

Immunological Methods for Monitoring the Effectiveness of “Immunonutrients” During Infections in Newly Weaned Piglets

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A number of immunological methods are currently being developed as part of a study examining pathogenic *E.coli* infection in newly weaned piglets. When a repeatable infection model has been established, the effect of supplementing piglets with “immunonutrients” such as the amino acids glutamine and arginine will be examined.

Various clinical indices are being measured in piglets, including temperature, body weight, feed intake, and diarrhea scores. Measurement of various immunologic parameters demonstrates how well the immune system of these animals is able to respond to infection. Immune cells such as lymphocytes and neutrophils are isolated from peripheral blood and immune tissues for immune assays. The respiratory burst or capacity to kill foreign pathogens is measured in activated neutrophils. Specific lymphocyte populations are phenotyped and counted according to their cell-surface molecules. Immune cells from Peyer's patches in the intestinal wall, and mesenteric lymph nodes, adjacent to the intestine, are isolated from sacrificed animals. Lymphocyte populations in these tissues are isolated, identified and their ability to proliferate in response to mitogens is determined. The production of cytokines, the regulatory proteins that mediate the complex interactions among immune cells, is also measured.

Implications:

This ongoing research has several key implications to the pork industry. Infections caused by pathogens such as *E.coli* result in significant losses each year. Developing a better understanding of how the swine immune system functions during infection will enable new methods of treating or preventing this illness with inexpensive nutritional interventions aimed at boosting the immune system and reducing the overall incidence of infection. This research is funded by the Alberta Pork Producers and the AARI.