

Study links certain types of gut bacteria to pre-cancerous growths in colon

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A new study led by a team with a local researcher has linked certain types of gut bacteria to specific pre-cancerous colorectal polyps, which are growths on the inner lining of the colon that can become cancerous over time if they are not removed.

The findings increase the likelihood of using a microbial test kit to determine if one has these polyps, particularly those that are not easily detected by current screening methods.

One can then make specific changes to the diet or gut microbiome – the ecosystem of bacteria, fungi and other microbes found in the digestive system – to alter the growth patterns of the polyps to

prevent them from turning into cancer.

“Maybe in the future, you need to know what type of microbes you have and based on that, you can personalise the preventive diet to reduce the risk,” said the study’s first and corresponding author, Dr Jonathan Lee, a consultant at the gastroenterology and hepatology division at the National University Hospital (NUH).

Generally, a high-fibre, low-processed diet rich in fruits, vegetables, nuts and seeds is known to help beneficial bacteria to flourish in the gut and reduce one’s risk of colorectal cancer.

However, a one-size-fits-all approach does not work all the time, as some people may need to reduce their fibre intake or stop eating red meat while others need to increase their fibre intake, he added.

“In the past, the school of

thought was that you could manipulate what you eat. Now, if you could manipulate what you eat plus your innate microbes, you can get a better outcome,” he said.

The study was published in the journal *Cell Host & Microbe* in May 2023.

Dr Lee started working on the study with other researchers during his fellowship at the Broad Institute of Massachusetts Institute of Technology and Harvard. He is now a visiting scientist there.

He spoke to *The Straits Times* ahead of a free talk on the study findings and common gut problems at the Fighting Cancer, Living Stronger event on Jan 27, organised by the National University Cancer Institute, Singapore.

Colorectal cancer, which starts in the colon or the rectum, is the second-leading cause of cancer-related deaths in Singapore, after lung

cancer in men and breast cancer in women.

It can arise from two main types of pre-cancerous polyps – adenomatous or serrated polyps. Current screening methods, particularly colonoscopy, are highly effective for picking up adenomatous polyps, which are the most common. Serrated polyps tend to be missed more often during colonoscopy.

Colonoscopy is the current gold standard for screening for colorectal cancer. During the process, a polyp can be detected and removed before it becomes cancerous.

For the study, the researchers studied the data from 971 healthy patients undergoing routine colonoscopy at the Massachusetts General Hospital in the United States. Researchers looked at the information on patients’ health, diet, medication history and lifes-

tyles, and analysed their stool specimens to determine their bacterial make-up.

The researchers then identified 19 bacterial species associated with adenomatous polyps and eight in serrated polyps.

They also found that diet and medication significantly shaped the gut microbiome associated with common pre-cancerous colorectal polyps.

Dr Lee said the team found that the presence of specific bacterial species in the gut brought out the beneficial effect of a high fruit and vegetable diet and aspirin use in the prevention of colorectal cancer.

“For the effects of a veg-rich diet and aspirin use to be effective, you need the bugs to break those down to helpful metabolites to prevent cancers,” he added.

The study said that further research on the microbial mecha-

nisms behind diet and medication associations with colorectal cancer could help inform targeted dietary interventions, shape guidelines surrounding aspirin use, and even promote the development of novel cancer prevention strategies.

Right now, Singapore researchers at the National University of Singapore, NUH, Tan Tock Seng Hospital and the Agency for Science, Technology and Research are studying local data, paving the way for a locally validated microbial test kit for colorectal cancer one day, Dr Lee added.

He said the kit will be developed by precision gut microbiome firm Amili, where he is a co-founder.

Regular screening is advised because colorectal cancer is most likely to be curable, if it is detected early.

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