



Dairy Heifer Taste Preference for Diets Containing Bovatec[®] or Rumensin[®].

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Summary

Three diets that contained either no medication, Bovatec or Rumensin were offered simultaneously to 6 dairy heifer calves to determine ionophores preferences. During the first 3-day segment of the study when all diets were available for consumption, calves selected non-medicated diets on more heifer days (9) than Bovatec or Rumensin and Bovatec on more heifer days (7) than Rumensin (2). When total individual intake was used to rank diets from most to least preferred, heifers ranked the control diet as most preferred with Rumensin least preferred and Bovatec being intermediate. Diet selection for the control diet tended to be greater than expected (33.3%) if selection was a random event. Probability of the Rumensin diet being selected was less ($P < 0.05$) than expected if heifers had no preference, suggesting that heifers had an aversion to Rumensin. Collectively, the results from this study indicated that dairy heifers that have not had prior exposure to ionophores prefer non-medicated diets. However, among ionophores, heifers preferred diets containing Bovatec over those containing Rumensin.

Introduction

Erickson et al., (2004) conducted a study to evaluate the impact of Bovatec and Rumensin on diet taste preference of dairy heifer calves. Ionophores such as Bovatec and Rumensin are commonly fed to dairy replacement heifers in the United States to control coccidiosis and enhance growth performance. Data from the beef cattle sector suggests that differences in feed intake result when Bovatec or Rumensin are included in high concentrate diets. Feed intakes are typically greater in cattle receiving Bovatec when compared with those receiving Rumensin. Results from studies with dairy replacement heifers fed high forage diets are less conclusive. Because palatability plays a key role in initial feed acceptability, we were interested in the effects of Bovatec and Rumensin on diet selection by growing dairy heifers compared with non-medicated feed.

The objective of this study was to determine if dairy replacement heifers prefer to consume a diet containing no ionophore, Bovatec, or Rumensin when given a choice.

Experimental Procedures

A sequential elimination study using six, 6-week-old Holstein heifer calves (165 + 11 lb of body weight) was conducted to compare taste preference among diets containing no ionophore, Bovatec, or Rumensin. The procedure allowed the ranking of cattle preferences based on intake over a period of time (Nombekela et al., 1994). Calves were fed whole milk and calf starter containing Deccox to prevent coccidiosis prior to the study and were not exposed to either ionophore before the study was initiated.

Calves were weaned at 6 weeks and placed into an individual super calf hutch, bedded with kiln-dried wood shavings with ad libitum access to water. A starter grain identical to that used prior to study initiation, with the exception that Deccox was not included, was used during the taste preference experiment.

Feed was delivered into cafeteria style feeders placed in a feed manger that consisted of 5 containers (10.6 in. deep x 16.5 in. wide x 18.5 in long) with the containers placed at each end of the manger being empty to nullify any border bias. Heifers were fed at 0730 h and 1930 h with containers positioned randomly in the manger at each feed delivery. The amount of feed delivered to each container was calculated to provide a 10% overage such that a heifer could consume its daily intake from a single container (diet). Intake was determined daily at 0700 h. All diets were offered for the first 3 days. After 3 days the diet with the greatest consumption was removed and an empty container placed in the open space. Heifer preference between the remaining two diets was determined based on dry matter consumption during the remaining two days of the study.

Results and Discussion

The mean dry matter intakes (DMI) of the three diets during the initial 3-day segment of the study are shown in Figure 1. During the initial segment of the study when all three diets were available, heifers preferred non-medicated control (control) diets, followed by feed containing Bovatec, with feed containing Rumensin being the least preferred diet.

Figure 1. Mean daily dry matter intake by diet during the first 3-d feeding segment

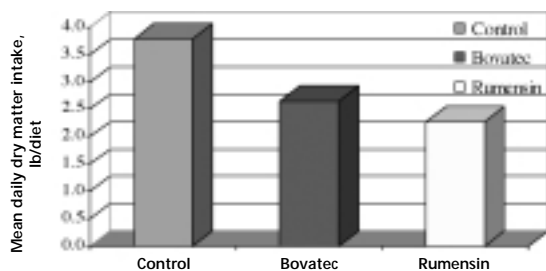
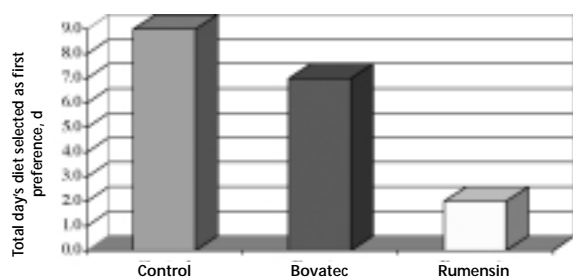


Figure 2 illustrates the total number of days that heifers chose each diet as their top preference based on DMI during the initial 3-day segment of the study when all three diets were available for selection. Based on this ranking, heifers preferred the control diet on more heifer days (9) than diets containing Bovatec or Rumensin. However, heifers selected Bovatec containing diets on more heifer days (7) than Rumensin-based diets (2).

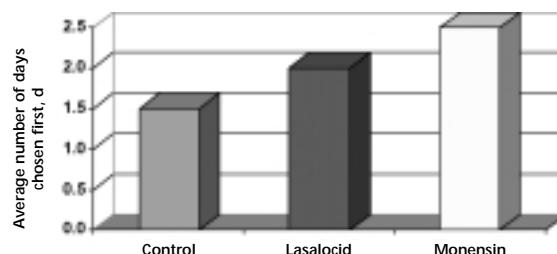
Figure 2. Mean number of days when a treatment was selected as first preference during the first 3-d feeding segment.



Total DMI for the study was used on an individual heifer basis to rank diet preferences. The diet that an individual consumed the most of during the study was ranked as that heifer's first preference. The diet with the second greatest total DMI was ranked second; whereas, the diet with the least total DMI was ranked as that heifer's third preference. A mean ranking across heifers was then calculated such that a smaller number represented a greater average preference among

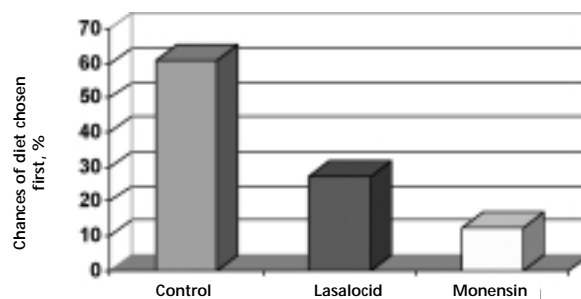
heifers. Heifers ranked the control diet as first preference, Bovatec-based diets as the second ranked diet preference and Rumensin-based diets as the third ranked, least preferred diet.

Figure 3. Ranking of treatments over all feeding segments based on total DMI



Treatments were further evaluated to determine the chances of a diet being the first preference of heifers. In taste preference studies with three diet offerings where all diets are supplied in sufficient quantity for a heifer to consume one diet to the exclusion of all others, a heifer with no preference would be expected to consume diets randomly in equal quantities. Hence, each diet would represent 33.3% of a heifer's daily or total DMI. However, if a diet were more or less preferred than other options, the diets contribution to DMI would be either greater or less than 33.3%. The probability that heifers selected control diets as first preference was greater ($P < 0.12$) than 33.3%. Bovatec containing feed was selected at a frequency consistent with random consumption, indicating that heifers did not have an aversion to Bovatec. The probability of diets containing Rumensin being selected first was less than ($P < 0.05$) 33.3%. This suggests that heifers avoided feed containing Rumensin when other ration options were available.

Figure 4. Chances of a diet being chosen first by heifers.



Orthogonal contrasts confirmed the tendency for the control diet to be preferred over diets containing

ionophores ($P < 0.05$). Contrary to daily preference and ranking data displayed in Figures 1 through 4, the orthogonal contrast comparing Bovatec with Rumensin was not significant. However, Nussio et al., (2002) reported that heifers fed Bovatec consumed more dry matter and had greater rates of gain than those fed Rumensin during a 20 week study that used 32 10-day old heifers.

Implications

Collectively, data from this study indicates that dairy heifer calves that have not had prior exposure to Bovatec or Rumensin prefer non-medicated feed. When given a choice between diets containing Bovatec or Rumensin, heifers appear to prefer feed containing Bovatec. Short term intake data does not lend itself to extrapolation over the growing-phase of heifer development. However, short term dry matter and ionophore consumption likely have direct inference on the ability of anti-coccidial compounds like Bovatec and

Rumensin to protect calves from coccidiosis. A lack of consumption or low consumption of ionophore for relatively short periods during times of extensive disease exposure and stress challenges are associated with future coccidiosis events, reduced growth rate and efficiency of feed conversion to live weight gain.

Literature Cited

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