variable, and may depend upon the fermentability of the carbohydrate source (e.g., forage vs. grain, grain processing). In agreement with our hypothesis, Archibeque et al. (2007) reported that net portal uptake of urea was greater in lambs fed oscillating CP than in lambs fed constant CP concentrations. Nutrient intakes also need to be synchronized with the animal's requirements. One method to adjust nutrient intake with requirements is via phase-feeding. Results of studies with dry-rolled corn-based diets indicate that dietary CP concentrations can be decreased late in the feeding period with no adverse effects on animal performance; however, results of studies using steam-flaked corn-based diets are less consistent, possibly due to differences in the aggressiveness of the implant program used. In conclusion, ruminal nutrient synchrony is theoretically a sound principle; however, it seems that N recycling may mitigate effects of asynchrony. Thus, methodologies that increase N recycling and(or) increase the utilization of recycled N may benefit animal performance and the environment.

Key Words: Beef Cattle, Nutrients, Synchrony

Animal Behavior & Well-Being - Livestock and Poultry I

14 Does flavored sow's milk matched with the same flavored post-weaning feed improve performance, reduce post-weaning aggression, and establish an odor preference in piglets? N. Krebs* and J. J. McGlone, *Texas Tech University, Lubbock.*

Odor conditioning has been shown in utero and post-partum in rodents. The objective of this study was to determine the effects of post-partum conditioning of piglets to onion given in the sow diet (and through the milk) on behavior and performance of piglets weaned onto onion-flavored feed. Sows (n = 24) and piglets (N = 96) were assigned (N = 12 experimental units/treatment) to treatments: onion (ON), added to the sows' diet before and after parturition (during lactation), or control diet (CON). Before weaning, the ON and CON piglets were tested in a Y-maze for 1 minute to determine if they were attracted to onion smell. Pigs were more attracted to the left side than the right side (Preference Index: 55% ± 4.03 vs 38.6 ± 4.28) but there was no effect of the odor treatment (P > 0.05). At weaning, ON and CON pigs were kept in treatment groups and given an onion-flavored diet. Aggressive behavior was recorded by 5 min scan samples over 24h after weaning. Performance was recorded for 4 weeks post-weaning. Pigs on the east side (EA) of the room (regardless of the treatment) fought less than the pigs that were on the west side (WE) (3.13 % of the time based on 5 min scan samples over 24h ± 0.84 vs 6.43 % ± 1.10). CON pigs had a greater percentage time engaged in aggressive behaviors (P < 0.05) than the ON pigs (5.99 % of the time over 24h ± 0.767 vs 3.64 % ± 0.767). The weight at d 0 (day of weaning) significantly (P < 0.0001) affected the weight at d 1, 7, 14, 21, and 28 after weaning. Weight gain and feed efficiency were calculated. Treatments did not influence (P > 0.10) pig performance, although the treatment by barn-side interaction (P < 0.05) may have masked main effects. Odor conditioning had no effect on ON preference in a Y-maze, or on post-weaning performance, but odor conditioning reduced piglet post-weaning aggressive behavior.

Key Words: Pigs, Conditioning, Behavior

15 Sex differences in the septal-hypothalamo-pituitary-adrenal axis and distribution of arginine vasotocin and corticotropin releasing neurons in the domestic fowl. F. N. Madison*, A. Jurkevich, and W. J. Kuenzel, *University of Arkansas, Fayetteville.*

Stress is a common stimulus faced by birds in the poultry industry and a better insight into a bird's response to a stressor could lead to improvements in productivity and well-being. In domestic fowl, males have been shown to have higher corticosterone (CORT) levels in response to acute stressors and to be more fearful than females. This suggests that males are more responsive to stress. Sexually dimorphic regions of the brain have been found in a few avian species, yet little is known about sex differences in the septo-hypothalamic region of the brain of the chicken, nor in the neuroendocrine release of stress hormones. We studied sex-related responses to intracerebroventricular injections of neuropeptides. Our past studies showed that male birds had significantly lower basal levels of plasma CORT than females, however males injected with arginine vasotocin (AVT) and corticotropin releasing hormone (CRH) had higher plasma CORT release than females (148% and 90% greater increase at peak response, respectively). Immunocytochemical studies were performed on sexually mature male and female chickens to determine the distribution of AVT and CRH anatomical profiles within the septo-hypothalamic region. Sexually dimorphic differences were observed in the medial bed nucleus of stria terminalis (BSTM), lateral septum (SL), and paraventricular nucleus (PVN). Co-localization of AVT and CRH neurons and fibers were present in the BSTM and SL of males, not females. There were more CRH perikarya in the PVN of female birds compared to males. A significant number of CRH fibers formed baskets around AVT neurons in the supraoptic nucleus of both males and females. Our results demonstrate that females have a higher number of CRH neurons in the PVN, higher baseline levels of plasma CORT, but are less responsive to ICV injections of CRH. Supported in part by NSF grant #IBN 01111006 and NRI grant #2005-35203-15850 from USDA, CSREES.

Key Words: Stress Response, Corticosterone, BSTM and PVN

16 Changes in feeding and standing behavior of transition cows predict risk of sole hemorrhages and ulcers. K. L. Proudfoot*¹, D. M. Veira², D. M. Weary¹, and M. A. G. von Keyserlingk¹, ¹*University of British Columbia, Vancouver, BC, Canada*, ²*Pacific Agri-Food Research Centre, Agassiz, BC, Canada*.

The development of sole hemorrhages and ulcers in dairy cows has been associated with environmental and systemic events related to calving, but the nature of these relationships is unclear. The aim of this study was to identify the relationship between cow behavior around the calving period and the development of lesions later in lactation. The claws of 55 multiparous and 23 primiparous Holstein dairy cows were scored for sole hemorrhage severity and presence of ulcers 2 wk before calving, 3 wk after calving and every 4 wk thereafter until 15 wk. Individual dry matter intake and inactive standing time were recorded from 2 wk before calving to 2 wk after calving. Following data collection, cows were grouped into those with no/low hemorrhage scores throughout the study (healthy), high hemorrhage scores after 3 wk post-calving and ulcers after 3 wk post-calving. Differences in dry matter intake and inactive standing time between the groups and within the periods -2 wk, +2 wk and +24 hr relative to calving were then analyzed using a SAS mixed model where group, parity and body weight were fixed effects and cow was a random effect. Multiparous and primiparous cows were analyzed separately. Multiparous cows that developed ulcers (n=6) ate more in the 2 weeks leading up to calving (17.50±0.72 vs. 15.32±0.43 kg/d P=0.01) and first 24 h after calving (16.88±1.97 vs. 11.93±1.13 kg/d P=0.04) compared to healthy cows. High hemorrhage score cows (n=12) stood longer (not eating) in the 2 wk before calving (653±44 vs. 540±33 mins/d P=0.05) and 24 h after calving (632±43 vs. 801±54 mins/d P=0.02) compared to healthy cows. No differences in feeding or standing behavior were found between healthy and high hemorrhage score first-lactation heifers. These data indicate that changes in feeding and standing behavior of multiparous transition cows are associated with the development of sole hemorrhages and ulcers later in lactation.

Key Words: Lameness, Behavior, Claw Horn Lesion

17 The effect of light intensity on broiler behavior and welfare. R. A. Blatchford*, J. A. Mench, P. S. Wakenell, and G. S. Archer, *University of California, Davis*.

Broilers are typically raised commercially in dim lighting. It has been suggested that providing brighter diurnal light intensity could improve bird health and provide opportunities for more normal behavioral rhythms. We examined the effects of three light intensities (5, 50, and 200 lux) on behavior and leg condition of broilers (N = 455, with 4 replicate pens/treatment). Broilers were reared under these intensities from 1-6 wk of age; photoperiods consisted of 16L: 8D with 1 lux intensity during the scotophase for all treatments. General activity was measured continuously using passive infra-red detection, and feeding activity measured by the amount of feed consumed per hour, during one 24-hour period per pen each week. At 6 weeks of age, all broilers were gait scored using a 0-5 scoring system, weighed, euthanized, and evaluated for the occurrence of leg abnormalities. There were no significant differences between treatments for body weight (mean = 2.32±0.01kg; P = 0.58), feed conversion ratio (0.18±0.004; P = 0.77), or feeding activity (0.94±0.04 kg/hr; P = 0.98). There were no significant differences in gait score, but broilers reared with 50 lux had more (P = 0.002) hock erosions (32 broilers) than those reared with either 5 or 200 lux (17, 10). There was also a trend for broilers reared

with 5 lux to show less (P = 0.08) general activity during the day than 50 or 200 lux and show less (P = 0.001) change in activity between day and night than 50 or 200 lux. Thus, rearing broilers with dim light (5 lux) appeared to decrease activity, while intermediate light intensity (50 lux) was associated with poorer leg health but not increased lameness.

Key Words: Broiler, Lighting, Welfare

18 Separating the effects of group size, stocking density and pen size in broilers. E. H. Leone* and I. Estevez, *University of Maryland, College Park*.

In examining stocking density (SD), group size (GS), or pen size (PS) there is inadvertent confounding between two or more variables. While traditionally a three factor analysis is required to separate the confounded effects our design maximized replication use, reducing the number of treatments required. We used GS of 10, 20, and 30 birds in 1.5m², 3.0m² and 4.5m² PS to study broiler movement and space use. GS 10 was placed in all PS, GS 20 in 3.0m² and GS 30 in 4.5m² PS. This enabled us to look at increasing PS at constant GS (10) and SD (0.15 m²/ bird) and across constant PS where GS/SD increased (GS 10 vs. 20 in 3.0m² and GS 10 vs. 30 in 4.5m² PS). Five focal birds were randomly chosen in each pen and their locations recorded via scan sampling. While the total area utilized by the birds increased with PS both for constant GS and SD (p<0.05), the percentage of space utilized decreased (p<0.05). When SD remained constant broilers were more active in larger PS (p<0.05) and birds in similar PS were more active at higher GS/SD (p<0.05). Interactions with a greater number of group members may have a more profound effect on activity levels than PS alone. At a constant PS movement patterns became more complex for larger GS/SD (p<0.05). While nearest neighbor distances increased with PS (p<0.05), differences were more pronounced across constant GS than SD. Although net displacement, defined as the distance between the first and last observed location, lengthened with growing PS at constant GS (p<0.05), SD was most likely the contributing factor. In equal PS displacement and total distance traveled dropped at higher GS/SD (p<0.05). Overall PS, SD, and GS had significant and individual influences on movement patterns in broilers. PS had the strongest effect on the average distance traveled, whereas SD and GS heavily impacted activity levels, complexity of movement, net displacement, and total distance traveled.

Key Words: Movement, Use of Space, Broiler

19 Reducing stress at the packing plant using prior training and conditioning to odors in finishing pigs. N. Krebs*, M. A. Sutherland, and J. J. McGlone, *Texas Tech University, Lubbock*.

Finishing pigs are infrequently handled on some farms and can be difficult to handle when experiencing novel situations. This study aimed to determine the effects of minimal training and conditioning of finishing pigs to a novel odor (maple syrup, MS) on the ease of handling in a novel environment (simulated processing plant pre-stun area). Pigs were assigned one of four treatments organized with a 2 × 2 factorial arrangement: training and odor exposure at the barn for 10 d (trained-TR or not trained-NOTR) and odor at the plant or not (MS or NO). Trained (TR) pigs (n = 140) were allowed out of their home pens and could chew on MS-soaked flags. NOTR pigs (n = 140) were

not handled nor exposed to MS. The day of the experiment, TR and NOTR pigs were loaded, transported, unloaded, rested, then they experienced a novel simulated pre-stun area. For the MS-pigs, MS was put in the simulated CO2 stun box. The NO-pigs were not exposed to MS. Trained pigs (TR) unloaded faster ($P < 0.05$) than NOTR pigs (TR: 5.61 s/pig \pm 1.79; NOTR: 13.8 s/pig \pm 1.79). Trained (TR/MS and TR/NO) and NOTR/MS pigs received more ($P < 0.05$) paddle hits in the first part of the pre-stun than the NOTR/NO pigs (TR/MS: 0.010 hits/pig/s \pm 0.0015; TR/NO: 0.012 hits/pig/s \pm 0.0015; NOTR/MS: 0.015 hits/pig/s \pm 0.0015; NOTR/NO: 0.00 hits/pig/s \pm 0.0015) but MS pigs received less ($P < 0.05$) hits in the second part of the pre-stun compared to NO pigs (0.039 hits/s/pig \pm 0.0051 vs 0.074 \pm 0.0051). TR pigs spent less ($P < 0.05$) time backing up than NOTR pigs (0.082 % \pm 0.68 vs 2.43 % \pm 0.68 of the time). TR pigs had lower ($P < 0.05$) neutrophils (TR: 41.1 % \pm 1.4; NOTR: 47.6 % \pm 1.4) and lower ($P < 0.05$) neutrophil:lymphocyte ratio (TR: 0.89 \pm 0.05; NOTR: 1.13 \pm 0.05) than NOTR pigs. Cortisol levels increased ($P < 0.01$) with the total time spent in the chute. Adapting facilities and routine management to allow pigs free time outside the finishing home pen with a unique taste and/or odor that is also present at the processing plant may improve the welfare of pigs, the ease of handling, and the time required to move pigs at harvest.

Key Words: Pigs, Stress, Conditioning

20 The efficacy of Meloxicam at relieving the pain response to dehorning in dairy calves. A. Heinrich^{1,3}, T. Duffield^{1,3}, K. Lissemore^{2,3}, E. J. Squires^{1,3}, and S. T. Millman^{1,3}, ¹Ontario Veterinary College, Guelph, ON, Canada, ²Ontario Agricultural College, Guelph, ON, Canada, ³University of Guelph, Guelph, ON, Canada.

The objectives of this study were (1) to describe the duration of pain when calves were dehorned using a local anesthetic and (2) to determine if Meloxicam (Metacam[®], Boehringer Ingelheim, Germany) is effective at mitigating the pain response to the procedure. Meloxicam is a preferential COX-2 inhibiting NSAID with a half-life of approximately 26 hours in bovines. In this study 60 Holstein heifer calves, age 6 to 12 weeks, were blocked by age and randomly assigned to Meloxicam and control treatments. Ten minutes prior to dehorning, calves received a lidocaine cornual nerve block and an I.M injection of either Meloxicam (0.5 mg/kg) or saline. Calves were dehorned using heat cauterization. Twenty-four hours prior to dehorning calves were sham dehorned using the unheated dehorner. Blood samples were taken via indwelling jugular catheters 0, 0.5, 1, 1.5, 2, 4, 6 and 24 hours following sham and actual dehorning in order to measure serum cortisol. Cortisol was measured using human radioimmunoassay kits validated for use with bovine blood (Coat-a-Count[®], DPC, Markham, ON). Pain sensitivity was measured 4 hours after treatment using an algometer. Digital videorecording was used to collect behavior data for 24 hours following sham and 48 hours following dehorning. Data was analyzed using the Mixed procedure in SAS (version 9.1.3; SAS Institute Inc., Cary, NC, USA) with responses during the sham procedures used as covariates. Meloxicam treated calves displayed significantly less pain sensitivity than Controls ($p=0.012$). Meloxicam treated calves also had significantly lower serum cortisol than Controls at all time periods except at 24 hours after dehorning ($p<0.05$). Preliminary behavior results suggest that Meloxicam treated calves performed less ear flicking and head shaking for at least 28 hours following dehorning. There was also a visible circadian pattern to behavior, with calves demonstrating the majority of pain-related

behaviors in the late afternoon. In conclusion, dehorning causes long-term pain and the prolonged action of Meloxicam is effective in alleviating the chronic pain associated with dehorning.

Key Words: Dehorning, Pain, Behavior

21 Removal of sub-therapeutic antibiotics from nursery pigs diets: influence on behavior, performance and physiology. C. Goldsmith*, L. Sadler, K. Stalder, L. Karriker, M. Honeyman, and A. Johnson, Iowa State University, Ames.

Sub therapeutic use of feed grade antibiotics for food animals is being debated. The objective of this study was to determine the effects on nursery pig behavior, physiology and performance of removing sub-therapeutic antibiotics from nursery feeds. Nursery pigs (224 crossbred; 17 - 20 d of age) were assigned to pens (4 pigs/pen) in a completely randomized design arrangement of dietary treatments (with and without feed grade antibiotics). Sub-therapeutic antibiotics used were carbadox and tiamulin/CTC at approved levels. The treatment without antibiotics had additional dietary fat (choice white grease) added at a level of 50%. All pigs were housed in pens (0.36 m²/pig; 2 gilts/2 barrows per pen) with slatted plastic flooring. Pigs were provided ad lib access to feed and water during three dietary phases from 6 to 23 kg BW. Proc Mixed of SAS was used to implement a fixed and random effects model. When dietary phases changed, the time required for all pigs in a pen to initially visit the feeder was recorded. Pigs fed diets without antibiotics visited the feeder more quickly ($P = 0.004$) than pigs fed diets with antibiotics (575 \pm 210 vs. 1454 \pm 210 s). Respiration rates and rectal temperatures were taken weekly on one barrow and gilt per pen and there were no treatment differences ($P > 0.05$). Pigs fed diets containing no antibiotics had better ($P < 0.01$) ADG (0.44 vs. 0.37 \pm 0.01 kg/d) and had improved ($P = 0.015$) Feed to Gain than pigs fed diets containing antibiotics (1.48 vs. 1.66 \pm 0.04 kg/d), respectively. There were no differences ($P < 0.05$) in total nursery feed intake for either dietary treatment. In conclusion, adding 50% more fat to nursery pig diets may allow removal of sub-therapeutic antibiotics when fed to pigs whose health status is not compromised without adversely affecting behavior, physiology or performance.

Key Words: Antibiotics, Behavior, Pigs

22 Effects of ractopamine on transport losses in market weight pigs. J. E. Swan, M. H. Gillis, K. D. Miller, J. D. Muegge, D. H. Mowrey, T. A. Armstrong, W. C. Weldon, and M. J. Ritter*, Elanco Animal Health, Greenfield, IN.

Data on 192 trailer loads of market weight pigs were collected from two different regions (Midwest and Southeast) over one year under U.S. commercial conditions to determine the effects of feeding ractopamine for 21 to 35 d prior to slaughter on transport losses (dead and non-ambulatory pigs). A randomized complete block design was utilized with farm as the blocking factor. Within each region, effects of ractopamine were evaluated on 96 trailer loads of pigs from four different farms with each farm marketing pigs from four different sites to a common slaughter plant. Within a site, ractopamine treatments (0, 5 or 10 ppm) were randomly assigned to the experimental units, barns, and two trailer loads of pigs were used to evaluate the effect per barn. Pigs were loaded and unloaded according to standard commercial

procedures. The number of dead, non-ambulatory, injured (NAI), and non-ambulatory, non-injured (NANI) pigs were recorded during loading, unloading, and the final drive. Data were analyzed using a generalized mixed effects model (GLIMM, SAS® macro GLMM800). Effects of ractopamine on total losses (dead + NAI + NANI) were dependent upon region. Ractopamine had no impact on total losses (1.35% vs. 0.85% vs. 1.55%, respectively for 0, 5, and 10 ppm) in the Southeast. However, in the Midwest, pigs fed ractopamine had higher total losses than control pigs (1.33% vs. 2.63% vs. 2.26%, respectively for 0, 5, and 10 ppm). It is possible that differences in transport times and conditions across the two regions may have contributed to these conflicting results. On average, pigs in the Midwest had 61 min longer journeys, 24 min longer waiting times prior to unloading, 33 min longer unloading times, and 194 min shorter lairage times than pigs in the Southeast. Also, electric prods were used on 52% and 97% of the loads during unloading and during the final drive in the Midwest, while electric prods were not used at these stages in the Southeast. These data suggest that the effects of ractopamine on transport losses are dependent upon other factors such as transport times and conditions.

Key Words: Pig, Ractopamine, Transport losses

23 Value of anesthesia in the dehorning of dairy calves. K. N. Patel*, A. L. Magliaro, J. R. Werner, D. A. Pape-Zambito, and R. S. Kensinger, *The Pennsylvania State University, University Park.*

Dehorning calves is a common management practice in the dairy industry. Both producers and the public would like dehorning to

have as little impact on calf growth and health as possible. Studies have suggested using anesthetics with dehorning to improve calf performance; but there is little objective data on which to base these recommendations for this age group. The purpose of this study was to determine if the use of xylazine and lidocaine in dehorning would affect growth rate, calf health and haptoglobin concentrations. Ninety Holstein heifer calves (6-8 wk old, 64.85 ± 8.1 kg BW) were blocked by age and randomly assigned to: sedative and anesthesia (SA) or control (C) treatment groups. SA calves received 0.2 mg/kg of xylazine IM and cornual nerve blocks with 3 mL of 2 % lidocaine in each cornual cleft. C calves received no drugs. Calves were dehorned by a veterinarian with an electrical iron at 600 C with a mean contact time of 35 s per horn bud. Calves were fed farm-pasteurized milk twice daily and were given calf starter ad libitum. BW was determined using a digital scale equipped with an averaging function (Arlyn 320-LLA). Fecal scores were recorded on days 0, 1, 3, 7, 14, and jugular blood samples were collected on days 0, 1, 3 and 7 relative to dehorning. Calves were observed on each experimental day and a fecal score between 1 (normal) to 4 (watery) was assigned for each calf. Data were analyzed using PROC MIXED in SAS. Health of calves during the study was generally good with 0% mortality, normal respiratory function and average fecal score of 2. Average daily gain from d 0 to d 14 of the study averaged 1.0 kg/d for both SA and C calves and was not affected by treatment. Hematocrit averaged 28 %; and plasma protein averaged 4.7 g/dL for all calves, and neither was affected by treatment. Use of sedative and anesthesia prior to dehorning in the current study provided no detectable change in growth of the calves.

Key Words: Dehorning, Anesthesia, Performance

Animal Health - Livestock and Poultry: Poultry and Swine I

24 Over-supplementation of Vitamin D as a risk factor for chronic heart failure in fast growing commercial broilers. S. Nain*, B. Laarveld, and A. A. Olkowski, *University of Saskatchewan, Saskatoon, SK, Canada.*

Broiler diets are frequently fortified with Vitamin D (D3) above the recommended levels to prevent commonly occurring leg problems. Over-supplementation with D3 has been shown to have detrimental effects on the heart. In order to evaluate the risk of D3 over-supplementation on the incidence of chronic heart failure in fast growing broilers, we examined the effects of high dietary D3 in commercial male broilers. 364 Ross male chicks were randomly assigned to six pens and offered a commercial broiler diet (vitamin D 5,000 IU/kg) or a vitamin D enriched diet (80,000 IU/kg). The birds were housed in floor pens in an environmentally controlled room. During the first 7 days the temperature was maintained at 34°C followed by a gradual decrease to a level approximately 30% lower than that set for normo-thermal brooding. Feed and water were provided ad-lib. All birds were monitored several times daily for overt signs of disease and periodically electrocardiographic measurements were obtained. Morbidity and mortality data were collected daily. Electrocardiographic examination revealed a numerically larger number of birds with cardiac arrhythmia and negative QRS axis on lead-II (an indication of left heart failure) in the D3 fed group in comparison to the control group. The blood gas analysis revealed marked hypoxemia, hypercapnia and lower Hb O₂ saturation percent-

age, with the incidence of cyanosis being 33.0% in the D3 fed group vs control group 24.8% (P<0.05). The risk of ascites was 3.33 fold higher (P<0.05) in birds fed the D3 enriched diet, with the incidence of ascites being 3.3 % in the control and 11.0 % in D3 group. The present findings indicate that over-supplementation of vitamin D increases the risk of chronic heart failure in broilers.

Key Words: Broilers, Heart Failure, Vitamin D

25 Evaluation of Vitamin U on *Salmonella typhimurium* in broilers. A. L. Shaw*, K. S. Macklin, and J. P. Blake, *Auburn University, Auburn, AL.*

Vitamin U (DL-methionine methylsulfonium chloride) is a sulfur-containing methionine derivative previously shown to modulate the immune system and protect intestinal membrane cells in humans and swine. Two 28-day trials were conducted to evaluate the effect of Vitamin U on controlling *Salmonella typhimurium* in broilers. Each trial utilized day-old straight-run broilers that were randomly allotted to one of four dietary treatments (3 reps/trt) employing a corn-soy basal diet (21.5% CP, 3142 kcal/kg). Cecal samples were collected from 12 birds and cultured to ensure they were negative for salmonellosis. On day 1, all birds were challenged with 1 ml of *Salmonella typhimurium* (10⁸ cfu/ml) via oral gavage. Cecal samples (3 birds/trt in Trial 1;