chain FA (15.2 vs. 12.1; $P < 0.05$), and tended to increase milk anteiso FA (9.0 vs. 7.3 g/d; $P = 0.08$). N supply had no effect on the apparent transfer of duodenal iso, anteiso, and linear odd-chain FA to milk, and no interaction with E source was observed. Compared with F, S diets decreased the apparent transfer of anteiso FA by 25% ($P < 0.05$), and tended to reduce transfer of iso FA (−17%; $P = 0.07$). In conclusion, because the apparent transfer of some OBCFA from the duodenum to milk was affected by treatments, further research is needed to establish which milk OBCFA can be used as robust markers to estimate OBCFA and microbial protein flow at the duodenum and/or which corrections should be applied.

Key words: duodenal flow, milk fatty acids, OBCFA

M343 Effects of a direct-fed microbial and fibrolytic enzyme product on somatic cell counts in milk produced by crossbred dairy cows in the Brazilian Cerrado. R. D. Sainz*[1,2], C. U. Magnabosco[3,4], E. A. Filgueiras[5], R. Guimarães[3], F. M. C. Freitas[4,6], and L. R. Mattos[4,6], *[1]University of California, Davis, [2]Embrapa, Brasilia, DF, Brazil, [3]Embrapa Cerrados, Planaltina, DF, Brazil, [4]Embrapa Arroz e Feijão, Santo Antonio de Goiá, GO, Brazil, [5]Biofórmula, Goiânia, GO, Brazil, [6]Embrapa Gado de Leite, Juiz de Fora, MG, Brazil.*

Two experiments were conducted on commercial dairy farms to test the effect of a product (Bioformula, Goiania, Brazil) containing direct-fed microbial (DFM) and fibrolytic enzymes on milk quality. In Exp. 1, 38 Holstein cows were fed corn silage on an *ad libitum* basis, and received up to 6 kg/d concentrate according to production level. In Exp. 2, 22 Girolando (crossbred Holstein x Gir) cows grazed *Panicum maximum* cv. Mombaça pastures plus corn silage and received up to 5 kg/d concentrate according to production level. In both experiments, cows were blocked by age, parity, stage of lactation and current production level into control and treated groups. Treated group cows received 2 g/d of a product containing live yeast (1 × 109 cfu/g), mannan oligosaccharide (10%), and *Lactobacillus acidophilus*, *Bacillus subtilis*, and *Enterococcus faecium* (2 × 107 total cfu/g), plus cellulose (6 U/g), hemicellulase (10 U/g), and xylanase (3U/g) while controls received 2 g/d of the vehicle alone. Milk composition was monitored weekly for 16 wk. Data were analyzed by ANOVA, with treatment as main effect and initial composition as the covariate. Somatic cell counts were log-transformed to overcome non-normality, but back-transformed data are presented here. There were no differences in milk production, or in the percentages of fat, protein, lactose, and non-fat solids, nor in total bacterial count, throughout both experiments ($P > 0.10$). In Exp 1 SCC in milk increased ($P < 0.05$) over time in both experiments, from 247,172 to 606,736 (controls) or 260,016 (treated). In Exp. 2 it increased ($P < 0.05$) from 117,490 to 584,490 (controls) or 270,396 (treated). In both experiments, SCC were similar ($P > 0.10$) for the first 8 weeks, then diverged. These results suggest that DFM may enhance immune function and improve milk quality in crossbred dairy cows under tropical conditions.

Key words: direct-fed microbials, somatic cell counts, tropics

M344 Effects of abomasal dosing of ferrous lactate in lactating dairy cows. O. N. Genther*, J. A. Zyskowski, T. H. Herdt, and D. K. Beede, *Michigan State University, East Lansing.*

We hypothesize that the majority of Fe naturally occurring in drinking water is in the ferrous (Fe^{2+}) state, and if present in great enough concentrations, could negatively affect Fe status and potentially cause toxicity. Our objective was to evaluate the short-term effects of abomasally infused ferrous lactate on Fe status of mid-lactation dairy cows given amounts to simulate total daily Fe intake from high-Fe drinking water. Six mid-lactation Holstein cows were assigned in a replicated 3 × 3 Latin Square balanced for treatment sequences. There were 7 d between experimental periods. Treatments were: 1) 0 mg Fe; 2) 0.75 mg of Fe from ferrous lactate per kg BW; and, 3) 1.5 mg of Fe from ferrous lactate per kg BW. Treatments were calculated to approximate 0, 4.5 and 9 ppm Fe concentrations in drinking water, respectively. All treatments were iso-lactate. Treatments were dosed in ~1 min directly into the abomasum via the ruminal fistula in 1 L of deionized water to avoid any potential ruminal impacts on Fe valence. Blood samples were taken hourly before dosing via jugular catheter for 6 h, and post-dosing hourly for 12 h. Liver biopsies were taken at 0 (before dosing), 18 and 36 h of each period. Mean of the pre-dosing blood samples was used as a covariate for each dependent variable in statistical analysis. There were no treatment by time interactions ($P > 0.10$) for serum Fe, unsaturated iron-binding capacity (UIBC), total iron-binding capacity (TIBC), percent Fe saturation, α-tocopherol, and Cu concentrations, as well as for liver Fe, Cu and Zn. There was no main effect of treatment on any response variables. There was an effect of hour pooled across treatments on serum Fe ($P = 0.022$), UIBC ($P = 0.012$), percent Fe saturation ($P < 0.0001$); and, for liver Cu ($P = 0.023$) and Zn concentrations ($P = 0.022$). There was a treatment by time interaction for serum Zn concentration ($P = 0.055$) and a tendency for liver Cu concentration ($P = 0.155$). Results indicate that infusion of ferrous Fe at rates used in this study do not have major impacts on short-term Fe status of lactating dairy cows.

Key words: iron, lactating dairy cows, iron status

M345 Glycerin as a replacement for corn in dairy Holstein cows diets. J. B. D. Sancanari*[1,2], J. M. B. Ezequiel[1], E. H. C. B. van Cleef[1,2], V. R. Fávaro[1], A. P. D'Áurea[1,2], A. C. Homem[1], Z. F. Silva[1], D. A. V. Silva[1,2], and J. W. Cattelan[1], *[1]São Paulo State University, Jaboticabal, São Paulo, Brazil, [2]FAPESP, São Paulo, São Paulo, Brazil.*

Six multiparous dairy Holstein cows cannulated in the rumen, after the peak of lactation, were used to evaluate the effect of inclusion of glycerin, originated from the biodiesel production, replacing the dietary corn on milk production (MP), milk composition and DMI. Cows were housed at individual tie-stall barn and fed with 3 isoenergetic and isonitrogenous diets containing 0 (G0), 15 (G15) and 30% (G30) of crude glycerin in diets dry matter. The experiment was a double 3 × 3 Latin Square, where each period lasted 23 d. Milk samples were obtained from 2 milking on the 18th and 19th d of each period. The MP obtained were 17.1, 16.4, and 18.9 kg/d ($P > 0.05$) for G0, G15, and G30, respectively. DMI was depressed ($P < 0.05$) in the G30 without affecting the MP, resulting in increased feed efficiency ($P < 0.05$). Cows fed with G0 and G15, respectively, the DMI showed 17.1 and 13.8% higher than G30. This effect could be attributed to the high salt content (6%, which 99% were NaCl) present in glycerin. Furthermore, it was observed that the milk urea nitrogen (MUN) was influenced ($P < 0.05$) by treatments, being 31% higher in G15 compared with G30, indicating greater efficiency of utilization of dietary protein on the G30. The concentrations of milk fat were 3.2, 3.3, and 3.2%, respectively, for G0, G15, and G30 ($P > 0.05$). Lactose obtained in G15 (4.7%) were 4% higher ($P < 0.05$) than the other treatments (4.5%). The crude protein of milk was 15.6 and 12.9% higher ($P < 0.05$) in G0 (3.2%) and G15 (3.1%), respectively, than in G30 (2.7%). This reduction can be caused by NFC deficiency in the diets and decrease in digestibility due to the high ratio NDF/NFC caused by replacement