NONRUMINANT NUTRITION SYMPOSUM:  
Breaking the mold –Formulating monogastric diets without traditional ingredients¹

K. L. Saddoris-Clemons²
Boehringer-Ingelheim Vetmedica, Inc., St. Joseph, MO 64506

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The Nonruminant Nutrition Symposium titled “Breaking the mold: Formulating monogastric diets without traditional ingredients” was held at the Joint Annual Meeting of the American Dairy Science Association and American Society of Animal Science in Indianapolis, IN, July 8 to 12, 2013. Ingredients typically used in monogastric diets, such as corn, wheat, and soybean meal, are now facing greater competition from both the human food and biofuels industries. To limit feed costs and remain profitable in the future, producers must be flexible to provide diets with alternative ingredients when supply of one ingredient become limited. The purpose of the symposium was to explore alternative feed ingredients and determine the feeding value of these potential ingredients. Knowledge on available feed ingredients from around the globe, factors to consider when evaluating potential alternative ingredients, formulating high quality cost effective swine diets with alternative ingredients, and evaluating new byproducts from the biofuel industry were discussed during this symposium.

The first speaker of the symposium was R. Campbell (Pork CRC, Willaston SA, Australia) whose presentation was titled “Alternative ingredients for diets – A global perspective” (Campbell, 2013). Global animal feed production approached 865 million t in 2012. While corn and soybean meal have been the main cereal and protein source in the United States, other countries regularly use wheat millings, barley, sorghum, and triticale as cereal sources and canola seed meal for protein sources. Dried distillers grains with solubles also remains an alternative source for cereal and protein sources in livestock diets. Developing means to accurately access the nutrient value of an ingredient and define inclusion levels are necessary to allow accurate assessments comparing cost effectiveness vs. animal performance.

The next speaker was K. Adams (Akey/Cargill, Brookville, OH), discussing “Factors to consider when formulating diets with alternative ingredients” (Adams, 2013). Many byproducts are variable by nature and require frequent analysis to accurately estimate the nutritional value of the ingredient. Accurate analysis of percentage moisture, protein, fat, ADF, NDF, Ca, P, Na, ash, and AA is necessary to allow for the appropriate use of alternative ingredients to support acceptable growth performance in animals.

The symposium continued with R. T. Zijlstra (University of Alberta, Edmonton, Canada), discussing “Controlling feed cost by including alternative ingredients in swine diets: A review” (Woyengo et al., 2014). Reducing total diet cost per metric ton of metric feed does not always result in the lowest cost per kilogram of gain. The successful use of alternative ingredients is dependent on appropriate characterization of available nutrients. Several available alternative feedstuffs contain high levels of antinutritional factors (ANF) such as fiber, tannins, glucosinolates, and heat-labile trypsin inhibitors. Methods such as reducing the particle size, dehulling or scarification of fiberous ingredients, air classification to create fractions with lower levels of ANF, heat treatments to reduce heat labile ANF factors, and use of fiber-degrading enzymes can be implemented to improve nutrient availability in some alternative ingredients. The ability of alternative ingredients to reduce the cost of feed per kilogram of pork produced is dependent on both the accurate assessment of nutrient availability and controlling the negative effects of ANF.

The fourth presentation, by J. D. Hancock (Kansas State University, Manhattan), discussed the necessities to maintain high quality swine and poultry diets with

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²Corresponding author: kari.saddoris-clemons@boehringer-ingelheim.com
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