In-Vitro Starch and NDF Digestibility Using Rumen Fluid from Control and Bovamine® Supplemented Cows

Author: Rachel A Nelson
Co-Presenters:
Major: Animal Sciences
Research Advisor: Maurice Eastridge

Probiotics are commonly fed to dairy cattle to improve feed efficiency and increase milk yield. The objective of this study was to determine the effects of a probiotic (Bovamine® from Nutrition Physiology Company, LLC. Guymon, OK) consisting of Lactobacillus acidophilus (LA) and Propionibacterium freudenreichii (PF), on the in vitro digestibility of starch and neutral detergent fiber (NDF). Starch and NDF are the primary carbohydrate sources in dairy cattle diets from which they receive energy. There have been mixed results in performance when cows were fed the PF plus LA probiotic in beef and dairy cattle. The hypothesis of this experiment was that the probiotic would increase starch and NDF digestibilities. Four rumen-cannulated, primiparous Jersey cows were used in a 2x2 crossover design experiment. Two cows were fed the LA and PF probiotic as a top dress and two were fed a control (ground corn) top dress. Rumen fluid from each treatment group was pooled, creating two total samples. The fluid was filtered and combined with a buffer before being inoculated into tubes containing no feed, ground corn, or ground alfalfa. Tubes were incubated for 0, 2, 4, 8, 12, 36, 48, or 96 hours in a 39° C water bath. After incubation, the samples were dried and analyzed for NDF and starch contents. Preliminary results will be available at the forum. In the coming weeks, the second trial period will begin, which will be completed in the beginning of March to provide another replication of the trial. The larger sample size will improve the statistical analysis the effect of the probiotic on digestibility. The importance of this study is that it will provide insight into the effect of the probiotic on digestibility in the cow.