Could microorganisms in poop help treat the deadliest form of skin cancer?

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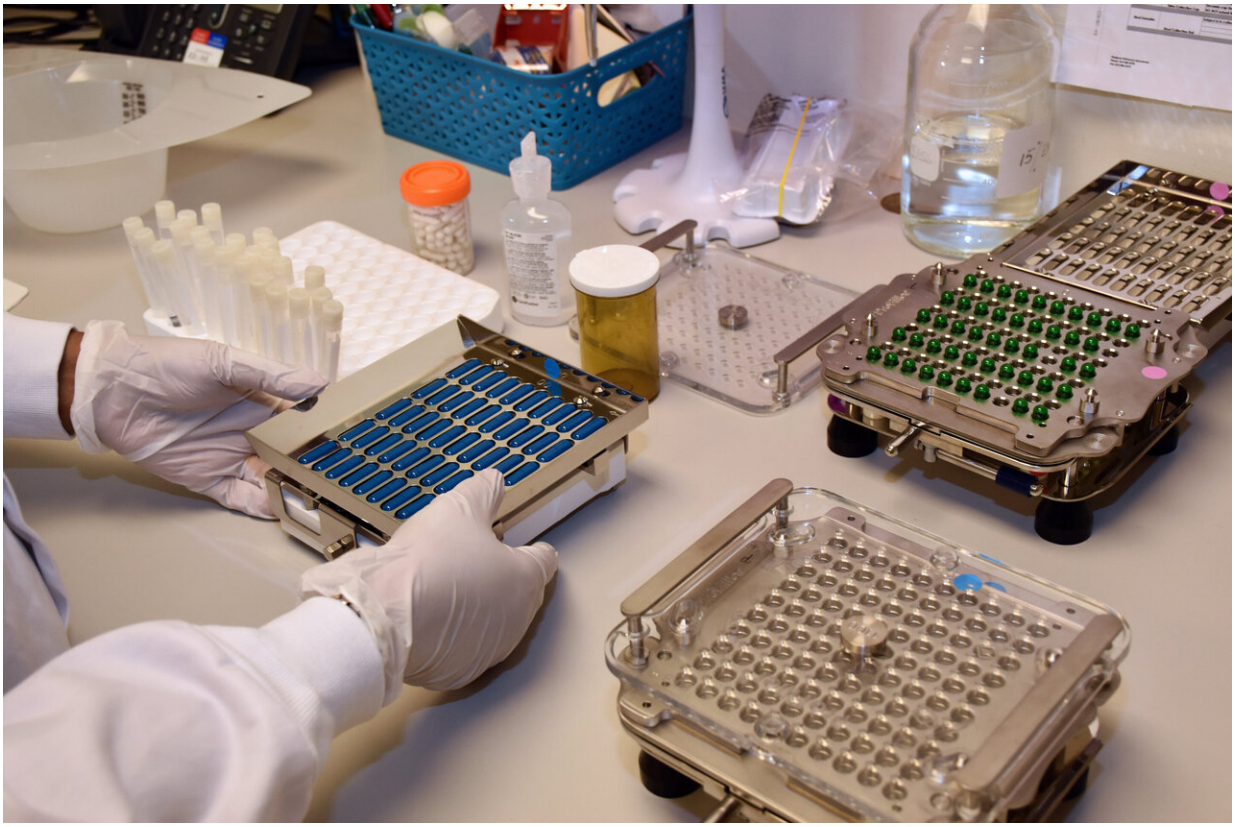

Fecal transplant capsules being prepared in the lab at Lawson Health Research Institute. Credit: Lawson Health Research Institute

A multidisciplinary team at Lawson Health Research Institute is exploring whether fecal transplants can improve outcomes in melanoma

patients treated with immunotherapy.

Immunotherapy drugs stimulate a person's immune system to attack and destroy cancer. While they can significantly improve survival outcomes in those with melanoma, they are only effective in 40 to 50 per cent of patients. Preliminary research has suggested that the human microbiome —the diverse collection of microbes in our body—may play a role in whether or not a patient responds.

"The gut microbiome helps establish immunity from an early age. It makes sense that a healthy gut could improve response to immunotherapy," explains Dr. Jeremy Burton, a Lawson Scientist who specializes in human microbiome research. "This led us to consider the potential of fecal transplants."

Fecal transplants involve collecting stool from a healthy donor, preparing it in a lab and transplanting it to the patient. The goal is to transplant the donor's microbiome so that healthy bacteria will colonize in the patient's gut.

In a phase I clinical trial, the research team is the first in Canada to study the use of fecal transplants to alter a cancer patient's microbiome and improve their response to anti-PD1 immunotherapy drugs.

Research participants will be 20 melanoma patients recruited from the London Regional Cancer Program (LRCP) at London Health Sciences Centre (LHSC). They will undergo a fecal transplant at St. Joseph's Hospital, a part of St. Joseph's Health Care London, followed by immunotherapy at LRCP. The transplant will consist of taking a number of specially-prepared oral capsules.

Patients will be assessed over time for any changes to their cancer, microbiome, immune system and overall health. The primary goal of the

study is to evaluate safety of the novel treatment combination, but researchers will also evaluate patient outcomes.

"Melanoma is the least common skin cancer but it is the most deadly and rates are going up," says Dr. John Lenehan, Associate Scientist at Lawson and Oncologist at LHSC. "Anti-PD1 immunotherapy drugs can be extremely effective but we want to help more patients respond. That's our goal."

While the team is studying the combination of fecal transplants and immunotherapy for melanoma, they see potential for other cancers as well.

"We're one of the first in the world to study fecal transplants in cancer patients. This study is as cutting-edge as it gets with potential applications for multiple disease sites," notes Dr. Saman Maleki, a Lawson Associate Scientist who specializes in cancer immunology. "With experts in microbiology, infectious disease, cancer and immunology, our institute is well-positioned to carry this forward."

Dr. Michael Silverman, Lawson Associate Scientist and Chief of Infectious Disease at St. Joseph's and LHSC, is a pioneer in the field of fecal transplants. St. Joseph's is a leading centre for the procedure, performing them for Clostridium difficile (C. diff) patients across the province.

"Fecal transplants have saved the lives of countless patients with recurrent C. diff," says Dr. Silverman. "We're now starting to see its potential for the treatment of other diseases."

Lawson researchers are planning fecal transplant studies for multiple other conditions including non-alcoholic fatty liver disease, multiple sclerosis (MS) and cancer treatment toxicity. "But in order to conduct

this research, we need stool donors," notes Dr. Silverman.

Provided by Lawson Health Research Institute