

SYMPOSIUM: Barrier function and systemic response of the gastrointestinal tract to the aspects of management and nutrition: Conclusions

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The paper by Dr. Kim and colleagues highlighted that the systemic immune response influences performance of pigs in two distinctive routes: alteration of nutrient partitioning, and neurological response to infection such as anorexia. The role of "nutrition" in tackling both routes of the systemic response initiated by compromised barrier function was reviewed, with attention being paid to the roles of selected amino acids and the supplementation of nutrients that reduce production of eicosanoid mediators as possible solutions to ameliorate immune system activation. Further research examining the individual and synergistic effects of putative nutrients, however, is required to establish widespread and cost-effective nutritional strategies to enhance the efficiency of growth of pigs under commercial conditions.

Pigs raised commercially are consistently exposed to (sub) clinical infections and (or) stressors, and the pigs' physiological responses to such challenges can significantly reduce growth potential and impact on disease outcomes. Research by Dr. Moeser and his team has shown that, at least in young pigs, progress has been made in understanding some of the processes by which physiological and pathophysiological stimuli, including cytokines and products released as a result of the stress response, regulate tight junction function in the gastrointestinal tract (GIT). In particular, it is evident that "stress" in the production cycle, as in the post-weaning period, leads to both short-term and long-term developmental changes to the GIT that can impact lifelong disease susceptibility.

Collectively, information presented in this symposium allows for a greater understanding of the biological mechanisms by which stress, disease and sub-optimal nutrition impacts barrier function and its subsequent effects on production and disease. It is hoped that discussion arising from this symposium will result in the investigation of new or revised management and therapeutic strategies to enhance GIT health and performance throughout the production lifespan of the pig, by focussing on either not compromising and (or) strengthening barrier function at vulnerable stages of the pig production cycle.