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Mouse gut microbiota composition is altered by elemental diet and pancrelipase treatment

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Ulcerative Colitis (UC) is an inflammatory bowel disease (IBD) which causes pain, bloody diarrhea, and in severe cases, cancer. There are neither fundamental remedy nor knowledge on its pathogenesis. However, past studies on UC has shown that the composition of gut microbiota is related with the disease. Furthermore, a clinical study has observed amelioration of symptoms in UC patients treated with elemental diet (Elental), an enteral nutritional supplement. Another research has observed amelioration of symptoms and change of gut microbiota composition in Elental treated model mice of Crohn's disease, another IBD with symptoms similar to UC. From these studies, we hypothesized that the availability of nutrition affects the composition of gut microbiota, which in turn affects the state of UC. Our interest is to examine this hypothesis through examining the gut microbiota of colitis model mice treated individually with Elental and Pancrelipase (Lipacreon), a drug containing digestive enzymes. Here we will present results from our preliminary research in which we examined PCR amplicons of 16S rRNA encoding genes derived from five separate parts of the gut taken from non-treated, Elental-treated, and Lipacreon-treated groups of healthy mice fed with normal diet. Sequencing of 16S rDNA amplicons were conducted by using Illumina MiSeq. The paired-ends reads were first quality trimmed and merged. Then the reads were clustered into operational taxonomy units (OTUs). Next taxonomies were assigned to each OTUs by aligning their representative sequences against Greengenes Database. After obtaining taxonomic compositions of each samples, we analyzed their ? diversity. To evaluate the change of microbiota composition, we also used statistical methods to identify individual bacterial taxa whose frequencies significantly differ between treatments. These analyses revealed differences in terms of β diversity and individual bacterial taxa between control and treated samples.