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affect excretion of PD and MPS. Protein sources did not affect efficiency of N utilization and MPS in mid-lactation cows.

Key Words: dried distillers grains with soluble (DDGS), protein sources, RUP

2508V Autolyzed or live yeast supplementation on performance of dairy cows. A. C. de Freitas[1], N. T. S. Grigoletto[1], P. C. Vittorazzi Junior[1], M. Bugoni[1], J. N. Ribeiro[1], C. V. de Almeida[1], N. P. Martins[1], O. P. Sbaralho[1], C. S. Cortinhas[2], T. S. Acedo[2], and F. P. Rennó*[1], [1]*University of São Paulo, Pirassununga, São Paulo, Brazil,* [2]*DSM Produtos Nutricionais Brasil S.A., São Paulo, SP, Brazil.*

Yeast products may alter microbiota of the digestive tract of ruminants, hence affecting nutrient absorption and performance. This study aimed to evaluate dietary yeast (*Saccharomyces cerevisiae*) supplementation on milk yield and composition, and feed efficiency of dairy cows. Forty-two Holstein cows (171 ± 40 DIM and 32.6 ± 17.7 kg/d milk yield) were blocked (n = 14) according to parity, DIM, and milk yield and randomly assigned to the following treatments: Control (CON); Autolyzed yeast (AY), AY fed at 0.617 g/kg dietary DM (Levabon Rumen E; Biomin Holding GmbH, Inzersdorf-Getzersdorf, Austria); or Live yeast (LY), LY fed at 0.123 g/kg dietary DM (Vistacell; AB Vista, Marlborough, England). Feed additives were provided mixed into the concentrate. Cows were allowed a 2-wk covariate period, and treatments were applied for the following 9 wks. Feed offered and refusals were recorded daily. Cows were milked twice daily, and samples were collected weekly during 3 consecutive days for solids analyses using mid-infrared method. Data were submitted to ANOVA as repeated measures modeling the fixed effects of covariate, treatment, time, and their interaction; block was considered as a random effect. Orthogonal contrasts evaluated treatment differences: CON *vs*. treatments with yeast; and AY *vs*. LY. Dry matter intake tended to be greater ($P = 0.10$) in cows fed LY than AY (27.6 and 25.9 kg/d, respectively). Milk yield tended to be greater ($P = 0.08$) in cows fed yeast products than CON. Fat-corrected milk was increased ($P = 0.01$) in cows fed yeast products (33.8, 35.6, 35.8 kg/d for CON, AY, and LY, respectively). Yeast supplementation increased ($P \leq 0.03$) solids yield but decreased ($P = 0.05$) protein content in milk (3.16, 3.13, 3.14% for CON, AY, and LY, respectively). Feed efficiency (FCM ÷ DMI) was greater ($P = 0.02$) in cows supplemented yeast than CON (1.30, 1.39, and 1.35 for CON, AY, and LY, respectively). Milk SCC was not influenced by treatments. Dietary supplementation of either AY or LY increases milk fat yield and brings benefits to performance of dairy cows.

Key Words: feed additive, direct-fed microbials, *Saccharomyces cerevisiae*

2509V Effect of filter bags and washout water temperature on dry matter recovery of pure starch and dry ground corn. C. Heinzen Jr.*[1], M. S. Souza[2,1], R. D. Shaver[1], and L. F. Ferraretto[1], [1]*University of Wisconsin, Madison, WI,* [2]*Universidade Federal Rural da Amazônia, Belém, PA, Brazil.*

Assays accurately predicting ruminal starch digestibility could provide useful information for ration formulation. But even though a 0 h starch disappearance assay has been recently used to rank forages and feedstuffs, the implications to ration formulation are unclear as different methodologies could alter the degree of particulate loss. Thus, the objective of this study was to evaluate the effect of filter bags commonly used in starch digestibility assays and washout water temperature on DM recovery of pure corn starch and finely ground corn samples following a 0 h starch disappearance assay. Triplicate samples of each starch source were placed in Dacron polyester in situ bags (DPB; R1020, 10 cm x 20 cm, 50 µm porosity; Ankom Technology), F57 bags (F57; 25 µm porosity; Ankom Technology) or filter papers (WG3; 6 µm porosity; Whatman G3) and incubated in water at either 23°C or 39°C. Approximately 5, 0.5 and 1 g of DM was used for DPB, F57 and WG3, respectively. The WG3 samples were incubated in Erlenmeyer flasks before filtration. After the washout, all samples were dried in an air-forced oven set at 60°C for 48 h and DM recovery was calculated. Two independent runs were conducted. Data were analyzed as a completely randomized design in a 2 × 3 x 2 factorial arrangement of treatments using PROC GLIMMIX of SAS with the Random effect of run and Fixed effects of starch source, filter bags, water temperature and their 2- and 3-way interactions. A starch source x filter bag interaction was detected ($P < 0.01$), with greatest DM recovery observed for pure starch placed in F57 and WG3 (92.1%, on average), intermediate for ground corn regardless of filter bag (85.3%, on average), and lowest for pure starch in DPB (74.8%). Moreover, less DM was recovered for samples incubated at 39°C than 23°C (84.9% vs. 86.6%, respectively, $P = 0.02$) regardless of filter bag or starch source. In conclusion, greater particulate loss was observed in filter bags traditionally used for ruminal in situ disappearance assays and when washing out samples with water simulating rumen temperature.

Key Words: starch, starch disappearance, corn grain

2510V Effect of sodium butyrate, phytogenic compounds or egg yolk antibodies supplementation in milk replacer on growth performance of dairy calves. P. Gorka*[1], J. Milik[2], W. Budzinski[3], M. Przybylo[1], J. Kanski[1], T. Jankowiak[4], and K. Budzinska[2], [1]*University of Agriculture in Krakow, Krakow, Poland,* [2]*University of Sciences and Technology in Bydgoszcz, Bydgoszcz, Poland,* [3]*Polmas S.A., Bydgoszcz, Poland,* [4]*Vetbovis, Zydowo, Poland.*

The same study methodology and treatments were used on 2 different commercial farms to determine whether supplementation of sodium butyrate (SB), phytogenic compounds (PC), and egg yolk antibodies (EY) in milk replacer (MR) containing probiotic bacteria will affect growth performance, feed efficiency, fecal score and health of calves. One hundred calves (52 females and 48 males) in Study 1 and 90 6 calves (48 females and 48 males) in Study 2 were blocked by date of birth and sex at 10 d of age and within block allocated to one of 4 treatments: 1) MR (CTRL); 2) MR with SB (3.4 kg/ton; Adimix Easy, Nutriad); 3) MR with PC (0.5 kg/ton; Digestarom, Biomin); and 4) MR with EY (3 kg/ton; Globigen Life Start, Globigen). The MR (21.5% CP and 18%) contained *Bacillus lichemiformis* and *Bacillus subtilis* (1.3×10^6 cfu/g), and *Enterococcus faecium* (1.2×10^6 cfu/g). Calves were fed daily 6 L of MR (900 g of MR powder) divided into 3 equal feedings and ad libitum starter mixture. Growth performance and health of calves was monitored for 50 d. Data were analyzed separately for each study as completely randomized block design using MIXED procedure in SAS. In Study 1, SB tended to increase fecal score (1.39 vs. 1.29; $P = 0.06$) and EY tended to decrease number of calves requiring medical treatment (8 vs. 14; $P = 0.09$), compared with CTRL. In Study 2, SB and EY tended to decrease ADG of calves (633 and 622 vs. 702 g/d) in the first 20 d of the study ($P \leq 0.10$), EY increased ADG of calves from d 21 to 50 of the study (1000 vs. 927 g/d; $P = 0.03$), PC decreased fecal score in first 20 d of the study (1.05 vs. 1.12; $P = 0.03$) and increased overall feed efficiency (756 vs. 716 g ADG/kg DM; $P = 0.05$), compared with CTRL. In summary, SB supplementation in MR containing probiotics had rather a negative impact on performance of calves, whereas EY and PC supplementation improved feed efficiency, fecal score, and health