T30 Expression of leptin and leptin receptor messenger RNA during mammary gland development in mice. J. L. Smith* and L. G. Sheffield, *University of Wisconsin, Madison.*

Previously, leptin and leptin receptor have been identified in the mammary gland and in mammary epithelial cells. To further investigate the developmental regulation of leptin and its receptor, quantitative real time polymerase chain reaction was used. Primers specific to leptin, long form leptin receptor, short form leptin receptor or glyceraldehyde-3-phosphate dehydrogenase (GAPDH, internal control) were synthesized. Female C57BL/6J mice were mated and mammary tissue excised at various stages of pregnancy or lactation. mRNA was extracted from mammary tissue, reverse transcribed and amplified in the presence of SYBR Green dye. Fluorescence was monitored each cycle and change in leptin, short form leptin receptor or long form leptin receptor assessed relative to GAPDH internal control. Leptin expression increased during early to mid pregnancy, reaching a maximum of 1.90.08 times non-pregnant control on day 15 of pregnancy. Leptin expression then declined during late pregnancy and was 1.10.08 at the initiation of lactation. Short form leptin receptor expression increased during early to mid pregnancy, reaching a maximum of 1.20.05 on day 15 of pregnancy, while a decline during late pregnancy was observed and was 0.80.05 at the initiation of lactation. Long form leptin receptor expression increased during mid to late pregnancy with a maximum of 1.40.1 on day 15 of pregnancy, with a resulting decline of expression at the initiation of lactation of 0.90.07. These results indicate that the expression of leptin and leptin receptor were altered during pregnancy, with the highest expression of each during mid pregnancy.

Key Words: Leptin, Leptin receptor, Mammary gland

T31 Impact of growth factors on expression of leptin and leptin receptor in cultured mammary epithelial cells. J. L. Smith and L. G. Sheffield*, *University of Wisconsin, Madison.*

To determine the impact of various growth factors on expression of leptin and leptin receptor in mammary epithelial cells, cultured murine mammary epithelial cells (NMuMG line) were serum deprived for 24 hours and treated with insulin, IGF-I or epidermal growth factor (EGF). mRNA was extracted, reverse transcribed and used for real time quantitative polymerase chain reaction. Primers specific for leptin, long form leptin receptor or short form leptin receptor were used to amplify their respective mRNAs, which were then compared to a glyceraldehyde-3-phosphate dehydrogenase (GAPDH) internal control. Maximum expression of leptin to insulin was 4.00.3 fold over control with 1 ng/ml at 3 hours. Maximum response of leptin expression to IGF-I at 3 hours was 5.40.5 fold over control with 10 ng/ml. Maximum response of leptin expression to EGF at 0.5 hours was 6.90.7 fold over control with 1 ng/ml. Short form leptin receptor mRNA expression was maximized in response to 1 ng/ml insulin at 1 hour after treatment (3.20.2 fold over control). Maximum response of short form leptin receptor to IGF-I was with 10 ng/ml at 1 hour (4.30.2 fold increase). Maximum response of short form leptin receptor to EGF was with 1 ng/ml at 6 hours (10.70.5 fold increase). Changes in long form leptin receptor were not as dramatic as leptin or short form leptin receptor, but were detectable. Insulin dose response studies indicated maximum response of a 1.40.3 fold change with 10 ng/ml at 6 hours after treatment. IGF-I at 100 ng/ml gave a 1.40.2 fold increase at 1 hour after treatment, while EGF at 10 ng/ml gave a 5.10.4 fold increase at 0.5 hours. These studies indicate that leptin expression in the mammary gland is regulated by factors known to alter mammary development. Furthermore, they indicate that both long and short forms of the leptin receptor are regulated in mammary epithelial cells, although to a different extent.

Key Words: Leptin, Leptin receptor, Mammary gland

T32 Local ablation of leptin receptor inhibits mammary alveolar development. J. L. Smith* and L. G. Sheffield, *University of Wisconsin, Madison.*

Previously, mice lacking leptin and leptin receptor have been shown to have impaired mammary development and lactation. However, whether this defect is due to leptin requirements within the mammary gland or to alterations in systemic physiology is unclear. To determine if leptin receptor deficiency within the mammary gland but in the context of otherwise normal physiology impacts mammary development, mammary epithelium was transplanted from wild-type (Lepr+/+) or leptin receptor deficient (Lepr-/-) donors into gland-free mammary fat pads of 3 week old syngenic (C57BL/6J) mice. After 7 weeks recovery, mice were mated and euthanized at various stages of pregnancy. Mammary gland development was assessed by whole mount. Basal development of the non-pregnant mammary gland was not different between Lepr+/+ and Lepr-/- mice. Subsequent duct development did not appear to be impaired in Lepr-/- mammary glands. However, alveolar development was dramatically inhibited. By day 15 of pregnancy, Lepr+/+ epithelium had extensive alveolar development, as would be expected at this stage of pregnancy in the mouse mammary gland. However, alveolar development was essentially absent in glands containing epithelium from Lepr-/- donors. Since the only tissue lacking leptin receptor was the mammary epithelium, this suggests that failure of mammary development in Lep-/- and Lepr-/- mice is due at least in part to a leptin requirement by the mammary epithelial cells. Specifically, these results suggest a role for leptin in alveolar development.

Key Words: Leptin, Leptin receptor, Mammary gland

T33 Evidence for shifts in prolactin sensitivity in cows exposed to long or short day photoperiod during the dry period. A. G. Rius*[1], T. L. Auchtung[1], P. E. Kendall[1], T. B. McFadden[2], and G. E. Dahl[1], [1]*University of Illinois,* [2]*University of Vermont.*

Galactopoietic effects of photoperiod are well established in dairy cattle. Long day photoperiod (LDPP) increases milk production in lactating cattle, whereas dry cows exposed to short day photoperiod (SDPP) produce more milk in their subsequent lactation. Photoperiod also affects circulating prolactin (PRL); LDPP increases, whereas SDPP decreases PRL. While PRL effects are likely not involved in the lactation response, we hypothesize that PRL effects are critical to the dry cow response to photoperiod. The objective of this study was to characterize the effect of photoperiod on PRL and PRL- receptor (PRL-r) mRNA expression during the dry period as an index of PRL sensitivity during the transition to lactation. Multiparous Holstein cows were dried off 62 days before expected calving and assigned to either LDPP (16L:8D; n = 19) or SDPP (8L:16D; n = 17). After parturition cows were exposed to ambient lighting conditions. Jugular blood samples were collected and immediately processed for PRL and PRL- r mRNA (in lymphocytes). With regard to production, milk yield was consistently greater in SDPP relative to LDPP cows for the initial 16 weeks of lactation (34.9 vs. 32.5 kg/d) and the difference was significant ($P< 0.09$) from week 3 to 8. Compared to LDPP, dry matter intake was greater ($P< 0.06$) in SDPP cows during the dry period (11.7 vs. 9.9 kg/d). Concentrations of PRL did not differ between groups at dry off (LDPP = 21.2 ng/ml; SDPP = 20.5 ng/ml), but were higher ($P < 0.05$) in LDPP cows at days 30 and 60 compared to SDPP cows (14.9 vs. 8.3 ng/ml). Long and short forms of PRL-r mRNA did not differ between groups at dry off but were higher ($P< 0.06$) in SDPP cows at days 30 and 60 compared with LDPP cows. In summary, SDPP exposure during the dry period increased PRL-r mRNA expression but decreased PRL relative to LDPP. These data support the concept that greater PRL sensitivity during the transition to lactation may result in the observed increase in subsequent milk yield.

Key Words: Photoperiod, Prolactin, Milk yield

T34 Short day photoperiod during the dry period improves immune cell response of dairy cattle. T. L. Auchtung*, D. E. Morin, C. C. Mallard, J. L. Salak-Johnson, and G. E. Dahl, *University of Illinois, Urbana.*

Photoperiod has practical use on dairy farms as its manipulation can increase milk production in dairy cows. Cows on long day photoperiod (LD; 16h light: 8h dark) during their lactation have an increase in milk yield compared with cows on natural photoperiod. Studies have also shown that short day photoperiod (SD; 8L: 16D) during the dry period increases milk yield of cows in the subsequent lactation. Interestingly, recent studies in hamsters have shown that immune function can be

influenced by photoperiod. The objective of this experiment was to determine if SD during the dry period alters immune function in cows. Multiparous Holstein cows (n = 40) started the experiment an average of 62 d prior to calving. After baseline blood samples were collected, cows were dried off and exposed to LD or SD until parturition. On d 0, 28, and 56 relative to dry off, and d 2 post-calving, samples were processed for neutrophil chemotaxis and lymphocyte proliferation. Blood samples were collected twice daily from 5 d prior to, until 2 d after calving to assess the periparturient prolactin (PRL) profile. The periparturient PRL surge was greater ($P < 0.05$) in LD animals relative to SD. Neutrophil chemotaxis was not different prior to treatment ($P = 0.29$) but subsequently differed ($P < 0.05$) at all time points measured, with cows on SD having greater chemotaxis than LD cows. Lymphocyte proliferation was not different between the treatments at dry off ($P > 0.20$) but was greater ($P < 0.05$) in SD cows, compared to LD, at all subsequent time points. In conclusion, dairy cows subjected to SD when dry have a reduced periparturient PRL surge compared to LD cows. Neutrophil chemotaxis and lymphocyte proliferation were greater in SD cows compared to LD, suggesting an enhanced immune system in cows on SD when dry. Because the periparturient period is a time of increased risk for mastitis, the potential implications for dairy management merits further investigation.

Key Words: Cattle, Immune function, Photoperiod

T35 Milk fat decreases when lactating mice are fed selected *trans* fatty acid containing diets. B. B. Teter*[1], J. Sampugna[1], R. A. Erdman[1], P. Yurawecz[2], and D. Luchini[3], [1]*University of Maryland, College Park, MD/USA,* [2]*Center for Food Safety and Applied Nutrition, FDA, College Park, MD/USA,* [3]*Bioproducts, Inc. Fairlawn, OH/USA.*

Lactating mice were used as a model to test the effects of *trans* fatty acid containing diets on milk fat and pup body weight. Diets were formulated based on the AIN-76 diet with fat at 20 % of energy. The control diet (C-9) oil contained cocoa butter, corn oil, olive oil and oleic acid. The test diets used the same mixture but some of the oleic acid was replaced by the isomers to be tested. Five isomer diets were formulated to include up to 5% of energy as the test isomer or isomer mixtures. The five diets were: *trans*-9-18:1 (t-9), *trans*-10-18:1 (t-10), mixed isomers from a commercial shortening (Sh), calcium salts of *trans* fatty acids (Ca-tFA), and calcium salts of conjugated linoleic acids (Ca-CLA). Groups of five C57/Bl6J mice were maintained on control diets until day six of lactation and then switched to an isomer diet for the remainder of the study. A control group was maintained on the C-9 diet throughout. Mice were milked on d6 of lactation, before the diet changes, and again at d10 of lactation. Body weights of the dams and pups were recorded after each milking and were not different compared to controls at either milking. Also the pup weights were not different by diet. Milk fat was determined at each milking and did not differ among groups at day six. At d10 the milk fat values of the control group did not differ from those at d6, but the values from all treatment groups were lower. The milk fat was significantly lower ($P<0.01$) on d10 compared to d6 in all groups fed the test diets. The t-9, t-10, Sh, Ca-tFA, Ca-CLA diets decreased milk fat by 5, 9, 14, 19, and 23 %, respectively, suggesting that the diets were not equivalent in their ability to decrease milk fat.

Key Words: Trans fatty acids, Conjugated linoleic acids, Mouse milk

T36 Effects of milk yield and milk fat production on milk *cis*-9, *trans*-11 CLA and Δ9-desaturase enzyme activity. A. L. Lock*[1,2], D. E. Bauman[2], and P. C. Garnsworthy[1], [1]*University of Nottingham, UK,* [2]*Cornell University, Ithaca, USA.*

The potential health benefits of conjugated linoleic acids (CLA) have been well documented. Although there have been numerous studies investigating the effect of nutrition of dairy cows on milk CLA levels, there has been no report of any relationship between the CLA content of milk and milk yield or milk fat production. The *cis*-9, *trans*-11 isomer of CLA is the predominant isomer found in dairy products and this isomer is principally produced in the mammary gland via the enzyme Δ9-desaturase. A desaturase index using the ratio of C14:1 to C14:0 fatty acids in milk can be used as an estimate of Δ9-desaturase enzyme. Using the data set from Lock & Garnsworthy, 2003 (Livestock Production Science 79: 47-59), the objective of the current analysis was to examine the effects of milk yield and milk fat production on the *cis*-9, *trans*-11 CLA content of milk and desaturase index. A total of 433 samples were collected from cows fed on a commercial TMR in winter and grazing in summer. Milk yield ranged from 8.8 to 55.2 kg/d, milk fat content ranged from 12.3 to 68.7 g/kg and milk fat yield ranged from 347 to 2559 g/d. The *cis*-9, *trans*-11 CLA content of milk ranged from 0.10 to 3.15 g/100 g fatty acids and the desaturase index from 0.033 to 0.166. Milk yield, milk fat content and milk fat yield had little or no effect on the *cis*-9, *trans*-11 CLA content of milk. R^2 values for the relationships between *cis*-9, *trans*-11 CLA and milk yield, milk fat content and milk fat yield were <0.01, 0.01 and 0.01 respectively. Similarly, there was no relationship between desaturase index and these variables (all R^2 values were <0.01). It may be possible to formulate diets that manipulate *cis*-9, *trans*-11 CLA, milk yield and milk fat concurrently. However, the current study clearly shows that, under normal conditions, the *cis*-9, *trans*-11 CLA content of milk and Δ9-desaturase activity in the mammary gland are independent of milk yield, milk fat content and milk fat yield.

Key Words: Dairy cow, Conjugated linoleic acid, Milk synthesis

T37 Abomasal infusion of a mixture of conjugated linolenic acid (C18:3) isomers had no effect on milk fat synthesis. A. Siæbo[1], J. W. Perfield*[2], and D. E. Bauman[2], [1]*Natural ASA, Hovdebygda, Norway,* [2]*Cornell Univ., Ithaca, NY.*

Trans-10, *cis*-12 conjugated linoleic acid (CLA) is a potent inhibitor of milk fat synthesis. Eicosanoid metabolites of this isomer formed by activity of tissue desaturases may be responsible for its activity. Additional unique fatty acids such as conjugated linolenic acid (C18:3) isomers, formed during rumen biohydrogenation of linolenic acid, may also affect milk fat synthesis. This study investigated the effects of a mixture of C18:3 conjugated triene isomers on milk fat synthesis. Three rumen fistulated Holstein cows (210±8 DIM) were randomly assigned in a 3 X 3 Latin square experiment. Treatments were 1) control, 2) *trans*-10, *cis*-12 CLA supplement (2.1 g/d; positive control), 3) supplement enrichment containing a mixture of C18:3 conjugated trienes (6.6 g/d; equal proportions of *cis*-6, *trans*-8, *cis*-12 and *cis*-6, *trans*-10, *cis*-12) and *trans*-10, *cis*-12 CLA (2.1 g/d). Conjugated fatty acid isomers were dissolved in ethanol and control treatment was ethanol only. Daily doses were abomasally infused with equal amounts given at 4 h intervals and treatment periods were 5 d with a 7 d interval between periods. Milk yield, DMI and milk protein yield were unaffected by treatments. In contrast, the trans-10, cis-12 CLA supplement reduced milk fat yield by 27% ($P<0.01$), whereas the supplement enrichment containing C18:3 conjugated trienes (treatment 3) had no effect on milk fat yield beyond that attributable to its *trans*-10, *cis*-12 CLA content. Abomasally infused *trans*-10, *cis*-12 CLA was transferred to milk fat with concentrations averaging 1.1 and 1.0 mg/g fatty acids for treatments 2 and 3, respectively. Abomasally infused C18:3 conjugated trienes were also transferred to milk fat, the concentration averaging 4.9 mg/g fatty acids for treatment 3 vs. trace amount in treatments 1 and 2 (<0.1 mg/g fatty acids; $P<0.001$). Overall short-term abomasal infusion of C18:3 conjugated triene isomers (*cis*-6, *trans*-8, *cis*-12 and *cis*-6, *trans*-10, *cis*-12) had no effect on milk fat synthesis or other production parameters.

Key Words: CLA, Milk fat depression, Milk fat

T38 Feeding increasing amounts of conjugated linoleic acid (CLA) progressively reduces milk fat synthesis immediately postpartum. C. E. Moore*[1], H. C. Hafliger III[1], O. B. Mendivil[1], D. Luchini[2], D. E. Bauman[3], and L. H. Baumgard[1], [1]*The University of Arizona,* [2]*BioProducts, Inc., Fairlawn, OH,* [3]*Cornell University, Ithaca, NY.*

CLA decreases milk fat synthesis in later lactation, but the ability of CLA to cause milk fat depression (MFD) immediately postpartum remains questionable. Multiparous Holstein cows (n = 16) were randomly assigned to one of four rumen-protected (RP) CLA doses (0, 200, 400 and 600 g/d) with each dose providing equal amounts of fatty acids by replacing and balancing treatments with EnerGII® (a RP supplement of palm oil). Doses provided a total of 468 g fatty acids/d and either 0, 74, 148 or 222 g CLA/d, respectively. The CLA supplement contained a variety of CLA isomers as previously described. Each group received treatments from -10 to 21 d relative to calving. To improve palatability and to ensure complete consumption, doses were mixed with equal amounts of steam-flaked corn and dried molasses and half the supplement was fed at 0600 and the remaining at 1800 hr. Milk yield and feed

intake were recorded daily, and milk samples obtained from each cow every second day (at both milkings) starting on d 1. There were no overall differences in DMI (20.5 kg/d), milk yield (34.1 kg/d), protein% (3.75), lactose% (4.62) or yield of these milk components. CLA supplementation decreased overall milk fat% in a dose responsive manner (4.58, 3.98, 3.43 and 3.11, respectively) and milk fat yield showed the same linear pattern. The milk fat% dose response was evident during wk 1 (P=0.15) and became highly significant during wks 2 and 3 (4.51, 3.79, 3.03, 2.81 and 3.89, 3.17, 2.77, 2.31% for wk and dose, respectively). The milk fat yield response pattern was similar with the highest CLA dose decreasing fat yield by 46% in wk 3. On d 21 the highest dose decreased milk fat% and yield by 49 and 56%, respectively. These data clearly indicate RP CLA can markedly (40-50%) induce MFD immediately postpartum without negatively affecting other production parameters and demonstrates the possibility of improving energy balance during the transition period.

Key Words: CLA, Milk Fat

Animal Health

T39 Differences in production traits between scrapie resistant and scrapie susceptible ewes. B. M. Alexander*[1], R. H. Stobart[1], W. C. Russell[1], K. I. O'Rourke[2], and G. E. Moss[1], [1]*University of Wyoming,* [2]*USDA-ARS.*

Scrapie is one of several transmissible spongiform encephalopathies (TSE) including bovine spongiform encephalopathy (BSE). The apparent transmission of BSE to humans in the United Kingdom resulted in a call for eradication of all TSEs in food producing animals. In the United States, scrapie has been detected only in sheep possessing alleles of the prion protein with glutamine (Q) or histidine (H) at codon 171, both reported as Q. Incidence of scrapie infection is rare when animals possess at least one allele for arginine (R) at 171. The objective of the present study was to determine if production traits differed between scrapie resistant (QR and RR) and scrapie susceptible (QQ) animals. Historic records of the Univ. of Wyoming purebred ewe flock were analyzed for evidence of production advantage to scrapie susceptible ewes. Lambing records from purebred Columbia (n=240), Hampshire (n=325), Rambouillet (n=227), and Suffolk (n=277) ewes with known genotype at codon 171 were analyzed for differences in birth-type, birth weight, adjusted weaning weight and total kg of lambs weaned per ewe lambing. In addition, influence of lamb genotype on birth weights and adjusted weaning weights was determined from the 2002 lamb crop (n=356). Suffolk ewes with QQ genotype gave birth to more ($P<0.001$) lambs than QR ewes (1.8 ± .06 vs 1.2 ± .13, respectively). However, QQ Suffolk ewes weaned less ($P=0.07$) total kg of lamb than QR ewes (63.2 ± 1.1 vs 70.2 ± 2.7, respectively). Although, birth weights from Rambouillet ewes tended ($P=0.09$) to be influenced by ewe genotype, differences were not noted at weaning or in total kg of lambs weaned. Production traits of Columbia and Hampshire ewes did not differ by ewe genotype. There was no influence of lamb genotype ($P\geq0.34$) on birth weight or adjusted weaning weight for any of the breeds analyzed. In conclusion, the scrapie resistance status of the ewe may influence birth-type and weight, but these differences do not appear to influence ultimate lamb production.

Key Words: Genotype, Scrapie, Sheep

T40 Effect of calving season on colostrum quality and growth of dairy calves in a hot arid region. J S. Saucedo*[1], L. Avendaño[1], F. D. Alvarez[1], T. B. Rentería[1], J. F. Moreno[1], M. F. Montaño[1], and M. P. Gallegos[2], [1]*Universidad Autónoma de Baja California, Mexicali, Baja California, México,* [2]*Universidad Juárez del Estado de Durango, Durango, México.*

The objective of the present study was to determine the effect of calving season on colostral immunoglobulin levels (CIL), colostral immunoglobulin transfer (CIT), calf birth weight (CBW), weight at 60 d (W60) and daily weight gain from birth to 60 d of age (DWG) of Holstein calves in a dairy herd located in a desert region of Baja California, Mexico. Calving season was grouped in summer (n=12), autumn (n=24), and winter (n=36). The CIL levels were measured using a colostrometer during the first four milkings postpartum. Blood samples were taken from the jugular vein of calves at birth, 24 and 48 h after partum in order to measure CIT using the ELISA procedure. Calves consumed 2 L of colostrum at 6 and 12 h of age and then 4 L of whole milk until 60 d of age. Calf starter was offered to all calves from the first week of age. Statistical analyses were performed using linear models through analysis of variance in SAS. In the first milking, cows calved during winter had higher (P<.05) CIL than those calved during summer and autumn (99.2 ± 6.98 vs 85.2 ± 5.33 and 89.28 ± 4.93 mg/ml, respectively). During the following three milkings, CIL was higher for cows calved in winter and autumn than the cows calved during summer (47.5 ± 4.4; 20.0 ± 2.9; 5.83 ± 2.9 mg/ml, in three milkings, respectively). The CBW were higher (P<.05) in cows calved during winter (35.6 ± 1.9 kg) than those calved during summer (29.6 ± 1.6), but similar (P>.05) to those cows calved in autumn (32.8 ± 1.3 kg). Weights of calves at 60 d were similar (P>.05) during summer (65.3 ± 2.91 kg), autumn (64.3 ± 2.32 kg) and winter (67.6 ± 3.36 kg). The DWG were also similar during summer, autumn and winter (0.593 ± 0.03, 0.524 ± 0.02 and 0.534 ± 0.04 kg, respectively). These results indicate that there is a significant effect of hot environmental temperatures on colostral quality and calf birth weight. However, no significant effect of calving season was observed in daily weight gain and weights at 60 d of age.

Key Words: Calves, Colostral immunoglobulin, Growth

T41 Effect of batch and high-temperature-short-time pasteurization on IgG concentrations in colostrum. L. Green*, S. Godden, and J. Feirtag, *University of Minnesota, St. Paul, MN.*

The objectives of this study were to determine the loss of IgG 1) during pasteurization of the colostrum in both a batch/vat (B/V) and a high-temperature short-time (HTST) pasteurizer; 2) with different volumes of colostrum pasteurized in a batch pasteurizer unit; 3) when different cooling treatments were applied post-pasteurization; and 4) when colostrum was frozen after pasteurization and thawed. The B/V and HTST pasteurizers used in this study were made for on-farm commercial use. A small laboratory-scale B/V pasteurizer (1 gallon aliquots) and a large scale on-farm commercial B/V pasteurization unit (8 gallon aliquots) were used to determine the effect of volume. Three cooling treatments (ice bath, cooler and room temperature) were applied to pasteurized colostrum in the laboratory-scale batch pasteurizer. Pasteurized colostrum samples were frozen immediately after pasteurization. The samples were thawed and re-tested for the impact of freezing on the available IgG concentration in the colostrum. IgG concentrations were quantified in both the pre- and post-pasteurized samples using a radial immunodiffusion assay. Pasteurization caused an average decrease in the IgG for the laboratory-scale batch pasteurizer, commercial on-farm batch pasteurizer and the HTST pasteurizer of 25%, 31%, and 29%, respectively. Pasteurization of different volumes did not appear to have an effect on the final concentration of IgG. A 24.4%, 12.6% and 20.9% decrease in colostral IgG from pre- to post-pasteurized samples was observed when the ice bath, cooler and room temperature cooling treatments were applied, respectively. No significant differences in IgG concentrations were detected in the pasteurized colostrum after being frozen and thawed. Results from this study have demonstrated that on-farm commercial batch pasteurization units can consistently produce a product of normal consistency which can easily be fed to calves.

Key Words: Colostrum, IgG, Pasteurization

T42 The absorption of immunoglobulins from a plasma-based IgG supplement. A. L. Riddle*[1], H. D. Tyler[1], M. L. O'Brien[2], K. J. Touchette[2], and J. A. Coalson[2], [1]*Iowa State University, Ames, IA,* [2]*Merrick's Inc., Union Center, WI.*

Calves that fail to absorb adequate amounts of antibodies within the first 24 h after birth have increased susceptibility to infectious diseases and increased mortality rates. Colostrum supplements, such as plasma-based IgG supplements, are useful when colostrum is unavailable, of poor quality, or a potential disease vector. A plasma-based IgG supplement may provide adequate levels of passive immunity to the neonatal calf. The objective of this experiment was to compare the efficiency of uptake of immunoglobulins from three different sources; a plasma-based IgG supplement, the same plasma-based IgG supplement with