**Development of a Bacillus subtilis product for a large commercial swine farm to reduce Clostridium perfringens and Clostridium difficile in neonatal pigs.** A. Baker*1, E. Davis1, D. Rosener1, K. Novak1, R. White2, A. Veldkamp1, and T. Rehberger1, 1Agtech Products, Inc., Waukesha, WI, 2Iowa Select Farms, Iowa Falls, IA.

Probiotics are defined as a live microbial feed supplement which beneficially affects the host animals by improving its intestinal microbial balance. It is known that probiotic effects were mediated through immune regulation, particularly through balance control of cytokines. There have been several efforts to search for alternatives to antibiotics. The objective of this study was to investigate the effect of probiotics supplementation on the growth performance and immune response of weaning pigs. Treatments were 1) NCON (basal diet), 2) PCON(basal + 0.12% avilamycin) and 3) A(basal + 0.2% Aspergillus oryzae), 4) B(basal + 0.2% Lactobacillus casei), 5) C(basal + 0.2% Bacillus subtilis), 6) D(basal + 0.2% Lactobacillus rcticus). A total of 120 pigs ([L x Y] x D, 7.16 ± 0.01 kg average body weight, weaned at 23 ± 3 days of age) were assigned to 6 treatments of 5 replicates of 4 pigs per pen in a randomized complete block design. During the whole experimental period, ADG (217, 294, 223, 236, 226, 225 g, P<0.01) and ADFI (474, 548, 451, 489, 476, 467 g, P<0.05 for NCON, PCON, A, B, C, D, respectively) of group PCON were greater than other treatments but G:F ratio in treatment A(Aspergillus oryzae) was similar to group PCON (0.538, 0.495, P<0.05 for PCON, A, respectively).

Lipopolysaccharide was injected to induce immune response in weaning pigs. At 3h post-injection, blood was collected and analyzed for CD4+ and CD8+ T-cells. The CD4+/CD8+ ratio was determined using the fluorescence cytometry method. The number of CD4+ T cells was significantly lower in group C than in other treatments (P<0.10). Pigs in the NCON and PCON group had more CD4+ T cells than the pigs in the probiotics treatments (1026.7, 1075.7, 906, 758, 421, 758, P<0.10 for NCON, PCON, A, B, C, D, respectively). The number of CD8+ T cells was not significantly different among treatments. There were no differences in the ratios of CD4+/CD8+ among treatments. These results demonstrated that supplementation of 4 different probiotics had potential effects on growth performance and immune response in weaning pigs.

**Key Words:** probiotics, weaning pigs, CD4