

Inflammatory bowel disease (IBD) is a common cause of idiopathic, chronic, and relapsing gastrointestinal (GI) disease in dogs. The most typical histological change associated with IBD is lymphocytic-plasmacytic enteritis (LPE). As for the treatment of the dogs with symptomatic LPE, a diet, an antimicrobial agent, a corticosteroid agent and an immunosuppressive drug are used frequently. However, some of the dogs with symptomatic LPE which is resistant to those treatments is present. Therefore, the establishment of the new treatment of dogs with symptomatic LPE is urgent business.

In human medicine, fecal microbiota transplantation (FMT) has been reported as an effective treatment for disease with dysbiosis. In FMT, fecal matter is collected from a tested healthy donor, mixed with saline or other solutions, strained, and administered to a patient by colonoscopy, endoscopy, sigmoidoscopy, or enema.

A purpose of this study is to consider being the treatment that FMT for the dogs with symptomatic LPE is safe and effective. Therefore, we pushed forward this study by the following contents by this thesis.

In the symptomatic LPE (sLPE) group, α diversity of the microbiome significantly decreased as compared with asymptomatic LPE (aLPE) group. The predominant bacterial phylum was Proteobacteria of total bacterial population in the sLPE group, and it was significantly higher than aLPE group. While Fusobacteria comprised < 0.1 % in the sLPE group, it was significantly lower than aLPE group. Moreover, it was found

that acetic acid and propionate concentrations were raised by the increase of the bacterial count of *Bacteroides* and *Fusobacterium*. Hence, it was found to have to give SCFA production these high bacterial strains of the specificity to raise the SCFA concentrations in the intestinal tract for symptomatic LPE with dogs. Therefore we conducted clinical application of FMT for the symptomatic LPE dogs to be resistant to treatment with drugs. After FMT fecal microbiome, the bacterial counts of *Enterobacteriaceae* was significantly decreased, while the bacterial counts of *Fusobacterium* was significantly increased. Based upon the foregoing, the sLPE dogs were a state of dysbiosis, and the possibility that this state is involved in the clinical status mainly on the digestive symptom is suggested. Furthermore, FMT treatment improved these sLPE dog's symptoms of diarrhea and vomiting. In conclusion, we show the safety and efficacy of FMT in the sLPE dogs. We conclude that FMT should be considered as a treatment option for canine symptomatic LPE cases in the future.