

in CON after at 2 and 8 h. WBC concentration was increased (25.4%,  $P < 0.05$ ) by levan supplementation at 6 h. Levan supplementation after LPS and saline challenge increased (22.53 or 20.97 vs. 18.02 or  $17.52 \times 10^3/\mu\text{l}$ ,  $P < 0.01$ ) WBC concentration compared CON after LPS and saline challenge at 8 h. LV treatment gave higher (25.6%,  $P < 0.05$ ) lymphocyte percentage compared with CON at 8 h. TNF- $\alpha$  concentration in CON was increased (38.0%, 29.6%, 39.3%;  $P < 0.05$ ) compared with that in LV at 4, 6 and 8 h. Serum IL-6 concentration was decreased ( $P < 0.05$ ) in LV compared with that in CON at 6 h (39.8%) and 8 h (27.4%). In conclusion, data from this study suggested that 0.05% levan supplementation decreased serum cortisol, TNF- $\alpha$  and IL-6 concentration, increased WBC concentration and lymphocyte percentage after LPS challenge in growing pigs, and may offer benefit effects on immune function post LPS challenge.

**Key Words:** growing pigs, levan, LPS challenge

**P086 Interaction of Grobiotic-s and antibiotics on growth performance of nursery pigs raised under substandard conditions.** H. Tran\*, J. W. Bundy, Y. S. Li, T. E. Burkey, P. S. Miller, *Animal Science, University of Nebraska, Lincoln.*

A 5-wk feeding study was conducted to evaluate the efficacy of Grobiotic-s (GRO; International Ingredient Corp., St. Louis MO) in ameliorating the deleterious effects of substandard environmental housing conditions on growth performance of nursery pigs. Ninety-six weaned pigs (age,  $20 \pm 1$  d; initial BW,  $5.04 \pm 0.5$  kg) were randomly assigned into 16 pens. Dietary treatments included: 1) control (no GRO or antibiotics, AB); 2) GRO (2.5%); 3) AB (phase 1, 0.18% Tiamulin and 0.4% Chlortetracycline; phase 2, 0.18% Tiamulin); and 4) GRO + AB. Treatments were fed throughout phase 1 (wk 1 and 2) and phase 2 (wk 3). A common diet devoid of GRO or AB was fed to all pigs in phase 3 (wk 4 and 5). Substandard environmental conditions were created by incomplete cleansing of pens and feeders without disinfection following a previous trial (20 d apart). Room temperature was maintained at 23.3 to 24.4°C. Diets were formulated to meet or exceed nutrient requirements (NRC, 1998). Pigs were weighed and fecal samples were scored at d 0 and weekly thereafter. Pigs fed AB had greater ( $P < 0.01$ ) BW on d 14, 21, and 28 compared to non-AB fed pigs. Pigs fed GRO tended to have greater ( $P < 0.10$ ) BW compared to control pigs on d 21 and 28. Greater ( $P < 0.01$ ) ADG (phase 1; 148 vs 85 g), ADFI (phase 1; 231 vs 196 g; phase 2, 491 vs 394 g), and GF (phase 1; 635 vs 434 g/kg) were observed in pigs fed AB compared to non-AB pigs. Overall, pigs fed AB had greater ADFI (496 vs 461 g;  $P = 0.01$ ) compared to non-AB fed pigs. Pigs fed GRO tended to have greater (476 vs 446 g;  $P = 0.08$ ) ADFI compared to control pigs. With respect to fecal scores, AB-fed pigs had decreased scores on d 7 (0.7 vs 1 and 1.1;  $P = 0.07$ ) and d 21 (0.1 vs 0.5;  $P = 0.001$ ) compared to non-AB fed pigs. There were no effects of GRO ( $P > 0.10$ ) on fecal scores. Given the substandard environmental conditions, feeding AB improves growth performance and fecal score of pigs in the early nursery period and inclusion of GRO tends to increase feed consumption when compared to control pigs.

**Key Words:** antibiotics, Grobiotic-s, pigs

**P087 Effect of dietary addition of tiamulin and chlortetracycline on pig performance immediately after placement in the finishing barn.** S. Nitikanchana\*, S. Dritz, M. Tokach, R. Goodband, J. DeRouche, J. Nelssen, *Kansas State University, Manhattan.*

A total of 1,313 pigs (PIC 1050  $\times$  337; initially 22 kg) were used in a 35-d study to determine the effects of adding tiamulin and

chlortetracycline (CTC) to feed on pig performance immediately after the move from the nursery to the finisher barn (placement). There were 31 to 33 pigs per pen and 10 pens per treatment. Immediately after placement, pens were randomly allotted to 1 of 4 treatments arranged in a 2 $\times$ 2 factorial with main effects of tiamulin (0 and 38.5 ppm) or CTC (0 and 440 ppm). Diets were corn-soybean meal-based and contained 20% bakery meal and 35% dried distiller's grains with solubles. Treatment diets were fed from d 0 to 15 with a non-medicated diet fed to all pigs from d 15 to 35. An interaction ( $P < 0.01$ ) was observed for ADFI from d 0 to 15 and for the overall period, with pigs fed the diet without medication and the combination of tiamulin and CTC having greater ADFI than those fed either medication alone. Adding antibiotics to the diets improved G:F from d 0 to 15, with no differences among pigs fed tiamulin, CTC, or their combination (interaction,  $P < 0.01$ ). Adding tiamulin or CTC to diets improved ( $P < 0.01$ ) ADG and G:F from d 0 to 15. However, when the in-feed antibiotics were removed from the diet (d 15 to 35), ADG of pigs previously fed any of the medicated diets decreased (tiamulin  $P < 0.01$ ; CTC  $P < 0.06$ ) compared with pigs previously fed the non-medicated diet. Because the advantages in performance from d 0 to 15 were lost during the period from d 15 to 35, there were no overall differences ( $P > 0.15$ ) in ADG or G:F. Adding tiamulin and/or CTC to diets immediately after pig placement in the finishing barn can improve growth performance, but the performance was not maintained in the subsequent period when pigs were fed non-medicated diets.

**Effects of tiamulin and CTC fed immediately after placement on growing pig performance**

Item	No medication	Denagard	CTC	Denagard + CTC	SEM
d 0 to 15					
ADG, g	648	677	687	723	7.607
G:F	0.551	0.641	0.626	0.621	0.009
d 15 to 35					
ADG, g	921	870	887	855	12.74
G:F	0.491	0.458	0.477	0.454	0.009
d 0 to 35					
ADG, g	804	787	801	798	7.231
G:F	0.509	0.512	0.522	0.507	0.006

**Key Words:** chlortetracycline, pigs, tiamulin

**P088 Cytokine gene expression and secretion by alveolar macrophages derived from pigs fed spray dried porcine plasma.** H. Tran\*, J. W. Bundy, P. S. Miller, T. E. Burkey, *Animal Science, University of Nebraska, Lincoln.*

An ex vivo experiment was conducted to evaluate the effects of spray dried porcine plasma (SDPP) on gene expression and secretion of tumor necrosis factor- $\alpha$  (TNF $\alpha$ ) and interleukin-10 (IL10) by porcine alveolar macrophages (PAM) derived from pigs fed a control diet or diet containing 5% SDPP. On d 14 postweaning, 3 pigs per dietary treatment were selected and euthanized for PAM collection. The PAM cells from each pig were counted and seeded into the culture plates for 24 h before being washed and assigned to 2 treatments: control (no lipopolysaccharide; LPS) and LPS (10 ng/mL). Thus, 4 treatments included: 1) control diet, no LPS (CTL-); 2) control diet + LPS (10 ng/mL; CTL+); 3) SDPP diet, no LPS (SDPP-); 4) SDPP diet+ LPS (10 ng/mL; SDPP+). Total cellular RNA and culture media were harvested at 3, 6, and 24 h after the