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Abstract # 2474

Effect of supplemental chromium propionate on milk yield of multiparous Holstein cows fed precalving through late lactation

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Chromium propionate (CrP) has been demonstrated to improve milk production in dairy cows. However, a vast majority of those trials have evaluated dairy cows only during the transition or early lactation periods. Our objective was to determine the impact of CrP (Nutrilock® Chromium, Chemlock Nutrition) on milk yield when fed to multiparous Holstein dairy cows starting in the close-up period and continuing through late lactation. The study was conducted on a commercial dairy located in western Wisconsin from April 2023 to June 2024. The dairy was equipped with 8 voluntary milking system (VMS) robots (DeLaval, Sweden), which allowed control (CTL) and CrP supplemented cows to be comingled and fed a common diet except for pellets which either contained no additional supplement or contained CrP. The CrP was formulated to feed 1 mg per 0.45 kg of pellet. The VMS varied feed rate of pellet from 2.7 kg to 5.4 kg daily based on milk yield. The cows fed CrP (n = 85) were selected based on having an even ear tag number and CTL cows (n = 76) were selected based on having an odd ear tag number. Cows began on either the CrP or CTL pellet approximately 21 d before calving and continued through late lactation. Individual cows' 7-d average milk production was recorded weekly and milk yield was analyzed at 30-d intervals from 1 to 269 DIM with the 'lmer' function of the 'lme4' package in R using a model that included the fixed effect of treatment (CTRL or CrP), the random effect of cow, and DIM as a covariate. Group 1 indicated DIM 1–14, group 30 indicated DIM 15–44, group 60 indicated DIM 45–74, and so on. Milk yield was higher ($P < 0.05$) in the CrP-fed cows in group 90 (56.8 vs. 54.1 ± 0.98 kg/d), group 120 (54.4 vs. 50.6 ± 1.10 kg/d), and group 150 (51.9 vs. 48.7 ± 1.12 kg/d). In addition, milk production tended to be higher ($P = 0.06$) for the CrP group at group 1 (34.6 vs. 32.5 ± 0.79 kg/d, $P = 0.06$). No other points were significantly affected by CrP supplementation. This study shows the impact of CrP on milk production past the transition phase.

Key Words: chromium propionate, milk yield, late-lactation