A new generation of a rumen protected lysine product, the third-generation AjiPro-L (A3G, Ajinomoto Co. Inc.), has higher bioavailability than the previous generation product (the second-generation AjiPro-L, A2G) mainly due to an increased intestinal digestibility which is attributed to the smaller particle size of A3G compared with A2G. Because the smaller particle size may affect the handling properties such as mixing homogeneity in feeds, durability at TMR mechanical mixing, and stability in TMR contact, however, the following studies were conducted to evaluate those properties of A3G. To examine the mixing homogeneity in feeds, A3G was added into a grain mix at 4.0 wt. % by using an auger mixer. The mix was transported by truck for 100 miles and unloaded into a feed bin. Four sub-samples of the mix (1 kg) were collected from a discharger of the bin. A3G particles in the mix were separated, weighed, and calculated for the inclusion rate. Statistical differences (P < 0.05) were tested by a one way-ANOVA. Mean inclusion rates of A3G in the mix before and after the transportation and subsequent discharge from the bin were 4.3 ± 0.2% and 3.8 ± 0.1%, respectively (mean ± SD, P < 0.05). Assuming the general CV of such feed mixing test is about 5%, those 2 rates fell within an acceptable range of the theoretical inclusion rate ± 2 SD. Next, in situ ruminal protection of A3G after TMR mechanical mixing was evaluated. A3G (1 g) were weighed and placed into a Dacron Bag. The bags were mixed with TMR by the Data Ranger (American Calan, Inc.) and were collected. Then the bags were placed in the rumin for 24 h. Comparing with intact A3G (Control), in situ protection of A3G was not affected by TMR mechanical mixing (P = 0.09). Lastly, a loss of Lys from A3G after contact with TMR was evaluated by measurements of Lys released from A3G into TMR after extraction with water at 0, 6, 12, 18, and 24 h. When A3G was mixed with TMR, about 5% of Lys in A3G was released into TMR within the first 6 h but no further Lys was released during the following 18 h. These results demonstrate that handling properties of A3G are not compromised regardless of reduction in the particle size.

**Key Words:** rumen-protected lysine, handling, stability

### T214 Characteristics of a rumen-protected lysine product. 2: Handling properties of the third-generation AjiPro-L in feeding practices

**Abstract:** The aim of this study was to evaluate the effects of dietary Acacia mearnsii tannin extract (TE) and managing the grazing schedule, on in vitro fermentative activity of the rumen inoculum (RI) collected from dairy cows. The trial was conducted with 9 Holstein cows averaging 197 ± 12 d in milk, in a triple split 3 × 3 Latin square design, through three 22-d experimental periods. The treatments consisted of morning grazing and afternoon TMR (AM), morning grazing and afternoon TMR added with 15 g/kg of TE (AMt), or morning TMR and afternoon grazing (PM). Cows were fed twice a day at 0700 and 1600 h, having access to TMR or pasture during 5 h. After 20 d of adaptation, RI of each cow was collected twice a day, 4 h after the morning and afternoon meal. The pH was measured and the fermentative activity of the RI was estimated through a 96-h in vitro gas-production assay. The substrates used were 2 whole-crop oat silages incubated in triplicate. Data were fitted to a simple exponential model with lag. Statistical analysis was carried out using the PROC MIXED of SAS, where treatments were compared

**Key Words:** rumen-protected lysine, dairy cow, bioavailability

### T215 Impact of tannins and grazing schedule on ruminal inoculum activity of dairy cows: Evaluation using the in vitro gas-production technique

**Abstract:** The aim of this study was to evaluate the effects of dietary Acacia mearnsii tannin extract (TE) and managing the grazing schedule, on in vitro fermentative activity of the rumen inoculum (RI) collected from dairy cows. The trial was conducted with 9 Holstein cows averaging 197 ± 12 d in milk, in a triple split 3 × 3 Latin square design, through three 22-d experimental periods. The treatments consisted of morning grazing and afternoon TMR (AM), morning grazing and afternoon TMR added with 15 g/kg of TE (AMt), or morning TMR and afternoon grazing (PM). Cows were fed twice a day at 0700 and 1600 h, having access to TMR or pasture during 5 h. After 20 d of adaptation, RI of each cow was collected twice a day, 4 h after the morning and afternoon meal. The pH was measured and the fermentative activity of the RI was estimated through a 96-h in vitro gas-production assay. The substrates used were 2 whole-crop oat silages incubated in triplicate. Data were fitted to a simple exponential model with lag. Statistical analysis was carried out using the PROC MIXED of SAS, where treatments were compared

**Key Words:** rumen-protected lysine, handling, stability