

172 A technique for mammary biopsy in lactating sows. J. Pérez Laspiur, R. N. Kirkwood, B. J. Moore, N. K. Ames, and N. L. Trottier*, *Michigan State University*.

The objective of this study was to develop a biopsy technique to obtain mammary tissue (MT) from lactating sows in sufficient amount for RNA and protein extraction and histology examination, while maintaining the physiological integrity of the mammary gland (MG) and welfare of the sow. Eighteen multiparous lactating sows were used. Biopsies were performed between d 4 and 7 and d 17 and 19 of lactation on the first and second thoracic MG, respectively. Piglets were removed and sows anesthetized with an intramuscular injection of TKX (250 mg tiletamine and 250 mg zolazepam in 2.5 mL ketamine and 2.5 mL xylazine-100) at 1 mL per 34 kg BW. During anesthesia, sows were positioned in lateral recumbency to expose one entire side of the udder. One MG was prepared for biopsy using Betadine scrub followed by rinsing with 70% alcohol and cleaning with Betadine solution. The incision area was numbed with sub-cutaneous and intra-mammary administration of Lidocaine (1 mL, 2%). A 2-cm incision was made vertical to the plica lateralis, aligned with the nipple and approximately 5 cm dorsal to the perimeter of the nipple areola. Hemorrhage was minimal but, if evident, was controlled by pressure with gauze. Mammary tissue (400 to 850 mg, n=2) was exteriorized with forceps and excised with a scalpel in a circular motion. The incision was closed using simple interrupted sutures. Time from incision to closing was approximately 5 min. Piglets were returned to suckle following full recovery from anesthesia. Average daily gain of piglets suckling the glands subjected to biopsy versus that of piglets suckling intact glands did not differ. Sow feed intake on the day following biopsy was not different than that of sows on the day prior to biopsy. In all but one sow, there were no local or systemic infections. In conclusion, up to 1.7 g MT can be obtained in a live lactating sow without adversely affecting lactation performance.

Key Words: Mammary gland, Biopsy, Sow

173 Effects of dried distillers grains with solubles on feed preference in growing pigs. C. W. Hastad*, J. L. Nelssen, R. D. Goodband, M. D. Tokach, S. S. Dritz, J. M. DeRouchey, and N. Z. Frantz, *Kansas State University*.

Three studies were conducted to evaluate the effects of dried distillers grains with solubles (DDGS) on palatability and feed intake of growing pigs. In Exp.1, 90 gilts (initially 26.4 kg) were used to evaluate a corn-soybean meal-based diet with or without 30% DDGS from two different sources on feed preference. Source 1 was obtained from an ethanol plant built before 1990 and source 2 was obtained from a plant built after 1990. Each pen had two feeders, one with the corn-soybean meal diet and the other with one of the DDGS sources. There were 10 pens with six pigs per pen and 10 pens with three pigs per pen. Feeder locations were switched twice daily. From d 0 to 7, there were no differences in ADFI among the dietary treatments. However, from d 7 to 13 and overall, feed intake was lower ($P < 0.01$) for both DDGS diets when compared to the corn-soybean control. For Exp. 2 and 3, there were four feeders in each pen, each containing a different diet. Feeder locations were switched twice daily. In Exp. 2, 187 barrows and gilts (initially 23.6 kg) were used to examine the effects of increasing DDGS (source 2) in a 21 d preference study. Treatments consisted of a control (corn-soybean meal) diet, or the control diet with 10, 20, or 30% DDGS. There were 17 pigs per pen and 11 pens. Increasing DDGS decreased (linear; $P < 0.01$) ADFI (776, 524, 331, and 153 g/d) for the overall trial. In Exp. 3, 120 barrows and gilts (initially 18.9 kg) were used to examine the effects of adding Sucram, a feed flavor additive, in 21 d preference study. Treatments were arranged as a 2 x 2 factorial with 0 or 30% DDGS and either 0 or 0.02% Sucram. There were 15 pigs per pen and 8 pens. For the entire trial, adding DDGS to diets decreased ($P < 0.01$) ADFI. Adding Sucram had no effect ($P > 0.71$) on feed intake in either the corn-soybean meal or DDGS diets. These studies demonstrate that pigs prefer corn-soybean diets compared with diets containing DDGS and the source of DDGS or addition of a feed flavor did not influence palatability.

Key Words: Pigs, Feed Intake, DDGS

174 The effect of dried palm oil powder containing different amount of monoglyceride on the growth performance and serological cholesterol changes in weaned pigs. B. J. Min*, O. S. Kwon, W. B. Lee, J. W. Hong, and I. H. Kim, *Dankook University*.

This experiment was conducted to determine the effect of dried palm oil powder containing different amount of monoglyceride on the growth performance and serological cholesterol changes in weaned pigs. One hundred twenty five cross-bred pigs (DYL, 6.00 ± 0.79 kg average initial BW) were used in a 21 d growth assay. Dietary treatments included SOY (containing 5% soybean oil), PALM (containing 5.5% dried palm oil powder) and SOPM0, 12.5 and 25 (containing 2.5% soybean oil and 2.7% dried palm oil powder containing 0%, 12.5% and 25.0% monoglyceride, respectively). For the whole period, ADFI was increased in dried palm oil powder containing monoglyceride and PALM treatments compared with SOY and SOPM0 treatment ($P < 0.05$). Digestibility of fat was higher ($P < 0.05$) for pigs fed the SOY diet than fed other diets. SOPM diets containing monoglyceride showed increased fat digestibility compared with PALM diet ($P < 0.05$). However, there were no significant differences in digestibility of DM, N and DE ($P > 0.05$). Backfat thicknesses were not significantly different among treatments. There was a decrease in total cholesterol, HDL-cholesterol, triglyceride, total lipid and increase in free fatty acid ($P < 0.05$) in serum of pigs fed SOY diet. Also, triglyceride concentration in serum was increased in PALM treatment compared with SOPM treatment ($P < 0.06$). In conclusion, feeding soybean oil in weaned pigs shows a higher digestibility of fat and lower concentration of cholesterol and triglyceride in blood than feeding only dried palm oil. Also, feeding dried palm oil powder containing monoglyceride result in improved digestibility and ADFI.

Key Words: Dry palm oil powder, Monoglyceride, Pigs

175 The effects of herbal plant mixture(Miracle20) supplementation on the productions of lactating sows and growth performance and hematological changes of piglets. B. J. Min*, O. S. Kwon, J. W. Hong, W. B. Lee, K. S. Son, Y. H. Yu, and I. H. Kim, ¹ *Dankook University*, ² *HANPEL TECH Co., Ltd.*

This study was conducted to evaluate the effects of dietary herbal extracts mixture(Miracle; included *Angelicae Gigantis radix*, *Rehmanniae radix*, *Cnidii rhizoma*, *Glycyrrhizae radix*, *Schizandrae fructus*, *Plantago asiatica* and *Dioscoreae radix*) on the productions of lactating sows and growth performance and hematological changes of piglets. Twenty seven sows (Yorkshire x Landrace x Duroc, 1 to 3 parities) were used in a 21 day trial. Dietary treatments included 1) CON (control; basal diet), 2) HPM0.1 (basal diet + herbal plant mixture 0.1%) and 3) HPM0.2 (basal diet + herbal plant mixture 0.2%). Backfat thickness loss from farrowing to weaning was decreased in HPM treatments compared with CON treatment (linear effect, $P = 0.0040$). ADFI was decreased in sows fed herbal plant mixture (linear effect, $P < 0.05$). Also, treatments of dietary herbal plant mixture reduced day of return to estrus compared with control (linear effect, $P < 0.05$). Availability of digestible energy was improved in HPM treatments compared with control (linear effect, $P = 0.0040$). In piglets, weight gain ($P > 0.34$) and survivability ($P > 0.89$) after weaning were not affected by treatment. No statistical differences were found for albumin, WBC, lymphocyte and monocyte concentration among treatments ($P > 0.05$). In conclusion, dietary herbal plant mixture reduces backfat thickness loss and day of return to estrus and improves availability of digestible energy in lactating sows.

Key Words: Herbal plant mixture, Lactating sow, Piglet

176 Effect of phosphorous deficiency and genetics on bone characteristics and gene expression in young pigs. L. Hittmeier*, R. Lensing, L. Grapes, M. Rothschild, and C. Stahl, *Iowa State University*.

Phosphorous (P) is essential in supporting bone growth and maintenance; however, little research has focused on the genetic mechanisms controlling P utilization. To better understand these mechanisms, we examined the effects of P deficiency in 36 gilts (6.63 ± 0.78 kg) from 6 litters (3 gilts/litter) sired by two lines known differ in bone structure (one considered heavier-boned (HB) and the other lighter-boned (LB)).