W466 Dynamic changes of main rumen microflora and ruminal fermentation in sheep supplemented with molasses-urea. Alatengdalai, Shuyuan Xue, Ming Hu, and Changqing Li*, *Inner Mongolia Academy of Agricultural and Animal Husbandry Sciences, Huhhot, Inner Mongolia, China.*

The digestion of diet and utilization of nutrients by sheep depends on rumen microbial fermentative digestion. Reproduction and growth rate of microbes is mainly determined by the availability of nutrient and energy levels in rumen. Therefore, rumen environment affects the extent of microbial protein (MCP) synthesis. The aim of this study is to evaluate the effects of licking the molasses-urea feed block on the rumen of sheep, including microbial biomass and fermentative efficiency. Eight sheep were selected and divided into 2 groups (control group and treatment group). The treatment group animals were supplied with molasses-urea feed block for ad libitum consumption. Rumen fluid was collected every 2 h and rumen fermentation parameters were measured. In addition, the population of majority bacteria were investigated by real-time PCR. The results showed that the population of majority bacteria is increased in rumen of treatment group animals ($P < 0.05$). The trend of daily change of rumen bacteria was same in all animals. Each bacterium quantity decreased gradually after feeding, and reached the lowest level after 2 h intake. It then increased slowly and reached the highest level after intake for 8 h. Finally, each bacterium quantity was back to same level as before intake. In contrast, the protozoa number raised to the highest in 4 h feeding and declined gradually, the concentration of protozoa in treatment group sheep was significantly higher than that of control group ($P < 0.05$). The pH of rumen liquids were in normal range and were not different between both groups. However, pH decreased from the highest level before feeding to the lowest level within 4 h. It was increased after intake for 8 h. The concentration of NH_3-N and MCP synthesis in the rumen liquids were both significantly higher than that of control group ($P < 0.05$), the highest concentration of NH_3-N and MCP were reached after feeding by 2 h and 4 h respectively. Block containing urea and molasses can be well utilized by sheep, it is conducive for rumen fermentation by the microbes in ruminant.

Key Words: molasses-urea, sheep, rumen

W467 Effects of corn levels on TMR on growth performance and economic efficiency in growing Korean black goats. S. U. Kim*, M. J. Ku, Y. S. Choi, S. K. Lee, D. H. Park, and S. G. Park, *Jeollanam-do Livestock Research Institute, Gangjin-gun, Jeollanam-do, Republic of Korea.*

This study was conducted to investigate the growth performance and economic efficiency in dietary corn mixing level on total mixed ration(TMR) in growing goats. A total of 32 castration goats with similar age (average 4 mo) and body weight (average 16kg) were equally allocated to dietary 4 treatments in a randomized complete block design. Dietary treatments included a controls (conventional) group and 3 corn mixing treatments groups (fed diets containing 15, 25, 35% corn mixing level of TMR). Average daily gain (ADG) was significantly ($P < 0.05$) higher in control group (103.5g). Within treatments, ranked the highest in 25% (91.2g), 15% (84.8g) 35% (72.6g) corn mixing treatments ($P < 0.05$). Daily feed intakes was significantly ($P < 0.05$) higher in control group (1,076g). Within treatments, ranked the highest in 15% (1,050g), 25% (1,041g), 35% (1,015g) corn mixing treatments ($P < 0.05$). The amounts of feed required for body weight gain ranked the lowest in control group (10.4), followed by 15% (11.4), 25% (12.4) and 35% (14.0) corn mixing treatments ($P < 0.05$). However, comparing the feed cost contrast with market price for economic analysis by comparing the income results, the income ranked the highest 396Won (36cents) in 25% corn mixing treatments, followed by 15% corn mixing treatments 344Won (31.2cents), control group 322Won (29.2cents) and 35% corn mixing treatments 254Won (23cents)($P < 0.05$). In conclusion, it was estimated that the optimal level of corn mix on TMR might be 25% feed intake, when diets based TMR were fed to growing Korean black goats for their improvements of economic efficiency.

Key Words: Korean black goats, corn mixing levels, total mixed ration (TMR)

W468 Effects of water restriction following feeding on microbial N supply and excretion of urinary purine derivatives in Corriedale ewes under heat stress condition. J. Ghassemi Nejad, B. W. Kim*, B. H. Lee, J. L. Peng, D. H. Ji, and K. I. Sung, *College of Animal Life Sciences, Kangwon National University, Chuncheon, Kangwon, South Korea.*

Urinary excretion of purine derivatives (PDs) is used to estimate the microbial N supply to sheep. The objective of this study was to determine the effect of water restriction following feeding on microbial N supply, and urinary excretion of PDs in Corriedale ewes under heat stress condition. Nine Corriedale ewes (average BW = 45.0 ± 4.5 kg) were fed diets based on maintenance requirements individually in metabolic crates. Sheep were assigned to 3 treatment groups according to a 3 × 3 Latin square design for 3 periods of 21 d duration each (9 sheep per treatment). Treatments were free access to water (FAW), 2h water restriction (2hWR), and 3h water restriction (3hWR) following feeding. No differences were found in body weight gain among all treatment groups ($P > 0.05$). Daily water intake decreased linearly as water restriction time following feeding increased ($P < 0.05$). Urine weight and volume were higher ($P < 0.05$) in FAW than restricted groups ($P > 0.05$). Water restriction following feeding decreased the urinary N (g/d) and urinary N as a percentage of N intakes ($P < 0.05$); however, fecal N (g/d) and fecal N as a percentage of N intake were not affected by water restriction following feeding ($P > 0.05$). Allantoin concentration tended to be higher ($P = 0.07$) in FAW group than 2hWR and 3hWR groups while no differences ($P > 0.05$) were observed in uric acid, xanthine + hypoxanthine and creatinine concentrations. Sum of PDs tended to be higher in FAW ($P = 0.08$) but water restriction following feeding reduced total PDs excretion compared with the FAW group ($P < 0.01$). It is concluded that water restriction following feeding for less than 3 h improved microbial N supply in ewes under heat stress condition.

Key Words: ewe, heat stress, microbial nitrogen

W469 Comparative study between two traditional camel rearing systems effects on milk fat and its fatty acids profile. Amir Ahmadpour[1], Abdol Hamid Karimi[2], Rupert Bruckmaier[3], and Mousa Zarrin*[4], *[1]Department of Animal Science, Bu-Ali Sina University, Hamadan, Iran, [2]Department of Animal Science, Fars Agricultural and Natural Resources Research Center, Shiraz, Fars, Iran, [3]Vetsuisse Faculty, University of Bern, Bern, Switzerland, [4]Department of Animal Science, Yasouj University, Yasouj, Iran.*

Raising awareness about harmfulness of high saturated fatty acid content of milk fat caused to increase the study to improve milk fat quality. The dromedary (*Camelus dromedarius*) is an important domestic animal in eastern Iran. In spite of importance of this specie, few studies have been reported on camel milk. The objective of the present study is comparison of the effects of different rearing systems on fat content and fatty acids profile of milk fat in camel. Eighteen lactating camels were assigned in 2 treatment groups include very extensive (VE, n = 9) and extensive (E, n = 9) rearing system. In the EV group, camels depended merely on pasture, but in the E group camels received 750g/animal barley after daily grazing. Animals watered twice daily and received 250 g/animal salt weekly. Animals were milked twice a day. Milk samples (250 mL from each camel) collected in the morning and analyzed for milk constituents. Thin-layer chromatography used for separation of triacylglycerol and fatty acids profile measured by gas chromatography method. Data are presented as means ± SEM. The fat content was 33.2 ± 9.2 g/L and 32.5 ± 11.6 g/L for VE and E group respectively. The amounts of short-chain (C4 – C8) and medium-chain (C10 – C13) fatty acids were higher in E group compared with VE group ($P < 0.05$), whereas the C14 like C16:0 and C16:1n-7 were higher in VE group ($P < 0.01$). Although C18:0 had no significant difference between groups, C18:1n-9 and C18:2n-6 in E and C18:3n-3 in VE were higher ($P < 0.05$). Moreover 20:0, 20:5n-3, 22:3n-3, and 22:6n-3 of VE was higher ($P < 0.05$). Milk fat of VE was less saturated ($P < 0.05$). Except free cholesterol and phospholipids that were lower and higher respectively in VE ($P < 0.05$), no significant difference observed between groups for cholesteryl esters, free fatty acids, triacylglycerols, diacylglycerols, and monoacylglycerols. The results demonstrated that the VE rearing system increases total polyunsaturated fatty acids and decreases free cholesterol compared with E group rearing system. In conclusion, the VE rearing system could produce healthier milk fat in camels.

Key Words: camel, milk, fat

W470 Influence of zilpaterol hydrochloride and enriched-Cr yeast supplementation on feedlot performance lambs. Miguel A. Rodríguez[1,2], Ignacio A. Domínguez-Vara[1], Ernesto Morales-Almaráz[1], and Rubén Barajas*[2], [1]*Universidad Autónoma del Estado de México, FMVZ, Toluca, Estado de México, México,* [2]*FMVZ-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México.*

Twenty-eight Rambouillet cross lambs (27.85 ± 2.91 kg) were used in a 74-d feedlot experiment to evaluate the influence of zilpaterol hydrochloride (Zilmax, Merck Animal Health) and enriched-Cr yeast (BioChrome, Alltech) supplementation on feedlot performance of lambs. Sheep were weighed and individually allotted in 1.2 × 2.5 m concrete floor pens. They were randomly assigned to 4 treatments as follows: 1) A 85% concentrate diet, contained 15.5% CP and 1.87 Mcal NEm/kg, and formulated from corn grain and soybean meal (Control); 2) Control added with 0.2 mg of zilpaterol hydrochloride/ kg BW during last 28 d in the feedlot (ZH); 3) Control plus 0.3 mg of Cr/kg DM (YCr); and 4) Control plus ZH and YCr (ZHCr). Results were analyzed as a completely randomized design with a 2 × 2 factorial arrangement. Pen was the experimental unit; data were analyzed with initial weight as a covariate in the model. Final body weight tended ($P = 0.10$) to be increased by ZH supplementation (45.4 *vs*. 44.1 kg). Average daily gain tended ($P = 0.07$) to be higher for lambs in ZH treatment (0.306 *vs*. 0.280 kg/d). Dry matter intake was not affected by treatment ($P > 0.20$). Gain/feed ratio was increased ($P = 0.02$) by 11% (0.236 vs. 0.213 kg/kg) with ZH supplementation. Yeast-Cr supplementation did not modify any variable analyzed ($P > 0.20$). No interaction of ZH x Yeast-Cr was observed ($P > 0.20$). It is concluded, that zilpaterol hydrochloride supplementation promoted feedlot performance of lambs, whereas chromium supplementation from enriched-Cr yeast did not shown benefits to feedlot lambs both alone or in combination with zilpaterol hydrochloride.

Key Words: chromium, lamb, zilpaterol

W471 Influence of zilpaterol hydrochloride and enriched-Cr yeast supplementation on carcass characteristics and meat composition of feedlot lambs. Miguel A. Rodríguez[1,2], Ignacio A. Domínguez-Vara[1], María A. Mariezcurrena-Berasain[1], Juan E. Sánchez-Torres[1], and Rubén Barajas*[2], [1]*Universidad Autónoma del Estado de México, FMVZ, Toluca, Estado de México, México,* [2]*FMVZ-Universidad Autónoma de Sinaloa, Culiacán, Sinaloa, México.*

Twenty-eight Rambouillet cross lambs (27.85 ± 2.91 kg) were used in a 74-d feedlot experiment to evaluate the influence of zilpaterol hydrochloride (Zilmax, Merck Animal Health) and enriched-Cr yeast (BioChrome, Alltech) supplementation on carcass characteristics and meat composition of feedlot lambs. Lambs were weighed and individually allotted. They were randomly assigned to 4 treatments as follows: 1) A 85% concentrate corn-SBM diet, contained 15.5% CP and 1.87 Mcal NEm/kg, (Control); 2) Control with 0.2 mg of zilpaterol hydrochloride/ kg BW during last 28 d in the feedlot (ZH); 3) Control with 0.3 mg of Cr/kg DM (YCr); and 4) Control with ZH and YCr (ZHCr). Lambs were harvested, hot carcass weight measured and carcass dressing obtained. After 24 h chilling, *longissmus dorsi* muscle was cross sectioned at the 12th rib, and then back fat thickness and rib eye area were recorded. *Longissimus dorsi* samples were taken and meat chemical composition determined. Results were analyzed as a completely randomized design in a 2 × 2 factorial arrangement. Hot carcass weight tended to be greater ($P = 0.10$) in ZH (20.9 *vs*. 20.3 kg). Hot carcass dressing (46 ± 0.35%) was not different across treatments ($P > 0.20$). Back fat thickness was not affected by ZH ($P > 0.20$), but Cr tended ($P = 0.10$) to increase back fat thickness (2.02 vs.1.67 mm). Rib eye area (25 ± 0.68) was similar across treatments ($P > 0.20$). Meat dry matter, ash, and CP content were not altered by treatments ($P > 0.10$). ZH decreased ($P = 0.03$) fat content (28.3 *vs*. 39.14 g/kg). Shear force of the meat from lambs fed ZH treatments was greater ($P < 0.01$) than in meat lambs not fed ZH (5.8 *vs*. 2.8 kg/cm^2). Cooking losses were similar across treatments ($P > 0.10$). In conclusion, zilpaterol hydrochloride supplementation contributed to greater carcass weight and reduced fat content of meat, but shear force was greater. Yeast-Cr tended to increase back fat thickness without benefit in other carcass or meat characteristics.

Key Words: chromium, lamb, zilpaterol

W472 The nutritional value of confectionary sunflower hulls as forage source for finishing lambs. Rae-Leigh A. Pederzolli* and Gregory B. Penner, *University of Saskatchewan, Saskatoon, Saskatchewan, Canada.*

The objective of this study was to determine whether sunflower hulls (SFH) could be used as a partial replacement for barley silage in diets for finishing lambs. Eighteen Canadian Arcott wether lambs were randomly assigned to 1 of 3 treatments: 0SFH (60% barley grain, 30% barley silage and 10% lamb mineral pellet), 7.5SFH (60% barley grain, 22.5% barley silage and 10% lamb mineral pellet) and 15SFH (60% barley grain, 15% barley silage and 10% lamb mineral pellet). The lambs were weighed on 2 consecutive days at the start and end of the 25-d feeding period. Total fecal collection was performed from d 21 to 24, and behavior was monitored on d 25. Samples of feed and refusals were analyzed to evalu-

ate the sorting index. Data were analyzed as a completely randomized design using mixed model of SAS. Dry matter intake was not affected ($P = 0.32$) averaging 1.4 kg/d but ADG increased (quadratic, $P = 0.03$) from 160 g/d for 0SFH to 215 g/d for 7.5SFH followed by a decrease for 15SFH (143 g/d). Sheep fed 15SFH sorted against particles retained on the 8 mm sieve ($P < 0.01$), tended to sort for particles retained on the 1.18 mm sieve ($P = 0.09$) and sorted for particles retained on the pan ($P < 0.05$) showing there was preference for the 19mm, 1.8mm and < 1.8mm particles in the diet. There was no difference in time spent ruminating or eating between the treatments ($P > 0.1$) but 15SFH spent less time drinking than lambs fed 0SFH ($P = 0.03$). Apparent total-tract digestibility was not affected by treatments ($P > 0.1$) with DM, CP, NDF, and ADF digestibility averaging 72.7, 71.6, 45.8, and 39.7%, respectively. The data in this study indicate that sunflower hulls can be used as a partial replacement for barley silage without negatively affecting DMI, G:F, feeding behavior and digestibility.

Key Words: ADG, lamb, sunflower hulls