

PSXIV-18 Fecal dry-Matter Output Determination from Irregular Marker Doses. Corey A. Moffet¹, Stacey A. Gunter¹, ¹USDA-ARS, Southern Plains Rang

Abstract: Automated head chamber systems (AHCS) configured to offer known quantities of feed to individual animals may potentially be used to dose animals with an indigestible marker. Fecal marker analysis commonly assumes steady-state fecal concentration represented by average measured concentration. Due to irregular voluntary use of an AHCS, it's not likely steady-state fecal concentrations would be achieved. Our objective was to determine whether steady-state assumptions could be relaxed and fit measured concentrations to multi-dose digesta kinetics models to produce reliable fecal output estimates when dose times and amounts are known but irregular. We used individually penned, rumen fistulated Dexter steers (n = 4, initial BW = 322 ± 15 kg) limit fed a diet of hay and protein supplement in two experiments. First, after a 7-d acclimation period, steers were given a dose of TiO₂ through the rumen fistula. On d 14, the steers received another dose. Over a period of 120 h after each dose, 14 fecal samples were collected. In Exp. 2, 7-d after the steers had received their 2nd dose, steers received the first of 6 daily doses, then on d 7 no dose, and on days 8 to 12 daily doses resumed. Beginning on d 7, when dose was skipped, fecal sampling began and over a 120-hr period, 14 fecal samples were collected. During both experiments total fecal collections were also made. For Exp. 1, marker concentration data were fit to a G2 digesta kinetics models and for Exp. 2, concentration data were fit to a multi-dose G2 digesta kinetics model. The multi-dose approach models over time, the sum of each known pulse, assuming identical digesta kinetics for each dose. Measured fecal output in Exp. 2 averaged 2,525 g/d, but the estimates obtained from fitting measured concentrations to multi-dose digesta kinetics models was significantly less (P = 0.005, 2,265 g/d).

Keywords: fecal dry-matter output, indigestible marker, digesta kinetics

MEAT SCIENCE AND MUSCLE BIOLOGY

PSIII-19 Growth Performance, Carcass

Traits, and Meat Quality of Pigs from Divergent Groups for Pork Loin

Tenderness. Gabryella Luiza F. São José¹, Amoracyr José C. Nuñez¹, Luiz Fernando F. Brito², Allan P. Schinckel², Vanessa Livian A. Pereira¹, Albino Luchiarri Filho³, Adriana S. do Carmo¹, Aline Cesar⁴, Vivian V. Almeida¹, ¹Department of Animal Science, Federal University of Goiás, Goiânia, ²Department of Animal Sciences, Purdue University, ³LinBife, Piracicaba, ⁴Department of Agri-Food Industry, Food and Nutrition, University of São Paulo, Piracicaba

Abstract: Genetic selection for improved feed efficiency and lean growth in pigs has resulted in reduced intramuscular fat content. The aim of this study was to evaluate growth performance, carcass traits, and meat quality in genetically lean immunocastrated pigs grouped based on divergent Warner-Bratzler Shear Force (WBSF) values. The WBSF values of the longissimus lumborum (LL) muscle were obtained from a previous trial evaluating 4 diets, 6 replicates per diet, and 3 pigs per pen, summing up to 72 Large White immunocastrated male pigs. Pigs (initial BW = 28.44 ± 2.95 kg) were fed diets containing either 1.5% soybean oil (CON) or 3% soybean oil (SO), canola oil (CO), or fish oil (FO) in a 98-d study. The original dataset was used to segregate pigs into 2 treatments: high (5.4 to 4.3 kg) and low (3.8 to 2.8 kg) WBSF. The SO diet did not show extreme values for WBSF and was not included in the resulting dataset, which comprised 2 treatments (high- and low-WBSF), 3 blocks (CON, CO, and FO), and 6 replicates per treatment (12 experimental units). No significant differences were observed for growth performance between WBSF groups. When compared with low-WBSF pigs, high-WBSF pigs tended to have decreased (P = 0.07) backfat thickness and intramuscular fat content in the LL and greater (P = 0.09) carcass lean percentage and cooking losses. Oleic acid concentration was less (P = 0.05) in the LL intramuscular fat of high- than low-WBSF pigs. There were statistical tendencies for decreased (P = 0.06) total monounsaturated fatty acids and increased (P = 0.09) total polyunsaturated fatty acids concentrations in the LL intramuscular fat of high- than low-WBSF pigs. In conclusion, immunocastrated male pigs with tender meat had improved nutritional attributes of pork, with no effects on feed efficiency and carcass traits.

Keywords: immunocastrated pigs, intramuscular fat, shear force