Bacteria from the mesenteric microbiome of patients with Crohn's disease promotes colitis in mice

Zhen He
Jinjie Wu
Junli Gong
Jia Ke
Tao Ding
Wenjing Zhao
Wai Ming Cheng
Zhanhao Luo
Qilang He
Wanyi Zeng
Jing Yu
Na Jiao
Yanmin Liu
Bin Zheng
Lei Dai
Min Zhi
Xiaojian Wu
Christian Jobin
Ping Lan

Video Byte

Keywords: Microbiome, Crohn's disease, colitis, inflammation, creeping fat, abdominal fat, mesentery, mesenteric fat, mesenteric adipose tissue, hyperplasia, microbiome, bacteria, pathogens, pathogenic, inflammatory, mouse model, cell culture, in vivo, in vitro, leaky gut, opportunistic pathogens

Posted Date: March 1st, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1405932/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Abstract

Crohn's disease is an incredibly painful inflammatory bowel disease that frequently reoccurs after treatment. The growth of a certain type of abdominal fat has been associated with Crohn's disease recurrence. This fat, called mesenteric adipose tissue, is tucked up against the membrane connecting the intestines to the abdominal wall. Microbes can escape the intestines in Crohn's disease and may affect the mesenteric fat. Recently, researchers explored this relationship by investigating the mesenteric microbiome of patients with Crohn's disease. Crohn's disease patients had distinct mesenteric microbiomes, host gene expression patterns, and metabolites compared to controls. To explore the specifics, the researchers isolated bacterial strains from the mesenteric microbiome of these patients. In a mouse model of colitis, introducing a mixture of five of the isolated bacterial strains made disease symptoms worse. One of these strains, *A. pulmonis*, was able to exacerbate colitis even when introduced alone and *A. pulmonis* migrated from the intestine to mesenteric fat. While more research is needed, this study suggests that the mesenteric microbiota in Crohn's disease patients creates a pro-inflammatory environment. Understanding the bacterial contribution to Crohn's disease development may lead to new treatment targets and methods.