responses to handling and transportation, but plasma epinephrine levels were increased at the 7.5 ppm level.

Key Words: pig, Paylean, handling

6 Use of OmniGen-AF to reduce mammary E. coli infection and to augment mucosal immunity in a murine model of bovine mastitis. A. Rowson*[1], S. B. Puntenney[1], E. Aalseth[2], Y. Q. Wang[1], and N. E. Forsberg[1], [1]*OmniGen Research, Corvallis, OR*, [2]*Dairy Consulting, Lake Stevens, WA*.

The goal of the study was to examine effects of feeding an immunomodulatory feed additive (OmniGen-AF) on infection of the murine mammary gland with E. coli and on mammary mucosal immune responses to the infection and to the additive. Twenty-four lactating CD-1 mice were allotted to three treatments: 1) control-fed with no E. coli challenge, 2) control-fed with E. coli challenge and 3) OmniGen-AF-fed with E. coli challenge. The E. coli challenge consisted of intramammary infusion of 50 colony forming units of a bovine mastitis E. coli isolate. OmniGen-AF-feeding consisted of supplementation of the control diet with 0.5% (w/w) of OmniGen-AF (Prince Agri Products, Quincy, IL). Animals were challenged on Day 10 of lactation following 14 days of the feeding protocols. Infection was allowed to progress for 24 hr after which animals were euthanized and samples of mammary tissue were recovered and analyzed for E. coli DNA (a marker of the extent of E. coli infection), mammary major histocompatibility complex (MHC) mRNA and myeloperoxidase (MPO) mRNA. The latter markers provided indexes of antigen presentation by phagocytic cells and of neutrophil infiltration into mammary tissue, respectively. E. coli DNA content was assessed by quantitative PCR. MHC and MPO mRNAs were assessed using quantitative reverse transcriptase PCR with β-actin as a reference. E. coli infusion into the gland caused significant accumulation of mammary E. coli DNA. Feeding OmniGen-AF reduced mammary E. coli DNA accumulation by 60% ($P<0.05$). Infection of mammary tissue with E. coli caused significant elevations in mammary MHC and MPO mRNAs ($P<0.05$). Feeding OmniGen-AF to animals prior to E. coli infusion caused an even greater ($P<0.05$) response in MHC and MPO mRNAs ($P<0.05$). Mechanisms by which feeding the additive reduced mammary infection are attributed to an increase in the infiltration of neutrophils into mammary tissue and to increased expression of antigen-presenting molecules (e.g., MHC) in phagocytic cells of the mammary gland. Further studies are needed to test efficacy of the product in a bovine model of mastitis.

Key Words: OmniGen-AF, mastitis, E. coli

7 Effects of diet source and timing of porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumoniae* (Mpp) vaccines on post-weaning nursery pig performance. E. M. Kane*, M. L. Potter, J. R. Bergstrom, S. S. Dritz, M. D. Tokach, J. M. DeRouchey, R. D. Goodband, and J. L. Nelssen, *Kansas State University*, *Manhattan*.

A total of 400 weanling pigs (21 d old; 5.7 kg BW) were used in a 20-d growth trial to determine the effect of diet source and PCV2 and Mpp vaccination timing on growth performance. Comparisons between diet source (A, B, C, or D) and vaccination timing (d 0 or 8 after weaning) were made in a 4 × 2 factorial arrangement in a randomized complete block design (5 pigs/pen; 10 pens/treatment). Pigs were fed 0.45 kg/pig of SEW diet, and then a transition diet to d 8. A common third diet was fed to all pigs from d 8 to 20. Formulated to similar specifications, the SEW and transition diets were supplied by 4 different manufacturers. On d 0 or 8, vaccines (PCV2: Circumvent PCV, Intervet; Mpp: RespiSure-One, Pfizer) were administered as labeled. Pigs were weighed and feed disappearance measured on d 0, 4, 8, and 20. There were no 2-way interactions for ADG or ADFI. From d 0 to 8, pigs fed diet sources A and B had greater ($P\leq0.01$) ADG and ADFI than pigs fed diet source C with pigs fed diet source D having lower ($P<0.02$) ADG and ADFI than pigs fed diet source B. On d 8, pigs fed diet sources A and B were heavier (7.4 kg) than pigs fed diet sources C (7.1 kg) or D (7.2 kg). There were no effects of SEW and transition diet source fed on performance from d 8 to 20. From d 0 to 8, pigs vaccinated on d 0 had decreased ADG ($P<0.01$; 0.19 vs. 0.21 kg), ADFI ($P<0.01$; 0.17 vs. 0.18 kg), and lower d 8 weights ($P<0.01$; 7.2 vs. 7.4 kg) compared with pigs vaccinated on d 8. From d 8 to 20, pigs vaccinated on d 8 had decreased ($P=0.05$; 0.31 vs. 0.32 kg) ADG compared to d 0 vaccinates. In summary, diet source influenced pig performance, despite similar ingredient and nutrient specifications. Also, the vaccines used in this study reduced feed intake and growth immediately after vaccination. The impact of vaccination timing and diet source on pig performance should be considered when investigating performance issues in the nursery.

Key Words: PCV2, vaccine, nursery pig

8 Effects of porcine circovirus type 2 and *Mycoplasma hyopneumoniae* vaccines on nursery pig performance. M. L. Potter*, A. W. Duttlinger, J. R. Bergstrom, S. S. Dritz, J. M. DeRouchey, M. D. Tokach, R. D. Goodband, and J. L. Nelssen, *Kansas State University*, *Manhattan*.

Nursery pigs are often vaccinated for porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumoniae* (*M. hyo*). Concurrent with the introduction of PCV2 vaccines, producer reports indicate increased difficulty getting pigs to eat after weaning. These reports prompted this trial to evaluate PCV2 and *M. hyo* vaccine effects on nursery pig performance. A total of 360 pigs (21 d old; 5.9 kg BW) were blocked by BW and used in a 35-d study to evaluate two commercial PCV2 vaccines: Circumvent PCV (CV; Intervet) and CircoFLEX (CF; Boehringer Ingelheim), and one *M. hyo* product: RespiSure (MYCO; Pfizer). Comparisons between PCV2 (CV, CF, or control) and *M. hyo* (MYCO or control) vaccines were made in a 3 × 2 factorial in a randomized complete block design (5 pigs/pen; 12 pens/treatment). Vaccines were administered according to label directions; CF at weaning; CV and MYCO at weaning and 21-d later. Similar diets were fed to all pigs. Pigs were weighed and feed disappearance determined on d 0, 4, 8, 14, 21, 25, 29, and 35 to calculate ADG, ADFI, and G:F. No 2-way interactions were observed ($P<0.05$). Overall, CV vaccinated pigs had decreased ADG ($P<0.02$; 0.39 vs. 0.41 and 0.41 kg) and ADFI ($P\leq0.01$; 0.56 vs. 0.60 and 0.59 kg) compared with CF and control pigs, respectively. On d 35, CV pigs weighed less ($P<0.01$; 19.5 kg) than CF (20.1 kg) or control pigs (20.1 kg). MYCO vaccinated pigs had lower ADG than controls ($P\leq0.05$) from d 14 to 21 (0.46 vs. 0.48 kg) and d 21 to 25 (0.42 vs. 0.46 kg). On d 35, MYCO vaccinated pigs tended to weigh less ($P=0.06$; 19.7 vs. 20.1 kg) and have lower ADFI ($P=0.06$; 0.57 vs. 0.59 kg) than controls. These data indicate that PCV2 and *M. hyo* vaccination can independently reduce feed intake and performance of nursery pigs, with the PCV2 vaccine impact being product-dependent. Although PCV2 and *M. hyo* vaccines are known to improve finishing performance, negative impacts on nursery performance must be considered when implementing vaccine strategies.

Key Words: growth, pig, vaccine