

Abstract

This work examines the response of the gut microbiome to therapeutic interventions in three longitudinal studies of chronic gastrointestinal diseases: Crohn's disease, celiac autoimmunity and irritable bowel syndrome. Multiple methods of stool microbiome analysis (especially massively parallel 16S rDNA or 18S rDNA sequencing and metagenomic sequencing) followed by bioinformatic and statistical analysis were used. In Crohn's disease, we detected a previously undescribed secondary nature of changes in the gut bacteriome after anti-TNF treatment. In celiac disease autoimmunity, where previous works described an effect of probiotic intervention on serological markers of the disease, the gut bacteriome and metabolome, we described the absence of significant changes in beneficial gut protozoa. In irritable bowel syndrome, we observed a significant response of the bacteriome after administering four doses of mixed microbiota transplantation but no response in the reduction of clinical symptoms. The results of these studies could contribute to a better understanding of the gut microbiome's role in the pathogenesis of these serious diseases.

Keywords: microbiome, Crohn's disease, celiac disease, irritable bowel syndrome