

Materials and Methods

Duodenal lumen contents (LS) and epimural surface biopsies (EPS) were collected from 6 dairy crossbred steer calves. A flexible video-endoscope was used to harvest 4 biopsy samples via a T-shaped intestinal cannula. In order to assess as much environmental and individual calf microbiota variation as possible, each calf was sampled 3 times over a 6-week period. A total of 36 samples were collected, 18 LS samples and 18 EPS specimens. The DNA was extracted from the samples and submitted for 16S rRNA gene PGM bacterial sequencing.

Results

The top 5 phyla present in the LS consisted of Firmicutes (52%), Bacteroidetes (32%), Proteobacteria, Spirochetes, and Fibrobacteres. In contrast, in the EPS, 75% were Firmicutes

and 10% Bacteroidetes, followed by Proteobacteria, Tenericutes, and Cyanobacteria (t-test, $p < 0.001$). Firmicutes and Bacteroidetes composed over 80% of the microbiome present in both sample locations. The percentages overall bacterial diversity for the phylum Firmicutes and Bacteroidetes between sample locations were also considered to be statistically different (t-test, $p < 0.001$).

Significance

Changes in the ratio of Firmicutes to Bacteroidetes can adversely affect the ability of the gut to absorb or secrete metabolic byproducts. Characterizing the gastrointestinal microbiome in vivo is imperative. This study satisfied the hypothesis, as differences in the natural microbiota of the LS and EPS were found. Further study is warranted to explore the impact of medical therapy and/or environmental effects on the metabolically active gut microbiome of ruminants.

A survey to describe beef producer opinions on antibiotic use and consumer perceptions of antibiotics in the beef industry

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Introduction

Antibiotic use is of interest to all involved in the beef industry, including producers, veterinarians, and consumers. Beef producers and veterinarians are constantly working together to improve animal health and production, especially in regards to antibiotic use. This survey was created by industry veterinarians at Kansas State University to explore producers' use of antibiotics in the beef industry, their opinions on antibiotic resistance, and their perceptions of consumer opinions of antibiotic use. To date, no other literature exists exploring these topics at the producer level.

Materials and Methods

A 26-question survey was developed and distributed to beef producers throughout the United States and Canada via popular industry outlets. The data were collected via Kansas State University's online survey service, Qualtrics Online.

Results

Two-hundred sixty (260) surveys were submitted from producers in 43 states and 1 province in Canada. Producers

with cow-calf production units most frequently reported, followed by stocker, backgrounder, and feeder operations, represented in equal proportions. Eighty-five percent (85%) of producers indicated they use the services of a veterinarian regularly, while only 23% reported that they have a written, documented, and signed veterinary-client-patient relationship. Oral and injectable antibiotics are rarely used by participants, and most antibiotics are used for treatment of bovine respiratory disease, foot rot, and pinkeye. Seventy-two percent (72%) of producers indicated that Beef Quality Assurance is an important industry program for addressing antibiotic use and prevention of antibiotic residues and resistance. When asked if familiar with the Veterinary Feed Directive rule, 81% of respondents indicated they are.

Significance

This survey provides valuable insight into the practices and opinions of beef producers in the United States and Canada. The results of the survey show that beef producers are willing to share information about their production practices, including antibiotic use, and have valuable opinions on industry issues such as antibiotic resistance.