



Dairy Heifer Taste Preference for Diets Containing Bovatec[®] or Rumensin[®]: Effects of Prior Bovatec Exposure.

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Summary

Five diets that contained either no medication, Bovatec or Rumensin at 1 mg/kg body weight (Bovatec-1 and Rumensin-1, respectively), or Bovatec or Rumensin at 2 mg/kg body weight (Bovatec-2 and Rumensin-2, respectively) were supplied simultaneously to growing dairy replacement heifers that had been exposed to Bovatec prior to the study to determine if prior ionophore exposure and ionophore level altered heifer diet preferences. Heifers consumed more non-medicated feed during the first 5 days, followed by Bovatec-2 with Bovatec-1 and Rumensin-1 being intermediate and Rumensin-2 having the poorest consumption. Total dry matter intake for the 14 day study was used to rank dietary treatments from most to least preferred with the diet having the greatest individual consumptions receiving a rank score of 1 and the diet with the lowest total consumption receiving a rank score of 5. Heifer's preferred non-medicated, Bovatec-1 and Bovatec-2 diets over Rumensin-1 and Rumensin-2 diets. The probability of a diet being chosen as first preference tended to be greater than expected (20%) for Bovatec-1 and was less than expected for Rumensin-1 ($P < 0.05$) and Rumensin-2 ($P < 0.01$). Orthogonal contrasts confirmed that heifers preferred ($P < 0.01$) Bovatec, regardless of ionophores level, over Rumensin. When comparing results from a previous study where heifer calves were naive to Bovatec, prior Bovatec exposure does not appear to enhance heifer's preference for Bovatec nor increase their aversion to Rumensin.

Introduction

Ionophores are widely used to enhance growth rate, improve feed efficiency and control coccidiosis during the development of dairy replacement heifers. Studies with beef cattle suggest that Rumensin depresses dry matter intake to a greater extent than does Bovatec. In a previous Technical Bulletin (CD0492) we reported that naive heifer calves preferred non-medicated feed over

feed containing Bovatec or Rumensin supplied at 1 mg/kg of body weight. However, feed containing Bovatec was preferred over feed that contained Rumensin. Erickson et al. (2004) recently conducted a study to determine the effects of Bovatec and Rumensin on initial feed preferences when heifers had prior exposure to Bovatec. The results from this study are reported below.

Experimental Methods.

A sequential elimination study using six, 5-month-old Holstein heifers (485 + 31 lb of body weight) housed in individual 15.1 x 15.1 ft pens in a naturally ventilated free-stall barn was conducted to compare taste preference among diets containing no ionophores (Control), Bovatec or Rumensin included to provide 1 mg/kg body weight (Bovatec-1 and Rumensin-1, respectively) or Bovatec or Rumensin included to provide 2 mg/kg of body weight (Bovatec-2 and Rumensin-2, respectively). The procedure allowed the ranking of cattle preferences based on intake over a period of 14 days (Nombekela et al., 1994).

The feed manger consisted of seven feed tubs with the center five containing experimental diets. An empty container was placed on each end to nullify border effects. Tubs containing the treatments were randomly placed in the manger at each feeding to nullify location preferences. Heifers were fed at 0730 and 1930 each day. Each tub contained the same amount of feed with enough feed in each tub for a heifer to consume exclusively from any one single location (diet). Feed offered and feed not consumed were measured at each feeding. All 5 diets were offered for 7 d, with the first 2 days used for adaptation. At the end of each feeding segment (d 5, 9, 12) each individual's most preferred diet, based on total dry matter consumption, was removed. Hence, five treatments were offered for 5 days, four treatments for 4 days, 3 treatments for three days and two treatments for 2 days.

Heifers were fed a mostly grass silage diet with added minerals, vitamins and Bovatec for the 3 month period preceding the study. The experimental diet was considerably different, containing corn silage (46%), grass haylage (46%) and soybean meal (8%). The basal diet was changed to decrease any bias created by dietary ingredients other than Bovatec. The Bovatec-2 and Rumensin-2 treatments were included to determine if prior exposure to Bovatec influenced taste preferences for higher concentrations of ionophores.

Results and Discussion.

Dry matter intake, by diet type for the first 5-days of the study when all 5 diets were available for consumption, is shown in Figure 1. Heifers appeared to prefer Control feed followed by Bovatec-2. Bovatec-1 and Rumensin-1 were intermediate with the least consumption occurring with Rumensin-2.

Figure 1. Mean daily dry matter intake by diet during the first 5-d feeding segment

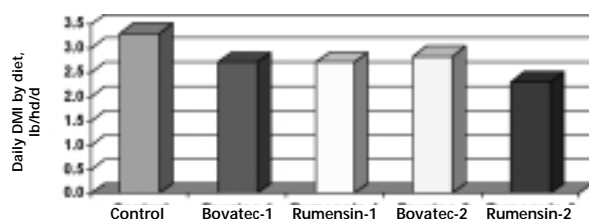
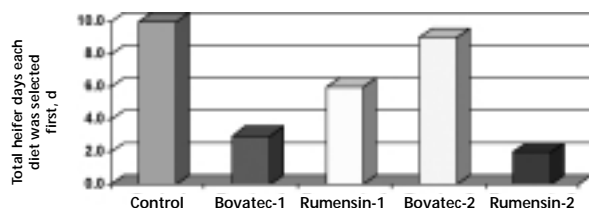


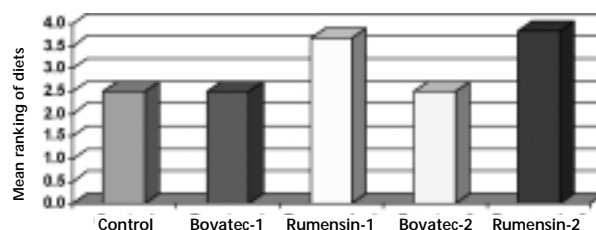
Figure 2 illustrates the total number of days the heifers selected each diet as their top preference based on dry matter intake (DMI) during the first 5 days of the study when all 5 diets were available to each heifer. Heifers selected Control feed as first preference on 10 of a possible 30 heifer days. Bovatec-2 was the second most preferred diet being chosen as first preference on 9 of 30 heifer days. Rumensin-1 was next being selected on 6 of a possible 30 heifer days. Bovatec-1 was selected on 3 heifer days while Rumensin-2 was selected on 2 heifer days. Heifers preferred Bovatec-2 over other medicated options.

Figure 2. Mean number of days when a treatment was selected as first preference during the first 5-d feeding segment.



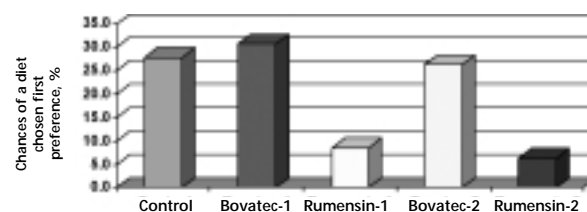
Total DMI for the 14 day study was used to rank diets such that the diet that each individual consumed the most was given a rank of 1 and the diet that a heifer consumed the least of was given a rank of 5 (Figure 3). A mean ranking across heifers was then calculated such that the diet with the lowest score represented the most preferred diet whereas the diet with the highest score represented the least preferred diet. Control, Bovatec-1 and Bovatec-2 received the lowest rank scores with identical 2.5 rankings, whereas Rumensin-1 and Rumensin-2 received higher rank scores. This suggests that when the DMI from the entire study was considered, Bovatec-1, Bovatec-2 and Control diets were equally preferred by heifers. Moreover, these three diets were preferred over feed containing Rumensin, regardless of the Rumensin inclusion level.

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



To further evaluate heifer preferences, the chance that diets would be equally preferred during the trial was determined (Figure 4). If diets were preferred equally, each would be selected 20% of the time. Rumensin-1 (8.6%) and Rumensin-2 (6.4%) differed ($P < 0.05$ and $P < 0.01$, respectively) from 20%. Bovatec-1 had the greatest chance of being chosen first, followed by control and Bovatec-2. None of these three diets differed from 20%.

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



Orthogonal contrasts further indicated that there was no interaction between ionophores and ionophore level ($P > 0.90$). Averaged across ionophores level, heifers preferred Bovatec over Rumensin ($P < 0.01$). Ionophore level, averaged across ionophores, did not alter ($P > 0.74$) preference.

Implications.

When heifers are pre-exposed to feed containing Bovatec, non medicated feed remains a heifer's first diet preference; however, Bovatec is preferred nearly as frequently and has the same chance of being chosen as first preference even at a level twice that used during previous exposure. Based on dry matter intake, heifer ranking and chances of being chosen first preference, heifers prefer feed containing Bovatec over feed containing Rumensin when given a choice. Prior exposure to Bovatec did not appear to increase heifers preference for Bovatec nor increase their aversion to feed containing Rumensin as treatment differences noted in this study were similar to those reported previously with naive heifer calves (Alpharma Technical Bulletin CD0492).

Literature Cited.

Alpharma Technical Bulletin. 2004. Dairy heifer taste preference for diets containing Bovatec or Rumensin. CD0492.

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