

**151 Energy Metabolism, Digestive and Absorptive Capacity, and Fecal Microbiome of Nursery Piglets Selected for Feed Efficiency.** Yujia Wu<sup>1</sup>, Paula Azevedo<sup>1</sup>, Shunshun Jin<sup>1</sup>, Xiaoya Zhao<sup>1</sup>, Haoxiang Xu<sup>1</sup>, Huaigang Lei<sup>2</sup>, Argenis Rodas<sup>1</sup>, Martin Nyachoti<sup>1</sup>, Chengbo Yang<sup>1</sup>, <sup>1</sup>*Department of Animal Science, University of Manitoba,* <sup>2</sup>*Topigs Norsvin Canada Inc.*

**Abstract:** Improving feed efficiency (FE) plays an important role in the economic and environmental sustainability of the swine industry. Genetic selection based on low estimated breeding value for feed conversion ratio (EBV\_FCR) can effectively improve FE. This study investigated the growth performance, nutrient and energy digestibility, activity of hydrolyses, expression of nutrient transporters and tight junction proteins, and fecal microbiome of nursery pigs selected for high and low feed efficiency. A total of 128 pigs weaned at 21 + 2 days were selected from parents of low and high EBV\_FCR calculated based on phenotypes for FCR during growing-finishing stage. Pigs were fed with corn-soybean meal-based diets in a two-phase feeding program for 4 weeks under similar rearing conditions. The results revealed that there were no differences in average daily feed intake, average body weight gain, FCR, energy, and nutrient digestibility between the two groups. Moreover, enzyme activity kinetics results showed no differences in the maximal activity of alkaline phosphatase, sucrase, maltase, and maltase-glucoamylase between the two groups ( $p > 0.05$ ). Real-time PCR analyses showed that SGLT1, ASCT2, PepT1, EAAC1, and BoAT1 mRNA abundances were not affected by the pig groups ( $p > 0.05$ ). There were also no significant differences in claudin-1 and ZO-1 protein abundances on the jejunum membrane between the two pig groups. The two pig groups had similar fecal microbial taxonomic composition and function. However, the microbiota diversity results showed that the high-efficiency pig group has higher species evenness, and there is a trend ( $p < 0.084$ ) for beta diversity difference, which indicates that high-efficiency pigs might have a more homogenous and healthier gut environment. In conclusion, nursery pigs selected for high and low feed efficiency based on parents EBV\_FCR did not differ in growth performance, nutrient digestibility and absorptive capacities, microbiota composition and function.

**Keywords:** feed efficiency, digestive tract, microbiota

**152 Effect of Continuous or Intermittent Feeding of Ergot Contaminated Grain in a Mash or Pelleted Form on the Performance of Backgrounding Beef Steers.** Matthew R. Reynolds<sup>1</sup>, Kim Stanford<sup>2</sup>, Daniela M. Meléndez<sup>3</sup>, Karen S. Schwartzkopf-Genswein<sup>3</sup>, Timothy A. McAllister<sup>3</sup>, Barry R. Blakley<sup>1</sup>, John J. McKinnon<sup>1</sup>, Gabriel O. Ribeiro<sup>4</sup>, <sup>1</sup>*University of Saskatchewan,* <sup>2</sup>*University of Lethbridge,* <sup>3</sup>*Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada,* <sup>4</sup>*Department of Animal and Poultry Science, College of Agriculture and Bioresources, University of Saskatchewan*

**Abstract:** The objective of this study was to evaluate the effect of feeding pelleted or mash ergot contaminated grain continuously or intermittently on performance and blood parameters of backgrounding steers. Sixty black angus steers ( $300 \pm 29.4$  kg) were used in a complete randomized backgrounding (60% barley silage:40% concentrate DM basis) 84 d study. Steers were randomly assigned to 4 different treatments and housed individually. Treatments included: 1) control ration (CON; no added ergot), 2) continuous ergot mash (CEM; fed continuously at 2 ppm), 3) intermittent ergot mash (IEM; fed at 2 ppm on the first wk of each 21 d period and control diet for the remaining 2 wk), and 4) intermittent ergot pellet (IEP; fed at 2 ppm during the first wk of each 21 d period and control diet for the other 2 wk). Calves were weighed every 21 days and blood samples were collected on d 0, 42, and 84. No treatment effects ( $P > 0.05$ ) were observed for complete blood count. Steer DMI was reduced for all ergot diets compared to the CON diet ( $P < 0.01$ , 7.45 vs. 8.05 kg/d). Steer ADG was reduced for all ergot diets compared to the CON diet ( $P < 0.01$ ). CEM fed steers had lower ADG ( $P < 0.01$ , 0.980 vs. 0.735 kg) and shrunk final weight ( $P < 0.01$ , 366 vs. 350 kg) than CON calves, but CEM and IEM were no different. CEM fed steers had lower Gain:Feed ( $P < 0.07$ , 0.130 vs. 0.142) than CON calves. Pelleting ergot contaminated grain did not reduce the impact of ergot alkaloids on any of the measured parameters. Results suggest that continuously or intermittently feeding an ergot contaminated TMR (2 ppm) can significantly reduce the growth performance of backgrounded feedlot steers but no effects were observed for blood parameters. Pelleting was not an effective method of reducing ergot toxicity.

**Keywords:** cattle, ergot, mycotoxin