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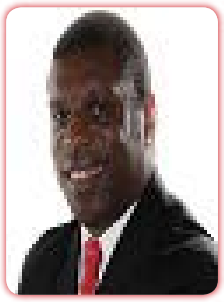

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Reprogramming the gut: Implications for the use of bacteriophages to reduce foodborne bacterial pathogens in preharvest food animal production

Virulent bacteriophages represent a sepecific tool that may be used to reprogram the gastrointestinal tract (GIT) of warm blooded animals to remove bacteria that cause disease. One potentail application of this apporach is the reduction of foodborne pathogens in the GIT of bovines prior to harvest for meat production. We evaluated a bacteriophage cocktail consisting of 37 phages, and capable of growth on multiple strains of *E. coli* O157:H7, for redcution of *E. coli* O157 in live animals. A total of 14 Black Angus calves ranging from 4 to 6 months of age were orally inoculated with 108 CFU *E. coli* O157:H7 and subjected to phage treatment during two trials. The first trial evaluated ileal samples and the second trial evaluated fecal samples for the presence of *E. coli* O157:H7 and phages. In the first trial, concentration of *E. coli* O157:H7 decreased (P=0.0266, P=0.0424) in the ileal samples at 8 and 12 hours. However, the concentration of *E. coli* O157:H7 increased back to the concentration of the control samples at 16 hours. In the second trial, shedding of *E. coli* O157:H7 decreased (P=0.025) in the treated group at 24 hours. Similar to the ileal samples, an increase in the concentration of *E. coli* O157:H7 was observed at 36 hours in the fecal samples. Encapsulation of the phage cocktail may be required to provide protection for the cocktail through areas of the GIT with low pH, such as the abomasum and duodenum. Additionally, continual administration of the cocktail may prove to be successful in a sustained reduction or elimination of *E. coli* O157:H7 in the GIT of cattle.

Biography

Lawrence D Goodridge received his PhD from the University of Guelph (pronounced Gwelf) in Guelph, Ontario, Canada with a major emphasis in Food Microbiology and Food Safety in 2002. Currently, he is the Ian and Jayne Munro Chair in Food Safety at McGill University. His primary research interest is the use of bacteriophages to study and solve problems associated with the production of food. He has published more than 55 peer reviewed publications and book chapters on topics related to food safety.

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