

The healing effect of faecal microbiota transplantation lasts for long

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Researchers in the University of Helsinki and Helsinki University Hospital have studied in detail the intestinal microbiota of 14 patients treated with a faecal microbiota transplant. The patients suffered from recurrent *Clostridium difficile* -infection, also known as antibiotic associated diarrhoea, and they had not responded to antibiotic treatment. After the faecal microbiota transplantation therapy, the patient's microbiota was followed for a year.

The researchers found out that the patient's intestinal microbiota highly resembled the donor's microbiota and this composition remained stable through-out the 1-year follow-up period.

"Our results suggest that intestinal microbiota can be modified relatively permanently. This opens new possibilities to the use this treatment for other diseases related to microbial dysbiosis," says the Academy Research Fellow Reetta Satokari from the University of Helsinki.

The researchers also wanted to find out which bacteria among the diverse microbial community are the key species behind the treatment success. In order to understand this, they investigated which bacteria were commonly transferred from the donors to all of the patients. In the future, the promising bacterial species will be isolated and characterised for the design of bacteriotherapy products.

"The aim is to develop a so-called bacterial cocktail that could be used to treat patients instead of the faecal material," outlines the post-doctoral researcher Jonna Jalanka.

Reetta Satokari's group has an interesting ongoing project where they look at the effects of faecal microbiota transplant on [antibiotic resistance genes](#) detected in the patient's microbiota. The group just published a study where they showed that the transplant decreases the amount of

antibiotic resistant genes found in the patient's intestinal microbiota.

"This is a very important finding because resistance to antibiotics is a big problem and resistant bacterial strains are often found in the intestine," says Dr. Satokari.

WHO IS A GOOD DONOR?

Faecal microbiota transplantation is an established treatment method for severe antibiotic associated diarrhoea where medical treatment has not cleared the infection. It has a high success rate, where over 90% of the patients are cured.

"We treat patients with this method in all university hospitals and most of the central hospitals in Finland," tells Chief Physician Perttu Arkkila from the Helsinki University Hospital endoscopy unit. "Currently, we have ongoing clinical trials where we are investigating the effect of faecal microbiota transplantation in treating irritable bowel syndrome and inflammatory bowel disease."

Dr. Arkkila also told that the patients are very eager to enrol the trials since they have often suffered from their condition for a long time and have not found a relief.

The prospective donors are selected carefully. They should be in good general health, normal weight and not have had any antibiotics for the past half a year. Also all donors are tested carefully to exclude several diseases.

Reetta Satokari's group and the hospital clinicians have in collaboration created a unique 'faecal bank' where the tested transplants are kept. "Our international colleagues have said to be jealous of this", says Dr. Satokari. "We aim to share our well received method of regular donors and frozen transplants to other Finnish hospitals. I have just received a grant for this purpose from the Key

Project Funding by the Academy of Finland."

The importance of the intestinal microbiota for human health has just recently been unfolded. The relationship between the human health and intestinal microbiota has been widely investigated and it has been recently linked with several different conditions, including over-weight.

"This is currently a very hot research topic," states Dr. Satokari.

More information: Jonna Jalanka et al. Long-term effects on luminal and mucosal microbiota and commonly acquired taxa in faecal microbiota transplantation for recurrent *Clostridium difficile* infection, *BMC Medicine* (2016). [DOI: 10.1186/s12916-016-0698-z](https://doi.org/10.1186/s12916-016-0698-z)

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