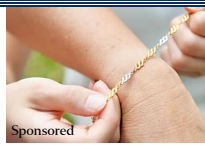




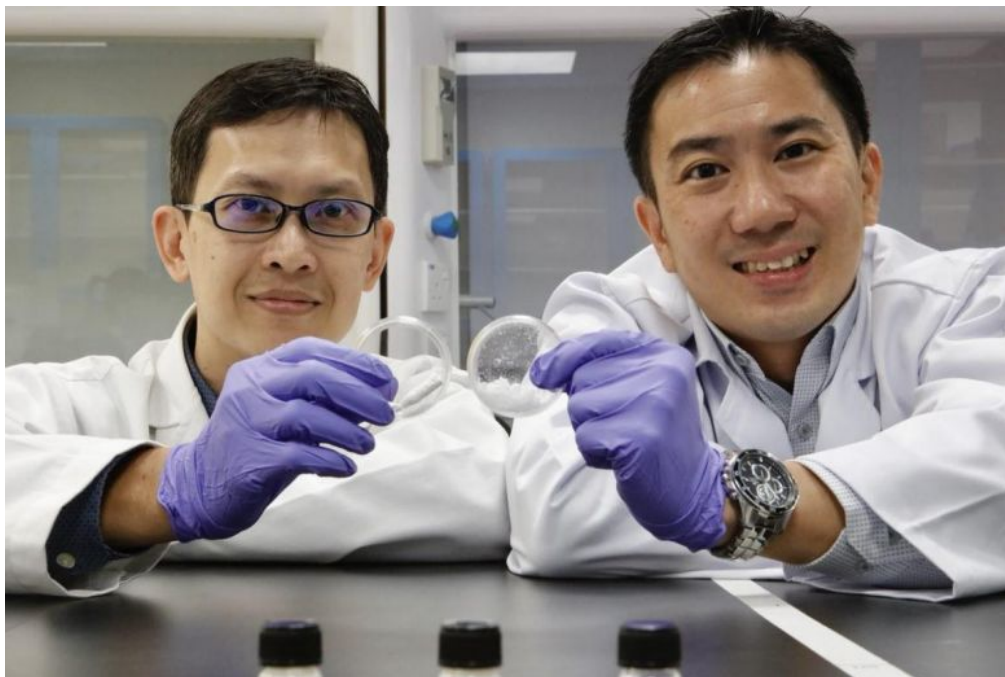
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Nanofibres added to food could reduce fat absorption, study finds



Associate Professor Ng Kee Woei holding cellulose nanofibre and Associate Professor Joachim Loo (right) holding cellulose nanocrystal. ST PHOTO: XUAN ZHANG

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SINGAPORE - Cellulose fibres 100 times smaller than the width of a human hair could one day be added to food to reduce fat absorption, if future experiments are successful.

Scientists from Nanyang Technological University (NTU) and Harvard University in the United States found that nanocellulose fibres could cut fat absorption by up to 48 per cent in a simulated gastrointestinal tract.

Cellulose is a naturally-occurring plant fibre, which cannot be broken down by the human body. Instead, it binds to food in the digestive track, aiding bowel movement.

The scientists started experimenting with the fibres early last year, which were ground down from wood pulp by an ultra-fine cutting machine.

In this size, the fibres can bind and trap fat molecules called triglycerides, which are usually broken down into fatty acids by digestive enzymes in the gut. This reduces the amount of fatty acids from being absorbed by the small intestines and converted to fat by the human body.

When tested on rats, the scientists discovered that those fed with heavy cream containing the fibres absorbed 36 per cent less fat than rats fed with heavy cream alone.

The study was published in the scientific journal ACS Nano in June and this new method of using nanocellulose fibres as fat blockers has been granted a US provisional patent, jointly filed by Harvard and NTU.

Associate Prof Ng Kee Woei, a biomedical engineer and materials scientist, said the finding reinforces the conventional wisdom that eating a high fibre diet is good for health.

"We've known for a long time that fibre in the diet has positive health benefits but what we have shown now, is that in animal experiments, fibres at the nanoscale are much more effective at reducing fat absorption than in its bulk form," said Assoc Prof Ng, who is from NTU's School of Materials Science and Engineering.

Assoc Prof Joachim Loo, a scientist researching on nanomaterials, said cellulose is categorised by the US Food and Drug Administration as a Generally Regarded As Safe (GRAS) material, given that it is found in all plants.

"In our study, three types of nanocellulose were compared to commercially available fat-reducing options, and all of them performed much better in the amount of fats they trapped," Assoc Prof Loo said, although he highlighted that more studies are still needed to determine why the trio had better performance.