EXTENSION
BEEF CATTLE RESEARCH UPDATE
Britt Hicks, Ph.D., PAS
Area Extension Livestock Specialist
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Effect of a Lactobacillus Fermentation Product on Postweaning Heifer Performance

Developing replacement heifers is a critical and expensive enterprise of the cow-calf operation. The feeding of ionophores to replacement heifers improves average daily gain (ADG) and may decrease age at puberty.[1, 2] A recently published paper used meta-analysis to investigate the impacts of monensin on the performance of developing replacement heifers (used data from 18 different peer-reviewed publications and experiment station reports).[3] In the analysis, monensin treatment (200 mg/hd/day) increased ($P < 0.01$); average daily gain by 5% (0.066 lb), feed efficiency (gain/feed ratio) by 14%, and percentage cycling before the breeding season by 15.9%; while decreasing ($P < 0.01$): dry matter intake 4.3% (0.65 lb), and age at puberty 8.9 days. No differences in artificial insemination pregnancy nor total pregnancy were observed.

However, the use of ionophores is not allowed in natural and organic programs.[4] Prebiotics and probiotics may offer an alternative to ionophores in growing cattle diets. University of Idaho researchers designed an experiment to compare supplementation with of a prebiotic fermentation product of *Lactobacillus acidophilus* (LaP, RumaCell, Pacer Technologies Inc., Murtaugh, ID) or monensin on pre-breeding growth, dry mater intake, feed efficiency, and pregnancy rate in confinement fed heifers.[5]

In this study, crossbred replacement beef heifers (162 head) were stratified by age, weight, and previous preweaning and backgrounding treatments and then randomly assigned to total mixed ration containing either LaP (5 mL/hd/day) or monensin (200 mg/hd/day). The ration consisting of 42.5% ground alfalfa hay, 42.5% ground orchardgrass hay, 10% wheat middlings, and 5% liquid supplement on a dry matter basis. Heifers were fed for 71 days in a GrowSafe unit, so individual feed intake could be measured and were weighed every 2 weeks. Feed efficiency was calculated by residual feed intake (RFI). At the end of the RFI trial, heifers remained on their diets for an additional 27 days and were estrus synchronized using the 14-day CIDR + PG protocol and bred by artificial insemination followed by natural service. Prior to estrous synchronization, reproductive tract scores were measured.

These researchers reported that body weights, average daily gain (1.98 lb/day), feed intake (20.51 lb/day), and RFI value were similar ($P > 0.30$) among monensin and LaP supplemented heifers. In addition, reproductive development as indicated by reproductive tract scores was similar ($P > 0.28$) between treatments. However, estrus response increased (77.0 vs. 56.5%, $P < 0.01$) and artificial insemination pregnancy rates tended to be greater (58.0 vs. 42.4%. $P < 0.07$) for monensin compared to LaP heifers. In contrast, the percentage of heifers pregnant by 60 and 100 days (80.4% and 90.5%, respectively) was not different ($P > 0.33$) for monensin and LaP heifers.

These authors concluded that the use of a *Lactobacillus acidophilus* fermentation product as prebiotic may be a viable substitute for ionophores in replacement heifer diets since in this study, growth and reproductive responses to this type of prebiotic appeared to be similar to monensin in diets containing sufficient energy to support recommended growth rates in heifers. They suggested that “further investigation on *Lactobacillus acidophilus*

fermentation products on growth as well as focusing on dose-response, rumen function, and mechanisms of action is warranted".

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