

Fecal transplants show promise as treatment for non-alcoholic fatty liver disease

June 9 2020



Results from a clinical trial suggest that **FECAL TRANSPLANTS** could be used as a treatment for **NON-ALCOHOLIC FATTY LIVER DISEASE**

Fecal transplants resulted in **REDUCED INTESTINAL PERMEABILITY** and changes to the **HUMAN MICROBIOME**

Schulich MEDICINE & DENTISTRY LAWSON HEALTH RESEARCH INSTITUTE Western 

Fecal transplants show promise as treatment for non-alcoholic fatty liver disease. Credit: Lawson Health Research Institute

A new study from Lawson Health Research Institute and Western University suggests that fecal transplants could be used as a treatment for non-alcoholic fatty liver disease (NAFLD). The randomized controlled trial published in the *American Journal of Gastroenterology* found that fecal transplants in patients with NAFLD result in a reduction in how easily pathogens and other unwanted molecules pass through the human

gut and into circulation, known as intestinal permeability. The results could have implications for the treatment of numerous conditions including metabolic syndrome and autoimmune diseases.

"Intestinal [permeability](#) plays a role in the development of metabolic syndrome which is a major cause of coronary and cerebrovascular disease. It has also been associated with autoimmune diseases like multiple sclerosis (MS), rheumatoid arthritis, systemic lupus and type 1 diabetes," explains Dr. Michael Silverman, Associate Scientist at Lawson and Professor at Western's Schulich School of Medicine & Dentistry.

Many NAFLD patients have increased intestinal permeability which triggers inflammation, increased fat in the liver, insulin resistance and elevated levels of triglycerides in the blood. The [human microbiome](#)—the diverse collection of microbes in our body—is thought to play a role. Previous studies have shown differences between the gut microbiome of NAFLD patients compared to healthy individuals.

"Our team wondered whether we could change the gut microbiome of NAFLD patients to reduce intestinal permeability," says Dr. Jeremy Burton, Lawson Scientist and Associate Professor at Schulich Medicine & Dentistry.

The trial included 21 NAFLD patients from London Health Sciences Centre (LHSC) and St. Joseph's Health Care London. Patients were randomized to receive a fecal transplant using stool from a healthy donor or a placebo (the patient's own stool). Fecal material was delivered to the small intestine using endoscopy. Patients were followed for six months to assess changes to their gut microbiome, intestinal permeability, percentage of liver fat and insulin resistance.

While the researchers found no changes in percentage of liver fat or [insulin resistance](#), they observed significant reduction in intestinal

permeability in those patients who had elevated intestinal permeability at the study's start (seven patients in total). They also observed changes to the gut microbiome in all patients who received a fecal transplant from a healthy donor.

"Our study demonstrates that intestinal permeability can be improved through fecal transplant from a healthy donor," says Dr. Laura Craven, a recent Ph.D. graduate from Schulich Medicine & Dentistry and first author on the published study. "This suggests that fecal transplant could be used as an early intervention in the treatment of NAFLD to reduce intestinal permeability and prevent inflammation"

"Our findings have implications for other conditions too," adds Dr. Silverman, who is also Chair/Chief of Infectious Diseases at Western, LHSC and St. Joseph's. "Changing the gut microbiome could hold promise in preventing and treating metabolic syndrome and autoimmune diseases associated with increased gut permeability."

The team hopes to next conduct a large multi-centre trial to further investigate FMT as an intervention for NAFLD and as a therapy to reduce [intestinal permeability](#).

NAFLD is an obesity-related disorder and is the second-leading cause of liver [transplant](#) in North America. While reversible if treated early, its progression can lead to liver failure or cancer. Current therapies are not overly effective and the prevalence of NAFLD is increasing.

Dr. Silverman is a pioneer in the field of fecal transplants, including their use as a treatment for *Clostridioides difficile* (C. diff). He is involved in multiple studies examining the potential of fecal transplants as treatments or supportive therapies for numerous conditions including multiple sclerosis (MS) and different types of cancer.

"In order to conduct this research, we need stool donors," notes Dr. Silverman. "By donating your poop, you can help us assess the value of [fecal transplants](#) to treat a variety of diseases."

More information: Laura Craven et al, Allogenic Fecal Microbiota Transplantation in Patients With Nonalcoholic Fatty Liver Disease Improves Abnormal Small Intestinal Permeability, *American Journal of Gastroenterology* (2020). [DOI: 10.14309/ajg.0000000000000661](https://doi.org/10.14309/ajg.0000000000000661)

The team is in need of young, healthy stool donors for fecal transplants. All donors are required to go through a screening process. Those interested in becoming a stool donor can contact Dr. Seema Nair Parvathy, Research Coordinator, Fecal Transplant Program, at 519-646-6100 ext. 61726.

Provided by Lawson Health Research Institute

Citation: Fecal transplants show promise as treatment for non-alcoholic fatty liver disease (2020, June 9) retrieved 25 April 2024 from <https://medicalxpress.com/news/2020-06-fecal-transplants-treatment-non-alcoholic-fatty.html>

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