2022
ADSA® Annual Meeting Abstracts

adsa.org/2022

Abstracts of the 2022 American Dairy Science Association® Annual Meeting

Journal of Dairy Science®

Volume 105, Supplement 1

2502V Influence of phytogenic feed additives on performance of dairy cows. C. S. Takiya[1], V. C. Ribeiro[1], C. V. de Almeida[1], M. Bugoni[1], P. C. Vittorazzi Jr.[1], R. G. Chesini[1], N. T. S. Grigoletto[1], A. C. de Freitas[1], D. J. C. Vieira[1], A. H. de Souza[2], D. Langwinski[2], and F. P. Rennó*[1], [1]*University of São Paulo, Pirassununga, São Paulo, Brazil,* [2]*Cargill Animal Nutrition and Health, Campinas, São Paulo, Brazil.*

Phytogenic feed additives (PFA) are natural compounds (i.e., condensed tannins, essential oils) that may alter dairy cows' ruminal fermentation and nutrient utilization. A study was conducted to evaluate the effects of a blend of PFA with or without a blend of buffer compounds and mycotoxin binder on DMI and milk composition of cows during the hot season (70.2 ± 5.32 temperature-humidity index). Thirty-six Holstein (162 ± 76 DIM and 32.6 ± 5.57 kg/d milk yield) cows were blocked (n = 12) according to parity, DMI, and milk yield and were randomly assigned to the following treatments: control (CON), no feed additive; phytogenic feed additive (PFA, Actifor Boost, Delacon Biotecknick Gmbh, Langwiesen, Austria) at 5 g/d; and PFA + 140 g of buffer compounds (*Lithothamnium calcareum,* $NaHCO_3$ and MgO) + 25 g/d of Notox, a mycotoxin binder (PFAB). The PFA is a blend of pepper oleoresin and extracts of cinnamon, pepper, *Curcuma* sp., and *Quillaja* sp. Treatments were provided mixed into the minerals. 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 a day, and samples were collected weekly for 3 consecutive days for solids analysis. Data were submitted to ANOVA using a mixed procedure of SAS 9.4 modeling the fixed effects of covariate, treatment, time, their interaction, and the random effect of the block. Orthogonal contrasts evaluated treatment differences (CON vs. treatments with PFA; and PFA vs. PFAB). Dry matter intake tended to be greater ($P = 0.077$) in cows fed diets with PFA than CON. Feeding PFA and PFAB increased ($P = 0.033$) milk yield compared with CON (32.1, 33.7, 32.8 kg/d for CON, PFA, and PFAB, respectively). Fat-corrected milk amount, milk fat content, and fat and protein yields were more remarkable in cows fed treatments with PFA than CON. Cows fed PFAB had greater ($P = 0.013$) milk protein content than those fed PFA. No significant differences were detected in feed efficiency. Phytogenic feed additives improved the performance of cows. Providing a blend of buffer components and mycotoxin binder may increase milk protein content.

Key Words: Actifor Boost, buffer components, mycotoxin binder

2503V The effects of rumen-protected *Capsicum* oleoresin on performance of transition cows. N. T. S. Grigoletto[1], C. S. Takiya[1], M. Bugoni[1], R. G. Chesini[1], P. C. Vittorazzi Jr[1], F. M. dos Santos[1], A. C. de Freitas[1], G. Gomes da Silva[1], J. N. Ribeiro[1], G. Acetoze[2], L. Soares[3], and F. P. Rennó*[1], [1]*University of São Paulo, Pirassununga, São Paulo, Brazil,* [2]*Archer Daniels Midland, Decatur, IL,* [3]*Pancosma LATAM South, Valinhos, São Paulo, Brazil.*

Recent studies have shown that rumen-protected *capsicum* (RPC) may alter glucose metabolism in dairy cows (Oh et al., 2017; J. Dairy Sci. 100:1888–1901). An experiment was conducted to evaluate the dietary inclusion of RPC (Pancosma SA, Valinhos, Brazil) on DMI, milk yield and composition of transition dairy cows. Twenty-four Holstein cows were blocked (n = 12) according to their BCS, parity, and previous milk yield, and were assigned to the following treatments: Control (CON); or Treatment (RPC), fed at 100 mg/cow/d mixed with minerals. Treatments were provided from 4 weeks before their expected calving date until 8 weeks into lactation. Feed offered and refusals were recorded daily for feed intake measurements. Cows were milked twice a day and milk samples were collected every week during 3 consecutive days for solids analyses using mid-infrared method. Data were analyzed using the MIXED procedure of SAS modeling the fixed effects of treatment, time, and their interaction, as well as the random effect of block. Pre- and postpartum data of nutrient intake and BCS were analyzed separately. Dry matter and NDF intake (as % BW) tended to be lower ($P \leq 0.092$) in cows fed RPC during the pre-partum period but cows had similar feed intake during the postpartum period (20.3 and 19.2 kg/d for CON and RPC, respectively). Cows fed RPC tended to have greater ($P = 0.070$) BCS during the pre-partum period in comparison to CON (3.16 and 2.91, respectively). Milk yield tended to be greater ($P = 0.097$) for cows fed RPC than CON (31.7 and 28.5 kg/d, respectively). Feeding RPC increased ($P = 0.045$) fat yield and tended to improve ($P = 0.067$) FCM (29.5 and 33.3 kg/d for CON and RPC, respectively). No differences were observed for milk solids content. Cows fed RPC had greater ($P = 0.032$) feed efficiency (DMI/FCM) compared with CON (1.83 and 1.59, respectively). No interaction effects between treatment and time were observed in this study. Feeding RPC to transition cows improves performance during early lactation.

Key Words: *Capsicum* oleoresin, feed efficiency, phytomolecules

2504V Effects of dietary capsaicin on performance of dairy cows. N. T. S. Grigoletto, C. S. Takiya, M. Bugoni, R. G. Chesini, P. C. Vittorazzi Jr., L. V. B. de Alcantara, A. C. de Freitas, G. Gomes da Silva, D. J. C. Vieira, and F. P. Rennó*, *University of São Paulo, Pirassununga, São Paulo, Brazil.*

Natural additives, such as capsaicin (CAP) – a chemical compound found in pepper with thermoregulation properties, may allow greater animal performance by increasing feed digestibility. The aim of this study was to evaluate the inclusion of CAP in diets of dairy cows on total-tract apparent digestibility and milk composition. Twenty-four Holstein cows (35.1 ± 4.95 kg/d milk yield and 175 ± 86.2 DIM) were blocked according to milk yield and DIM and were used into a crossover design experiment with 21-d periods, which the last 7 d were used for data analyses. Treatment sequences included control (CON) or capsaicin (CAP) fed at 1.5 g/d (Capcin, NutriQuest Ltda, Campinas, Brazil) mixed with minerals. Cows were fed a TMR, and feed offered and orts were recorded daily. Cows were milked twice daily, and milk samples were collected for 3 consecutive days and analyzed fresh for solids. Fecal samples were collected on d 15, 16, and 17 of each period on 9-h intervals. Samples of feeds, orts, and feces were analyzed for indigestible NDF content to estimate fecal excretion and nutrient digestibility. Data were analyzed using the MIXED procedure of SAS modeling the fixed effects of treatment, period, and their interaction besides the random effect of animal. Starch intake tended to be greater ($P = 0.075$) in cows fed CAP than CON. No treatment differences were detected on digestibility coefficients. Cows fed CAP had greater ($P \leq 0.031$) milk and solids yield than CON. Greater ($P = 0.009$) 3.5% FCM yield was observed in cows fed CAP when compared with CON (34.3 and 35.1 kg/d for CON and CAP, respectively). Feed efficiency (FCM/DMI) tended to be greater ($P = 0.056$) in cows fed CAP than CON (1.45 and