

807 Effects of dietary conjugated linoleic acid (CLA) on growth, carcass characteristics and meat quality of heavy pigs. C. Corino¹, V. Bontempo*², S. Magni¹, G. Pastorelli¹, R. Rossi¹, D. Sciannimanico¹, and J. Mourou³, ¹University of Milan/Italy, ²University of Molise/Italy, ³INRA, Saint-Gilles/France.

A study was conducted to determine the effect of conjugated linoleic acid (CLA) synthesized from sunflower oil on growth, carcass characteristics and meat quality of heavy pigs. Thirty-six pigs, half barrows and half females, averaging 97 kg L.W., allotted within weight and sex to a randomized complete experimental design, were fed diets supplemented with different CLA levels: 0.5% lard (C), 0.25% lard and 0.25% of CLA (T1), 0.5% of CLA (T2). CLA oil contained 65% CLA isomers (Conlinc, Inc., Detroit Lakes, Minnesota 56502 USA). The pigs were slaughtered at 172 kg L.W.. No significant differences were observed on ADG, FI, FE, dressing percentage, backfat thickness, pH and color of loin and

ham. Fatty acid composition of ham fat was significantly affected by dietary CLA. Higher levels of saturated fatty acids (C=38.5^A, T1=43.7^B and T2=41.2^B SEM=0.754), lower levels of monounsaturated fatty acids (C=46.7^A, T1=42.1^B and T2=43.7^B SEM=0.854) and higher CLA content (C=0.54^A, T1=1.01^B and T2=0.92^B SEM=0.107) were observed on fat of pigs fed CLA. These data suggest that conjugated linoleic acid have no effects on growth performances, carcass characteristics and meat quality of heavy pigs during the last fattening period. The influence of CLA on fatty acid composition of ham adipose tissue may be very important from a technological point of view for the higher content of saturated fatty acids and from a nutritional point of view for the higher CLA content.

Key Words: Dietary conjugated linoleic acid, heavy pig , carcass characteristics

ASAS/ADSA Ruminant Nutrition: Byproducts

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810 Effect of feeding a raw soybean hull-corn steep liquor pellet on the metabolism and performance of lactating dairy cows. J. M. DeFrain*¹, J. E. Shirley¹, E. C. Titgemeyer¹, A. F. Park¹, and R. T. Ethington², ¹Kansas State University, Manhattan, ²Minnesota Corn Processors, Inc.

Eighteen multiparous Holstein cows (148 ± 35 DIM) averaging 41.5 kg/d ECM were used in six 3 × 3 Latin squares with 28-d periods to evaluate the effect of a raw soybean hull-corn steep liquor pellet (SHSL) on the performance of lactating dairy cows. Cows were blocked by pretreatment BW and ECM and assigned to control (C), SHSL (20% of diet DM), or pelleted raw soybean hulls (SH, 15% of diet DM). C contained 30% alfalfa hay, 15% corn silage, 34% corn, 9.3% whole cottonseed, 5% soybean meal (SBM), 2% fish meal, 0.5% blood meal, 1% wet molasses, and 3.2% vitamin/minerals. SHSL replaced 6.2% alfalfa hay, 3.7% corn silage, 6.6% corn, 3.3% SBM, and 1.7% expeller SBM replaced solvent SBM to maintain similar dietary RUP levels. SH replaced 6.2% alfalfa hay, 3.7% corn silage, and 5.1% corn. Diet CP % and energy density (Mcal/kg NEL) were 16.6 and 1.78, 16.3 and 1.73, 17.1 and 1.71 for C, SHSL, and SH, respectively. DMI of cows fed SHSL were similar to C and SH, but cows fed SH consumed more (P < 0.05) DM than cows fed C. Milk and ECM were similar for cows fed SHSL and SH, but lower (P < 0.05) for those fed C. Production efficiencies (ECM/DMI) were not affected by diet, but CP output in milk/CP intake was highest (P < 0.05) for cows fed SHSL and similar between those fed SH and C. Milk fat percent and SCC were similar for cows fed SHSL and SH but higher (P < 0.05) for those fed C. Milk fat yield and milk protein percent were not affected by diet, but feeding SHSL and SH increased (P < 0.05) milk protein yield, MUN, and PUN. BW, BCS, milk N distribution, and glucose, NEFA, and triacylglycerol in plasma were not influenced by diets. Cows fed SHSL and SH had higher (P < 0.05) total alpha-amino N in plasma, but individual amino acids in plasma were similar. SHSL can replace a portion of the forage, grain, and SBM in diets for lactating dairy cows without decreasing production.

Key Words: Soybean hulls, Steep liquor, By-product

811 The impact of feeding a raw soybean hull-corn steep liquor pellet on induced subacute ruminal acidosis in lactating cows. J. M. DeFrain*¹, J. E. Shirley¹, E. C. Titgemeyer¹, A. F. Park¹, and R. T. Ethington², ¹Kansas State University, Manhattan, ²Minnesota Corn Processors, Inc.

We used four ruminally cannulated, multiparous Holstein cows (690 kg; 21 kg/d milk) in a 2-period cross-over design to determine the impact of feeding a raw soybean hull-corn steep liquor pellet (SHSL) on induced subacute ruminal acidosis (SARA) in lactating cows. Cows were fed control (30% alfalfa hay, 15% corn silage, 34% corn, 9% whole cottonseed, 5% soybean meal (SBM), 2% fish meal, 0.5% blood meal, 1% wet molasses, and 3.5% vitamin/minerals) or SHSL (20% of diet DM) diets as TMR. SHSL replaced 6.2% alfalfa hay, 3.7% corn silage, 6.6% corn,

3.3% SBM, and 1.7% expeller SBM replaced solvent SBM to maintain similar dietary RUP levels. Periods were 15 d (10 d adaptation, 2 d for pre-challenge measures, and 3 d of SARA challenge). During d 7 to 12 cows were fed once daily at a common DMI (3.2% of BW) dictated by the cow consuming the least. Cows were fasted 12 h prior to the first SARA challenge. For each SARA challenge (d 13, 14, and 15), cows were offered 75% of their daily diet at 0600 h. The remaining 25% of diet DM was replaced by ground corn which was mixed with orts remaining 2 h after feeding and placed into the rumen at that time. Rumen fluid was collected before and 3, 6, 9, and 12 h after feeding during d 11 to 15. Ruminant pH declined linearly with time after feeding (P < 0.01), and this decrease was greater during the SARA challenges (P < 0.01). Ruminant lactate was essentially 0 on d 11 and 12 and increased linearly (P < 0.05) with repeated SARA challenges. Concentrations of total ruminal VFA increased linearly (P < 0.01) after feeding, and increases were greater on challenge days than on d 11 and 12. There were no differences due to SHSL inclusion. These data suggest the model used to induce SARA was successful and the partial replacement of alfalfa, corn silage, corn, and SBM by SHSL did not influence the response to SARA challenges.

Key Words: Acidosis, Soyhulls, Steep liquor

812 Relative nutritive value of dried versus wet brewers' grain for dairy cows. T. R. Dhiman¹, M. S. Zaman*¹, I. S. MacQueen¹, and H. D. Radloff², ¹Department of Animal, Dairy and Veterinary Sciences, Utah State University, Logan, UT 84322-4815, ²A-L Gilbert Company, Oakdale, CA.

Twenty-four lactating cows (699 41.1 kg BW; 56 25.3 days in milk) were used to study the nutritive value of dried and wet brewers' grain for dairy cows. Twenty intact and four cows fitted with a rumen cannula were blocked according to milk yield and randomly assigned to two treatments. Each treatment had ten intact and two cows fitted with a rumen cannula. Cows were fed a total mixed ration (TMR) twice a day containing either dried or wet brewers' grain at 15% of the dietary DM. The diet contained 43% forage and 53% concentrate. The experimental design was a switch back with two periods. Each period was 5 wk. First 2 wk in each period were considered as an adaptation to the diets and data from the last 3 wk were used for treatment comparisons. Total duration of the experiment was 10 wk. Once a week milk samples were analyzed for chemical compositions. Ruminant pH, ammonia-N and VFA concentrations were measured in the rumen-cannulated cows. Dried and wet brewers' diets contained 68.0 and 66.5% DM; 16.9 and 16.9% CP; 40.4 and 42.0% NDF; 24.4 and 24.5% ADF, respectively. The feed DM intake were 25.4 and 24.8 kg/d and 3.5% fat corrected milk (FCM) yield 39.8 and 40.1 kg/d for cows fed dried and wet brewers' grain, respectively. Cows fed dried or wet brewers' grain had similar (P > 0.05) feed intake, milk yield, energy intake, milk composition, feed efficiency (FCM/DMI), ruminal pH, ruminal ammonia-N and ruminal total VFA concentrations. The results suggest that the performance of cows fed either dried or wet brewers' grain at 15% of dietary DM was similar when the TMR had the same amount of DM. The storage of wet brewers' grain for a lengthy time is always a concern especially in summer. However, based on milk yield response and drying cost, it might be beneficial to feed wet brewers' grain in areas close to the brewery.

Key Words: Cow, Brewer's grain, Milk