THE STRAITS TIMES
THURSDAY, NOVEMBER 20, 2014

B6 Your gut could save your brain: Professor

Cancer fight may have ally in the gut

Bug in digestive tract can affect how brain absorbs drugs, toxins, says study

By AUDREY TAN

THE promise of better treatment and prevention of brain cancer lies in the gut, a study led by a scientist at the Nanyang Technological University (NTU) has discovered.

The study done on mice found that microscopic bacteria found in the digestive tract can affect how permeable the membrane around the brain is.

This means that the membrane can be made more permeable to beneficial substances, such as drugs used to treat brain cancer, by regulating the levels of such bacteria.

The breakthrough could also aid healthy ageing by tightening the barrier against harmful substances.

The three-year study led by Professor Sven Pettersson from NTU's Lee Kong Chian School of Medicine is published in the Science Translational Medicine journal today. It is the work of more than 18 researchers from Singapore, the United States and Sweden.

The gut microbiota is believed to be able to affect the permeability of the membrane, known as the blood brain barrier, by changing its structure.

The study found that the blood brain barrier of mice raised in a sterile, bacteria-free environment comprised protein strands that were more loosely woven together – meaning they were more permeable.

In the study, the blood brain barrier of mice brought up in such an environment allowed substances such as antibodies – used here to measure "leakiness" – to be detected in the brain.

In contrast, in mice with the gut microbiota, however, the protein strands that formed the blood brain barrier appeared tighter and more compact – meaning it was less permeable.

But the "leakiness" in the blood brain barrier in the germ-free mice could be reduced if normal gut microbes from mice faecal material were transplanted into them, researchers said.

"Faecal material is the most easily accessible source of high concentration gut bacteria for transplantation," said Prof Pettersson.

He added that the composition of gut microbiota found in each individual was different, as this depended on age, diet and lifestyle.

While the research on mice looks promising, he said, the next step is to see whether the same observations could be made after transplanting human gut bacteria into mouse models. "We may be able to use micronutrients and food products to alter microbe function in the intestine to stay healthy, delay the onset of disease, and even lessen the severity of chronic illnesses in the future."

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