

Ruminant Nutrition: Fats and Carbohydrates - Beef, Sheep, Misc. Ruminants

TH209 Effect of physical particle size on ruminal and post-ruminal disappearance of nutrients of a mixed concentrate in Holstein steers. H. H. Jahani-Azizabadi¹, M. Danesh Mesgaran*¹, and A. Rahmatimanesh², ¹*Ferdowsi University of Mashhad, Mashhad, Iran*, ²*Heram Talae Shargh Feed Mill Company, Nishabour, Iran*.

In situ ruminal and post-ruminal disappearance [dry matter (DM), crude protein (CP) and ether extract (EE)] of a mixed concentrate prepared as fine mesh (fm), fine pellets (fp) and coarse pellets (cp) were studied. All pellets were provided in a condition of 70°C with pressure of 3 bars in 7 seconds. Concentrate was composed of cereal grain, soybean meal, canola meal, fish meal, urea, wheat bran, beet pulp, bagasse, salt, sodium bicarbonate, mineral and vitamin premix, anionic salt, molasses, sugar, protected fatty acid and Mg oxide (318, 60, 150, 15, 3.6, 250, 33, 40, 6.7, 8.6, 8, 15, 55, 30, 5 and 2.1 g/kg DM, respectively). Four Holstein steers (430±50 kg, BW) fitted with ruminal fistulae and T-shaped intestinal cannulae were used. Steers fed (DM basis) 2.5 kg of alfalfa hay, 2.1 kg of corn silage, 1.5 kg of straw and 2.5 kg of concentrate (170 g CP/kg of DM). Approximately 5 g of sample (DM) was placed in polyester bag (12×19 cm, pore size of 48 µm, n=8), then incubated in the rumen for 12 h. After removal from the rumen, bags were washed and dried. Then, 1 g DM of un-ruminal disappeared sample was weighed into a mobile bag (3×6 cm, pore size of 48 µm, n=8) and inserted in small intestine, then removed from the voided feces and rinsed in cold tap water. DM, EE and CP of intact and incubated samples were determined. Data were analyzed using completely randomized design. Ruminal DM, CP and EE disappearance of fm was significantly (P< 0.01) lower than fp and cp. Ruminal DM, CP and EE disappearance of fp was significantly (P< 0.01) higher than cp (0.71, 0.61 and 0.65 vs. 0.67, 0.58 and 0.59, respectively). Post-ruminal DM, CP and EE disappearance of fm concentrate (0.45, 0.50 and 0.80, respectively) was significantly (P< 0.01) higher compared with fp (0.35, 0.38 and 0.68, respectively) and cp (0.39, 0.38 and 0.57, respectively). Results of the present study indicated that the physical particle size of a mixed concentrate might impact on ruminal and post-ruminal disappearance of DM, CP and EE.

Key Words: Physical Processing, Disappearance, Mobile Nylon Bag

TH210 Comparative effects of whole, reconstituted- rolled, reconstituted-whole, dry-rolled and ground sorghum grain on growth and carcass characteristics in lambs. P. Orozco, R. Lazcano, and L. Corona*, *Universidad Nacional Autónoma de México. Facultad de Medicina Veterinaria y Zootecnia. Departamento de Nutrición Animal y Bioquímica, Cd. Universitaria, D.F., México, 04510*.

A growth trial was conducted to simultaneously evaluate five methods of sorghum processing for sheep. Experimental diets contained 73% sorghum grain. Sorghum processing treatments were as follows: 1) whole sorghum (WS), 2) reconstituted-rolled sorghum (RRS), 3) reconstituted-whole sorghum (RWS), 4) dry-rolled sorghum (DRS) and 5) ground sorghum (GS). RRS and RWS were reconstituted to 30% moisture and ensiled for 30d. Treatments effects on performance were evaluated in a 45-d finishing trial involving 20 Pelibuey ram lambs (33 kg±4.7) housed in individual pens. The experimental design was completely randomized

and data were analyzed using PROC GLM (SAS) with initial BW as a covariable. Lambs fed WS had lower (190 vs. 246g; P< 0.05) ADG, DMI (1.19 vs. 1.33kg; P< 0.05), gain: feed ratio (160 vs. 190g; P< 0.10), hot carcass weight (21.2 vs. 22.7kg; P< 0.05), dressing percentage (49.8 vs. 52.8%; P< 0.01), leg weight (5.6 vs. 5.0 kg; P< 0.10), chest weight (1.3 vs. 1.5kg; P< 0.10) and greater loin weight (2.76 vs. 2.21kg; P< 0.05) than sheep fed RWS. No differences (P> 0.05) between treatments were observed in initial weight, back fat thickness, KPF, LM area and shear force. Animals fed RWS had greater (1.2 vs. 1.1kg; P< 0.05) DMI; hot carcass weight (22.7 vs. 21.5kg, P< 0.05) and leg weight (5.6 vs. 4.8kg, P< 0.001) than lambs fed RRS. Lambs fed WS had lower (P< 0.05) dressing percentage (49.8 vs. 51.5%) and loin weight (2.4 vs. 2.8kg) than animals fed processed sorghum treatments. It is concluded that RWS enhances the growth performance and carcass characteristics in feedlot lambs compared to WS.

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Key Words: Sheep, Growth, Sorghum Processing

TH211 Effects of non-fiber carbohydrates supplementation on some blood metabolites of Holstein steers. F. Rezaii, M. Danesh Mesgaran, A. Heravi Mousavi*, and M. Nasiri, *Ferdowsi University of Mashhad, Mashhad, Iran*.

The aim of this study was to evaluate the effect of diets containing different non-fiber carbohydrates (sucrose or starch) on plasma glucose, urea nitrogen (PUN) and insulin in Holstein steers. Four fistulated Holstein steers (BW=280 ± 15 kg) were assigned to a 4 × 4 Latin Square with 21d periods; 17 days of diet for adjustment and 4 days of sample collection. A basal diet was formulated to be contained of alfalfa hay, barley grain, soybean meal and sugar beet pulp (400, 290, 190 and 50 g/kg, respectively). Starch (St) or sucrose (Su) or a 1:1 mixture of starch and sucrose (St+Su) was added to the basal diet at the rate of 70 g/kg DM. Diets were offered as 2-2.5 times of maintenance requirements (7 kg DM/d). Animals were fed twice daily at 0830 and 1630. Blood samples were collected before (0) and 2, 4, and 6 h after the morning feeding in tube containing heparin and immediately were centrifuged at 3000 rpm for 15 minute. The plasma was analyzed for glucose and PUN using commercial kits in the 0, 2, 4 and 6 h samples. The plasma samples were also analyzed for insulin in the 0 and 4 h samples. The data were analyzed using the MIXED procedure of SAS (2001) for a Latin Square design. The model contained the effects of period, cow, and treatment. Plasma glucose significantly decreased after supplementation diet with the non-fiber carbohydrates (p=0.043; 86, 70, 78 and 76 ± 3.7 mg/dL for control, Su, St and St+Su, respectively). The non-fiber carbohydrate supplementation decreased PUN significantly in compare with the control (p<0.01; 19, 15, 14, 13 ± 0.85 mg/dL for control, Su, St and St+Su, respectively). Plasma concentrations of insulin were similar among the diets (p=0.3). The result of this study demonstrated that sucrose and starch supplementations had significant impact on plasma glucose and PUN.

Key Words: Dairy Cow, Non-Fiber Carbohydrate, Sucrose and Starch