RESEARCH PROGRESS REPORT SUMMARY

Grant 01609: Use of Probiotic to Reduce the Symptoms of Inflammatory Bowel Disease

Principal Investigator: Dr. Albert E. Jergens, DVM, PhD

Research Institution: Iowa State University

Grant Amount: $97,416.00

Start Date: 1/1/2012 **End Date:** 6/30/2017

Progress Report: End-Year 5

Report Due: 12/31/2016 **Report Received:** 11/13/2016

Recommended for Approval: Approved

(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)

Original Project Description:

Idiopathic inflammatory bowel disease (IBD) is a common cause of chronic gastrointestinal disease in dogs. Accumulating evidence in human IBD and animal models suggests that imbalances in composition of the intestinal microbiota contribute to the pathogenesis of chronic intestinal inflammation. Recent studies have also shown that dogs with IBD have distinctly different duodenal microbial communities compared to healthy dogs. Current treatments for IBD include the administration of nonspecific anti-inflammatory drugs which may confer serious side effects and do not address the underlying basis for disease, namely, altered microbial composition. Use of probiotics (viable, non-pathogenic bacteria that exert health benefits beyond basic nutrition) offers an attractive, physiologic, and non-toxic alternative to shift the balance to protective species and treat IBD. The aim of the proposed study is to investigate the clinical, microbiologic, and anti-inflammatory effects of probiotic VSL#3 in the treatment of canine IBD. We hypothesis that VSL#3 used as an adjunct to standard therapy (i.e., elimination diet and prednisone) will induce a beneficial alteration of enteric bacteria leading to induction and maintenance of remission in dogs with IBD. A randomized, controlled clinical trial of 8 weeks duration will assess the efficacy of standard therapy + probiotic versus standard therapy alone. There is a need for additional data to be generated to provide proof of efficacy in probiotic therapy before these agents can be applied to widespread clinical use. These studies will also provide highly relevant insight into the anti-inflammatory effects of probiotics for treatment of human and canine IBD.

Grant Objectives:

To determine the clinical, microbiologic, and anti-inflammatory affects of probiotic VSL #3 in the treatment of canine IBD.

Publications:

- Otoni, R. Atilmann, M. Garcia-Sancho, et al. Serologic and fecal markers in prediction of acute disease course in canine chronic enteropathies. J Vet Intern Med 2012; 26:768-769.

- Slovak et al. Inter- and intra-observer assessment in the endoscopic assessment of canine inflammatory bowel disease. J Vet Intern Med 2013; 27:699.

Report to Grant Sponsor from Investigator:

Thanks to the CHF for funding this project once again. Data to date demonstrates that dogs with diabetes have predictable microbial imbalances which result in changes in their metabolic function contributing to poor clinical response to exogenous insulin administration. Of interest, the bacterial metabolites which are altered include both primary and secondary bile acids, similar to disturbances in bacterial metabolism seen in humans with diabetes.

Summarizing, we have addressed our primary hypothesis as to whether dogs with DM have dysbiosis of their fecal microbiota – yes they do. Secondarily, we provide new and innovative data on the role(s) of altered bile acid metabolism resulting from intestinal dysbiosis which favors the development of downstream insulin resistance.

What remains is to enroll additional dogs beyond the 3 to date for determination of the role of supplemental probiotics in modulating microbial imbalances and insulin sensitivity in dogs with spontaneous DM.