

Effects of Group-Housed Gestating Sow Nutrition, Environment and Social Rank on Piglet Immune Responsiveness to Weaning

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The consequence of prenatal stress exposure of gestating sows on the immune responsiveness of her progeny is not well understood. The objective was to assess the effects of social rank, and diet and feeding stall treatments of gestating sows on immune status of her progeny. Pigs ($n = 40$) born to dominant (DOM) and submissive (SUB) sows that were housed in group-pens with different feeding stalls [0.6 m (SHT) or 1.8 m (LNG)] and fed modified gestation diets [wheat middlings and soybean hulls (MID-SOY) or distillers dried grains and corn germ-meal (DDG-GM)] were used in this study. Blood samples were collected. Total IgM was less ($P = 0.01$) in pigs from SUB fed DDG-GM, but cortisol was greater ($P = 0.05$) in pigs from SUB fed MID-SOY (social \times diet). Total IgG ($P < 0.01$) and IgG₁:IgG₂ ($P < 0.01$) were greater in pigs from sows in LNG and fed DDG-GM, but ConA ($P = 0.05$) and IgM ($P = 0.02$) were greater in pigs from sows fed MID-SOY (diet \times stall). LPS-induced ($P < 0.01$) and cortisol ($P < 0.01$) were greater in pigs from sows fed DDG-GM. Total IgG ($P < 0.01$) and IgM ($P < 0.01$) were greater in pigs from sows in pens with LNG. Pigs from SUB had higher IgG₂ ($P < 0.01$), but pigs from DOM had higher ($P = 0.10$) IgG₁:IgG₂. These data imply that sow social rank and dietary treatment and environment during gestation may affect the immune responsiveness of her progeny.

Biography:

Dr. Janeen Salak-Johnson obtained her BS, MS, and PhD degrees in Animal Science from Texas Tech University. After earning her PhD in 1994, she was awarded a NIH Postdoctoral Training Fellowship in Psychoneuroimmunology and a NIH-NSRA Pain Fellowship in Pain at the University of Minnesota. She specialized in the areas of immunology, virology, and pain. In late 1999, she joined the faculty at the University of Illinois in Animal Sciences. She has authored or co-authored over 150 refereed publications, proceedings, and abstracts and given over 80 presentations in areas of Stress Physiology and Animal Well-being and Animal Behavior and Care.