

Gut health key to avoiding runs from antibiotics: Study

It finds that lower levels of a bacterium raise risk of diarrhoea after taking such medication

Wallace Woon

If you have experienced a bout of the runs after taking antibiotics, the cause might lie in the health of your gut microbiome.

This is the ecosystem of organisms that live in a person's digestive system, and comprise various species of bacteria and fungi.

A study by researchers from Singapore General Hospital (SGH) and Singapore-MIT Alliance for Research and Technology (Smart) found that individuals with lower levels of the bacterium *Faecalibacterium prausnitzii* in their gut microbiome – one of the most abundant strains of bacteria in the human digestive system – were at a higher risk of getting diarrhoea after taking antibiotics.

The study took place over a four-week period in 2019 and involved 30 healthy participants who were prescribed a three-day course of orally administered amoxicillin-clavulanate, known more commonly as Augmentin.

Their stool samples were collected and analysed throughout the course of the study. Lower levels of the *F. prausnitzii* bacterium were found in those who had diarrhoea than in those who did not.

The finding is significant, as the onset of diarrhoea during a course of antibiotics can lead to patients stopping their medication prematurely and thus ineffective treatment, according to the study's co-author, Dr Shirin Kalimuddin, a consultant at the SGH department of infectious diseases.

"The problem is very real for patients who are unable to take amoxicillin-clavulanate because it gives them diarrhoea," she said.

"Knowing why may help us de-

velop treatment strategies in the future to minimise or avoid such adverse effects."

The findings were published in the peer-reviewed scientific journal *iScience* last month.

Globally, a third of patients develop diarrhoea after being prescribed with amoxicillin-clavulanate, which is used in treating pneumonia, urinary tract infections as well as other infections.

As part of the study, the team developed a simple polymerase chain reaction test to determine the levels of the *F. prausnitzii* bacterium in the participants' stool samples.

This could help assess how prone a patient might be to developing diarrhoea if he were given broad-spectrum antibiotics such as Augmentin to treat an existing bacterial infection, said Dr Shirin.

The study's co-author, Professor Eric J. Alm, said: "People respond differently to medication. Understanding this response and the ability to predict those at risk will help guide the development of point-of-care diagnostics."

Prof Alm, who is the principal investigator at Smart's antimicrobial resistance interdisciplinary group, added that while much research had been conducted on how a patient's DNA might affect his response to medication, the effect of the person's gut microbiome is relatively less known.

A solution, in the form of dietary fibre, could help individuals looking to reduce their risk of suffering from diarrhoea after taking antibiotics.

Prof Alm said: "There're myriad health benefits from increasing your consumption of dietary fibre and that's probably the best recommendation for keeping a healthy gut ecosystem."

wallacewoon@sph.com.sg



Researchers from the Singapore-MIT Alliance for Research and Technology testing for levels of gut bacteria taken from a stool sample. PHOTO: SMART

HONING TREATMENT

People respond differently to medication. Understanding this response and the ability to predict those at risk will help guide the development of point-of-care diagnostics.



PROFESSOR ERIC J. ALM, the study's co-author, on nailing down the effect of people's gut microbiome to help them reduce the risk of suffering from diarrhoea after taking antibiotics.