P<.01). Plasma α-lactalbumin concentrations increased about fivefold from 10d to 15d (P<.01), indicating onset of lactation. Megalin expression increased about 3-fold from 0d to 5d (P=.01), then decreased 2.8-fold by 10d (P=.01). Gene expression of LDL-R decreased 4.5-fold (P<.06) from 5d to 10d while folic acid receptor mRNA decreased about twofold (P<.05). We conclude that temporal changes in expression of megalin, LDL-R and folic receptor mRNA during colostrogenesis may be related to the transport of their ligands into colostrum. Hormonal induction of lactation provided a useful model for studying the regulation of colostrogenesis.

Key Words: Colostrum, Vitamins, Induced Lactation

Meat Science and Muscle Biology

230 Conjugated linoleic acid (CLA) concentrations in beef tissues from cattle finished on pasture initially with limited grain. R. N. Sonon Jr.*[1], D. C. Beitz[1], A. H. Trenkle[1], J. R. Russell[1], and R. Rosmann[2], [1]*Iowa State University, Ames,* [2]*Rosmann's Family Farms*.

Thirty Red Angus cross yearling steers and heifers (initial BW = 394±54 kg) were fed to choice grade in an on-farm study to compare the concentrations of CLA in beef tissues and to evaluate beef quality of cattle finished on pasture initially or on drylot diet entirely. The cattle on the pasture group grazed by rotation forages consisting primarily of endophyte-free tall fescue grass for 207 d and then, were shifted to the drylot diet for 59±15 d, whereas the drylot cattle were fed ground alfalfa-orchardgrass hay for 183±16 d. In addition to the basal forage, a corn-soybean concentrate mixture was fed at 0.5 to 1.0% of BW to the pasture group of cattle while grazing, and at 2.0% of BW to the drylot group of cattle. After harvest of cattle, steaks were removed from the 12th-13th rib of the carcasses of sixteen animals for fatty acid analysis and sensory evaluation. Results showed that cis9, trans11 CLA concentration in ribeye steak of pastured cattle (0.44 g/100 g of fatty acids) was significantly higher (p#88040.05) than in steak of cattle fed the drylot diet (0.17 g/100 g of fatty acid). Linolenic acid (C18:3n-3) concentration in ribeye steak of pastured cattle (0.79 g/100 g of fatty acids) was significantly higher (p#88040.05) than in the ribeye steak of drylot cattle (0.61 g/100 g of fatty acids). The Warner-Bratzler shear test of tenderness of ribeye steak from pasture-fed cattle was 2.85±0.61 kg and did not differ with that of the drylot cattle (2.60±0.65 kg). Sensory evaluation of ribeye steaks (pasture vs drylot) included juiciness (5.83 vs 5.43), tenderness (6.61 vs 7.00), chewiness (3.14 vs 2.43), flavor (2.08 vs 2.43) and off-flavor (5.56 vs 5.55) and these attributes were not different (p>0.05) between the two groups of cattle. Data from this on-farm study indicate that pasture-feeding contributed to the production of a potentially healthier beef without diminishing eating qualities.

Key Words: CLA, Beef Quality, Pasture

231 Effects of two supplementation levels of linseed combined with CLA or tallow on meat quality traits and fatty acid profile of adipose tissue and longissimus muscle in pigs. G. Bee*, S. Jacot, G. Guex, and W. Herzog, *Swiss Federal Research Station for Animal Production and Dairy Products 1725 Posieux, Switzerland*.

Linseed is an efficient dietary supplement to increase 18:3n-3 concentration in meat and adipose tissue in pigs. Increased concentration of highly unsaturated PUFA can lead to quality deterioration due to lipid oxidation. We hypothesize that inclusion of conjugated linoleic acids (CLA) or tallow could limit the potential for lipid oxidation. In the present study we evaluated the effect of CLA or tallow combined with linseed on carcass characteristics, longissimus muscle (LM) quality traits, and the fatty acid profile of the LM and adipose tissue. From 18 to 104 kg BW, 32 Swiss Large White barrows were fed a grower finisher diet supplemented either with: 1) 3% linseed (L3); 2) 2% linseed (L2); 3) 2% linseed + 1% CLA (L2C); or 3) 2% linseed + 1% tallow (L2T). The amount of omental fat was higher (P < 0.05) in the L3 (2.09%) compared to the L2 and L2T group (1.60% for each). Initial pH in the LM was higher (P < 0.05) in the L2T (6.30) compared with the L2 (6.06) and L2C (6.03) group, but did not differ from the L3 group (6.14), whereas no dietary effects were observed for ultimate pH, color, drip, cooking losses, and shear force values. Inclusion of CLA (L2C) did not affect PUFA level but increased (P < 0.05) the concentration of saturated and decreased (P < 0.05) that of monounsaturated fatty acids in the tissues compared to the other treatments. Neither CLA nor tallow altered the concentration of 18:3n-3, 20:3n-3, 20:5n-3, and 22:5n-3 compared to the L2 group. Consequently, in the 3 dietary groups the n-6/n-3 ratio was similar in the LM (2.9) and adipose tissue (3.6). As expected, the higher linseed supply (L3) resulted in increased (P < 0.05) 18:3n-3 and 20:3n-3 concentrations in the tissues, whereas from the higher unsaturated fatty acids of the n-3 family only 22:5n-3 level was increased (P < 0.05) in the adipose tissue compared to the L2, L2C, and L2T group. The present results indicate, that CLA, but not tallow, combined with linseed could help reduce the potential for lipid oxidation by decreasing the unsaturation level without affecting the improved n-6/n-3 ratio.

Key Words: Linseed, CLA, Pig

232 Consumer acceptance of beef from steers finished on ryegrass forage or a high-concentrate diet. C. R. Kerth*, K. W. Braden, R. B. Cox, and J. Alexander, *Department of Animal Sciences, Auburn University, Auburn, AL*.

Charlais-Angus crossbred steers were fed one of three finishing diets to determine consumer acceptance of forage-fed or concentrate-fed beef. When steers (n = 30) reached 340 kg, they were randomly assigned to one of three finishing treatments consisting of ryegrass only for 178 d (RG), ryegrass for 125 d followed by 98 d of a high-concentrate, feedlot-type diet (RGC), or a high-concentrate, feedlot-type diet for 82 d (CON). Steers from RGC and CON groups were harvested when estimated backfat thickness reached 1.0 cm and steers from the RG group were harvested when the amount of forage was insufficient to maintain animal growth. To determine consumer acceptance, 153 consumers at an outdoor festival in Auburn, AL were asked to taste steaks from each of the three treatments. Boneless, strip loin steaks were cooked (71C) on clam-shell-style electric grills, cut into 1.0 X 1.0 cm cubes and placed in double boilers kept warm over a small flame. Overall acceptability scores were determined by marking an "X" on a continuous line anchored with frowning (score of 0) and smiling (score of 100) faces and scored by interpolation. Pricing acceptability was determined in the same manner with $7.46/kg and $16.26/kg anchoring the line and $11.86/kg as the midpoint of the line, representing the typical market value of a strip loin steak at the time. Consumers were then asked which steak they preferred. The demographics of those participating in the survey were evenly distributed across income levels and gender, with almost half (46.6%) being younger than 30 y and the remainder evenly distributed from 31-80 y of age. Overall acceptability scores and price per pound were higher (P < 0.05) for steaks from cattle finished on CON compared to steaks from cattle finished on RG or RGC. Additionally, a higher (P < 0.05) percentage of consumers preferred steaks from CON (63.9%) compared to RGC (13.9%) or RG (22.2%). Consumers that preferred RG beef were willing to pay $1.17/kg more for RG beef compared to CON beef. These results indicate that a significant market exists for forage-fed beef and consumers are willing to pay a premium for it.

Key Words: Grass-Fed Beef, Consumer Acceptance, Price

233 Mechanisms of beef carcass tenderness. R. Johnson*, J. Sawdy, J. M. Reddish, M. S. Updike, and M. Wick, *The Ohio State University, Columbus*.

This study advanced a model that was developed to investigate the potential for relating changes in electrophoretic protein patterns derived from the L. dorsi of beef cattle 36 hr postmortem with tenderness at 7 d. Previous research done in this lab showed a significant association (R^2 = 0.82) between tenderness at 7 days, as determined by Warner Bratzler Shear analysis, and the relative intensities of 7 bands from L. dorsi myofibrillar fingerprints of proteins/peptides derived from the same tissue at 36 hr postmortem. Mass spectrometric analyses was used to identify one of the bands, significantly associated with tenderness, as bovine fast myosin light chain-1 (bMLC1) (P < 0.001). The method was previously used to identify fragments of bovine myosin heavy chain as being associated with tenderness. These combined findings suggest the presence of at least two distinct mechanisms contributing to tenderness. One mechanism proposes a relationship between myosin heavy chain proteolysis and tenderness. The most recent finding indicates a positive correlation with the amount of intact bMLC1 and tenderness.

This information has the potential of increasing our understanding of the mechanisms regulating beef carcass tenderness.

Key Words: Proteomic Fingerprinting, Beef Tenderness, Myosin Light Chain 1

234 Effects of ractopamine and dietary fat source on performance and carcass characteristics of growing-finishing swine. J. K. Apple*[1], B. R. Kutz[1], C. V. Maxwell[1], M. E. Davis[1], L. K. Rakes[1], Z. B. Johnson[1], and T. A. Armstrong[2], [1]*University of Arkansas, Fayetteville,* [2]*Elanco Animal Health, A Division of Eli Lilly and Company, Greenfield, IN.*

To test the interactive effects of ractopamine (RAC) and dietary fat source on performance and carcass characteristics, crossbred pigs (n = 216) were blocked by BW (78.1 ± 6.5 kg), and allotted randomly to pens (6 pigs/pen). After a 1-wk adjustment period when a common diet devoid of RAC was fed, pens within blocks were assigned randomly to 1 of 4 dietary treatments arranged in a 2 2 factorial design with 5% fat (beef tallow or soy oil) and RAC (0 or 10 mg/kg). All diets were formulated to contain 3.1 g lysine/Mcal of ME and 3.48 Mcal/kg of ME. Individual pig weights and feed disappearance were recorded weekly to calculate ADG, ADFI, and G:F. At conclusion of the 35-d finishing period, pigs were slaughtered at a commercial pork packing plant, and carcass weight, 10th rib fat and LM depths, and fat-free lean yield (FFLY) were recorded prior to chilling. During fabrication, right-side loins were collected for pork quality determinations. Across the entire trial, pigs fed RAC had greater ($P < 0.001$) ADG and G:F, but RAC did not affect ($P > 0.10$) ADFI. Neither tallow nor soy oil affected ($P > 0.10$) pig performance. Carcass weight, LM depth and FFLY were increased ($P < 0.002$), whereas fat depth was decreased ($P < 0.06$), in carcasses from RAC-fed pigs; however, carcass composition measures were similar ($P > 0.10$) between fat sources. The LM from pigs fed RAC had higher pH values ($P < 0.01$) and received higher American ($P < 0.01$) and Japanese ($P < 0.04$) color scores. Although L* values were not affected ($P > 0.10$) by RAC, the LM from RAC-pigs had lower a* ($P < 0.002$) and b* ($P < 0.005$) values. The LM of pigs fed soy oil received higher ($P < 0.05$) American color scores than pigs fed tallow; otherwise pork quality was not ($P > 0.05$) affected by dietary fat source. Pigs fed RAC and beef tallow had higher ($P < 0.05$) marbling scores than all other treatment combinations (RAC fat source; $P < 0.04$). Results indicate that feeding 10 mg/kg RAC will improve rate and efficiency of gain, carcass composition, and LM quality; however, dietary fat source had little to no impact on performance or carcass composition and quality.

Key Words: Dietary Fat, Pork Quality, Ractopamine

235 Effects of ractopamine and dietary fat source on quality characteristics of fresh pork bellies. J. K. Apple*[1], B. R. Kutz[1], C. V. Maxwell[1], M. E. Davis[1], L. K. Rakes[1], Z. B. Johnson[1], and T. A. Armstrong[2], [1]*University of Arkansas, Fayetteville,* [2]*Elanco Animal Health, A Division of Eli Lilly and Company, Greenfield, IN.*

To test the interactive effects of ractopamine (RAC) and dietary fat source on fresh pork belly quality, bellies (n = 167) from pigs fed 1 of 4 dietary treatments arranged in a 2 2 factorial design with 5% fat (beef tallow or soy oil) and RAC (0 or 10 mg/kg), were collected during carcass fabrication. Subjective belly firmness was measured using the bar-suspension method by measuring the distance between belly ends when the length of the belly was suspended perpendicular (skin-side down and up) and parallel (skin-side up) to the bar. Color (L*, a*, and b* values) of the rectus abdominus muscle and belly fat was measured, and two 5.1-cm diameter cores were removed from the center of each belly. Cores were subsequently compressed 50% their thickness with an Instron testing machine equipped with a 400-kg load-cell and a crosshead speed of 100 mm/min. There were no ($P > 0.10$) interactions between RAC and dietary fat source for any pork belly quality trait. Neither RAC nor fat source affected ($P > 0.10$) belly thickness. Subjective (bar-suspension) or objective (compression test) measures of belly firmness were not ($P > 0.05$) affected by the inclusion of RAC in the diet; however, bellies from pigs fed soy oil were softer ($P < 0.01$) than those from pigs fed tallow, as indicated by perpendicular suspension (11.66 vs. 15.40 cm, skin-side down, respectively; 17.58 vs. 20.70 cm, skin-side up, respectively) and parallel suspension (16.04 vs. 19.50 cm, respectively). Additionally, bellies from tallow-fed pigs required more ($P < 0.01$) force to compress 50% their thickness than bellies from soy oil-fed pigs (52.47 vs. 43.02 kg, respectively). Neither lean nor fat color was affected ($P > 0.10$) by RAC, and fat source had no ($P > 0.10$) effect on lean color. However, the belly fat of pigs fed tallow was lighter (higher L* values; $P < 0.04$) and redder (higher a* values; $P < 0.02$) than the fat of bellies from pigs fed soy oil. Results of the present study indicate that, as expected, dietary fat source impacts the firmness of fresh pork bellies; however, feeding RAC during the late-finishing period does not affect the firmness and color of fresh pork bellies.

Key Words: Dietary Fat, Pork Bellies, Ractopamine

236 Effect of slaughter weight on pork quality of castrated females. J. Peinado*[1], D. García[2], F. Baucells[1], G. G. Mateos[3], and P. Medel[1], [1]*Imsade Agropecuaria Madried, Spain,* [2]*Estación Technológica De La Carne De Guijuelo Salamanca, Spain,* [3]*Universidad Politécnica De Madreid Madrid, Spain.*

A total of 150 Pietrain*Large White x Landrace*Large White females of 23.3 ± 1.5 kg of initial BW were used to study the influence of slaughter weight (SW) on meat quality. Females were castrated at 30 kg BW and slaughtered at 105, 115 or 120 kg BW. Each of three treatments was replicated five times (ten pigs housed together). Feeding program was common for all the pigs and consisted of three diets offered *ad libitum* (2.3, 2.4, and 2.4 Mcal NE/kg and 0.97, 0.70, and 0.67 % lys from 30 to 65, 65 to 95, and 95 kg BW to slaughter, respectively). At 45 min postmortem, *longissimus* muscle samples were obtained from the last rib from four pigs per replicate. Intramuscular fat content and Warner-Bratzler force of loins were determined by using a Near Infraread Transmittance meat analyzer and a texture meter, respectively. Loins from pigs slaughtered at 120 kg BW had more intramuscular fat and higher shear force values than loins from pigs slaughtered at 105 kg BW, with loins from pigs slaughtered at 115 kg BW in an intermediate position (1.99, 2.50, and 2.70 % of intramuscular fat and 6.34, 6.57, and 7.24 kg of Warner-Bratzler values for 105, 115, and 120 kg BW; $P < 0.05$ and $P < 0.10$, respectively). Defrosting and cooking losses decreased with SW (12.8, 9.2, and 11.7 %, $P < 0.05$; 26.0, 24.9, and 24.4 %, $P < 0.10$, for 105, 115, and 120 kg BW, respectively). Increasing SW increased meat color (a* value of 3.42, 4.78, and 5.07 for 105, 115, and 120 kg BW, respectively; $P < 0.05$). In addition, linoleic acid content of subcutaneous fat was higher for pigs slaughtered at 105 kg BW than for pigs slaughtered at 115 or 120 kg BW (11.56, 10.64, and 10.10 % for 105, 115, and 120 kg BW, respectively; $P < 0.05$). It is concluded that increasing slaughter weight from 105 to 120 kg improves intramuscular fat content and color of meat from heavy pigs destined to the dry-cured industry.

Key Words: Pork Quality, Castration, Slaughter Weight

237 Strategies based on gender and slaughter weight to modify carcass quality for cured product industry. J. Peinado*[1], A. Fuentetaja[2], J. Sánchez[1], G. G. Mateos[3], and P. Medel[1], [1]*Imsade Agropecuaria Madrid, Spain,* [2]*CPIESE Segovia, Spain,* [3]*Universidad Politécnica De Madrid, Madred, Spain.*

A total of 336 Duroc x Landrace*Large White pigs of 28.4 ± 2.3 kg of initial BW were used to study the influence of sex (castrated females, CF; entire females, EF; castrated males, CM) and slaughter weight (SW) (119 *vs* 131 kg BW) on productive performance and carcass quality. Each treatment was replicated four times (14 pigs housed together). Males were castrated at birth and females at 30 kg BW. All pigs received a common feeding program that consisted of three diets offered *ad libitum* (2.3, 2.4, and 2.4 Mcal NE/kg and 0.97, 0.70, and 0.67 % lys, from 30 to 60 kg BW, 60 to 90 kg BW, and 90 kg BW to slaughter). For the whole period, neither gender nor SW affected productive performance, although CM and CF pigs ate 4 % more and had 4 % worse feed conversion rate than EF. Backfat and fat thickness at *Gluteus medius* muscle (GM) were greater for CF than for EF or CM (31.4, 25.2, and 28.7 mm at P2, and 20.7, 18.1, and 18.7 mm at GM for CF, EF, and CM, respectively; $P < 0.05$). The percentage of pigs with a fat thickness at GM equal or greater than 20 mm was 70, 42, and 48 % for CF, EF, and CM, respectively ($P < 0.05$). In addition, backfat thickness increased 19 % when SW increased from 119 to 131 kg ($P < 0.05$). Loin yield was greater for EF than for CM, with an intermediate value for CF (7.13, 7.22, and 6.91 % for CF, EF and CM, respectively; $P < 0.05$). It is concluded that castration of females and increasing SW from 119 to 131 kg improves carcass fat content without impairing productive performance of pigs destined to produce cured hams.

Key Words: Carcass Quality, Pig Performance, Castration

238 Evaluating the fatty acid distribution of bratwurst in retail products and of fat in Fertilium treated sows. L. Gordon*, A. Cox, A. Schinckel, and M. Latour, *Purdue University, West Lafayette, IN*.

The objective in Experiment 1 was to investigate the fatty acid distribution of fourteen different brands of bratwurst available in retail stores. For Experiment 2, the investigators examined the fatty acid profile in the middle and outer fat layers of sows which were fed either a control diet (n=5) or a diet enriched with Fertilium (n=5), a supplement added to swine diets in low concentration and contains a protected n3 polyunsaturated fatty acid source. Results of Experiment 1, suggest that major fatty acids (C16:0, C18:0, C18:2, as well as the n6/n3 ratio and iodine value [IV]) varied significantly (P<0.01) between brands. The levels C16:0, C18:0, C18:2, n6n3 ratio and IV ranged between 20-27%, 33-41%, 9-19%, 8:1-37:1 and 53-70, respectively. Collectively these results would suggest that retail brand of bratwurst exhibit tremendous variability in fatty acid composition. In Experiment 2, there were significant differences (P<0.03) in the fatty acid distribution between control and Fertilium enriched sows as well as between fat layers; more specifically and across both fat layers, enriched sows displayed a significantly lower (P<0.05) n6/n3 ratio when compared to controls. Furthermore, control sows displayed a significantly higher (P<0.05) level of n6/n3 ratio in the outer layer when compared to the middle layer. These data would suggest that enriched sows display a fatty acid profile unlike controls and may provide a better source of n3 fatty acids in ultimate products.

Key Words: Fat, Bratwurst, Sows

239 Fascicular structure as a quantitative trait for bovine and ovine skeletal muscles. G. S. Harper*[1], M. E. McKay[1], M. Taylor[2], T. Reverter-Gomez[3], P. G. Allingham[2], and R. Seymour[3], [1]*Cattle and Beef Quality Cooperative Research Centre, Armidale, Australia,* [2]*Australian Sheep Industry Cooperative Research Centre, Armidale, Australia,* [3]*CSIRO Livestock Industries, St. Lucia, Australia*.

Connective tissues (endomysium and perimysium) are important contributors to growth and development of the muscle, being the site of capillary invasion, adipogenesis and age maturation. Perimysium is also an important contributor to meat toughness, though its contribution is difficult to quantify due to the inability of extraction techniques to account for three dimensional distribution. Here we describe a morphometric technique for quantification of the amount and frequency of perimysial seams. Longissimus dorsi muscle samples were collected by biopsy or necropsy and then either chemically fixed or frozen for histological sectioning. Muscle fascicular structure (FS) was visualised at low magnification, and morphological features were measured using image analysis tools. The features included perimysial seam width (SW) and average fascicular bundle width (BW). Our data suggest that FS measurements were robust and repeatable, and stable across divergent sarcomere lengths. Bos indicus (10 animals) and Bos taurus (10) muscles could be differentiated by SW, even though the number of seams per cm of tissue did not differ (42 ± 2.3, Bos indicus; 46± 3.8, Bos taurus). Animals came from similar nutritional backgrounds. Although SW values were vastly skewed, the residuals of the fitted mixed-model were normally distributed. Bos indicus animals were found to have significantly fewer fine connective tissue seams than did the Bos taurus animals (P<0.05). Bos indicus also had significantly larger BW than did the Bos taurus animals (P<0.05). Apart from the gross phenotypic and enzymic differences between these cattle breed types, there are also finer structural differences that have resulted from the evolutionary divergence of these breeds. Measurements on FS from sheep longissimus dorsi muscle differentiated animals of divergent EBV for muscling (control muscling EBV, SW, 9.7 ± 0.4; high muscling EBV, SW, 8.3 ± 0.3; P< 0.01), when nutrition was comparable. We propose that muscle fascicular structure is a heritable and developmentally regulated phenotype of mammalian skeletal muscle.

Key Words: Meat, Connective Tissue, Tenderness

240 Growth characterization of *callipyge* myoblasts. J. N. Fleming*, S. P. Jackson, and J. R. Blanton, Jr., *Texas Tech University, Lubbock*.

The objective of this study was to compare the growth rates of isolated myoblasts from both *callipyge* and normal (non-*callipyge*) lambs. *Callipyge* is a mutation found in sheep that causes muscle hypertrophy in the loin and hindquarters of lambs after they reach four to six weeks of age. Myoblasts, or satellite cells, are important factors in postnatal muscle growth, as they are located beneath the basement membrane and contribute to muscle fiber hypertrophy and repair. Lambs ranging from two to eight weeks of age were euthanized and the semimembranosus muscle was excised. Myoblasts were isolated by Pronase® digestion and a series of differential centrifugations. Cells were plated on 0.1% gelatinized round culture plates and grown in MEM-α media supplemented with ten percent fetal bovine serum. Plates were incubated at 37°C, 5% CO_2, and media was changed every two days. All plates were counted and replated using trypsin digestion. Primary plates were counted and replated at a level of one million cells per secondary plate. Secondary plates were counted every 24h, 48h, and 72h for all *callipyge* (n=13) and normal (n=19) lambs. Percent gain did not differ across genotypes at 24h (P=0.9361), or 48h (P=0.9739). However, a significant difference was seen at 72h (P=0.0135), with the average gain in *callipyge* plates at 307% ± 46% gain, versus the normal rate of 152% ± 41% gain. This increase in growth rate could be attributable to either an upregulated mitotic cellular division rate in *callipyge* cells, or perhaps an increased secretion of growth factors from the *callipyge* cells, promoting cell proliferation. In conclusion, there is an increase in *callipyge* myoblast growth rates *in vitro* when compared to normal ovine myoblast growth rates.

Key Words: Sheep, *Callipyge*, Myoblasts

241 Integration of myostatin-null alleles in leptin db/db mice does not alter body composition. A. C. Dilger*, A. L. Grant, M. E. Spurlock, and D. E. Gerrard, *Purdue University, West Lafayette, IN*.

Mutation in the myostatin gene and disruption of the leptin axis in animals leads to excessive accumulation of muscle and fat, respectively. Recent reports indicate that when myostatin and leptin genes are rendered nonfunctional in mice, fat accumulation in leptin obese (ob/ob) mice is suppressed; however, it is unknown whether fat accumulation is decreased when the myostatin and db/db mutations are combined. Therefore, pups from double heterozygous breeding pairs were weaned at 21 d of age and housed individually. Standard mouse chow and water were provided ad libitum. Animals were euthanized at 9 wk of age for body composition analysis. Mice were genotyped as myostatin null (MKO), leptin db/db (LKO), wild type (WT) or myostatin/leptin db/db double knock-out (DKO). At weaning (21d), LKO mice were heaviest (P < 0.05). At 6 wk of age, BW of MKO, DKO, and LKO was 22%, 41%, and 61% heavier (P < 0.05) than WT, respectively. At 9 wk of age, BW of MKO, DKO, and LKO was 26%, 98%, and 51% heavier (P < 0.05) than WT, respectively. A significant time and genotype interaction (P < 0.001) existed for BW. Percent body fat of DKO and LKO was 150%, whereas MKO body fat was 50% of WT (P < 0.001). No differences were observed in percent body fat of DKO and LKO mice. Percent protein of MKO was 10% greater (P < 0.05) whereas LKO and DKO percent protein was 41% less than WT. No differences in percent protein were observed between LKO and DKO mice. Fat mass was 4.62 g greater (29%; P < 0.05) and protein mass was 0.72 g less (13%; P < 0.05) in DKO than in LKO and MKO, respectively. These data show that mice lacking both functional myostatin and leptin axes become as obese as those mice possessing the leptin db/db mutation alone suggesting that the muscle growth potential associated with the loss of myostatin function may not be sufficient to alter body composition.

Key Words: Myostatin, Leptin, Mouse