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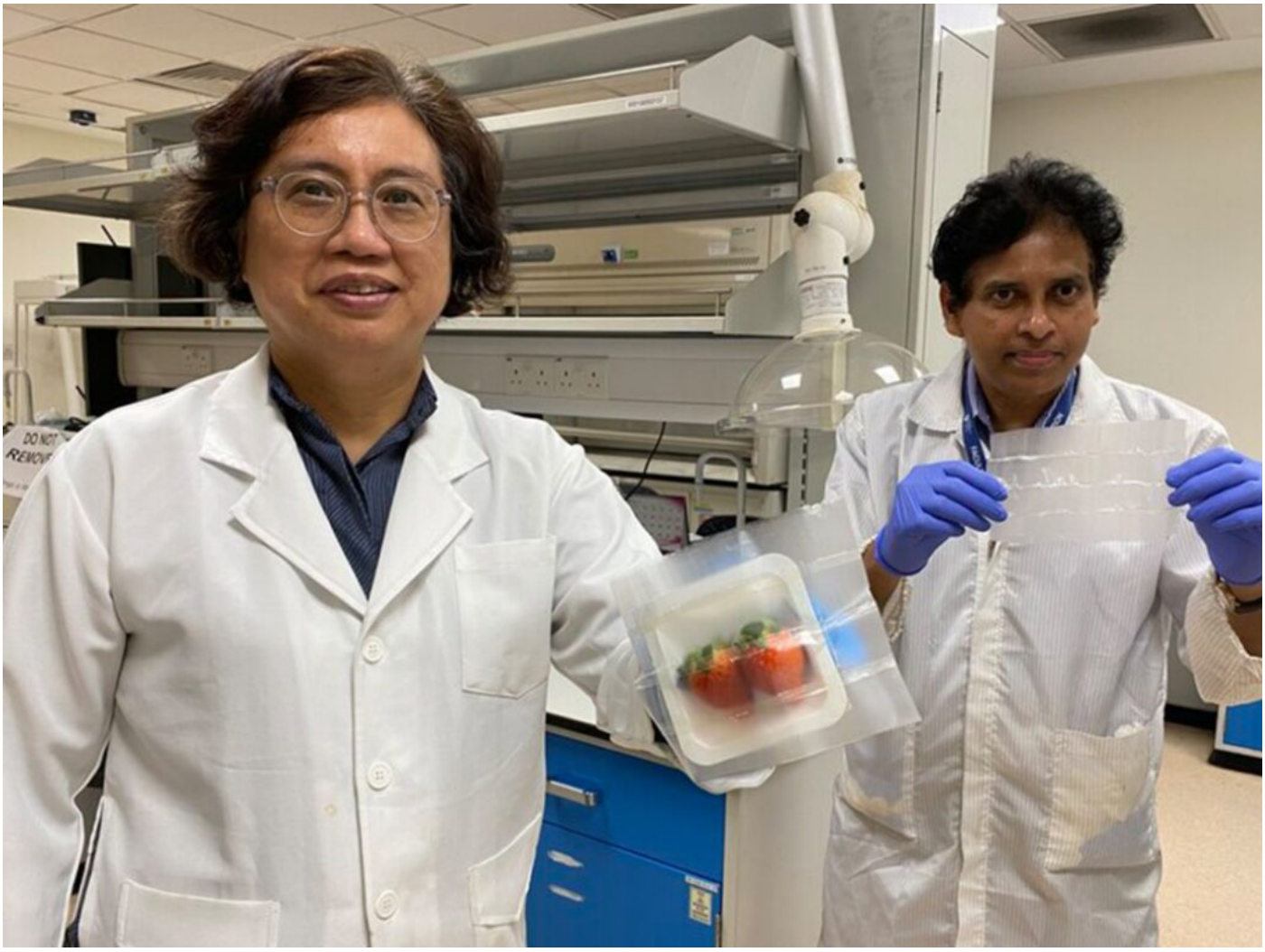
Singapore, US scientists develop bacteria-killing food packaging material

The material can be used for a large variety of products, including ready-to-eat foods, raw meat, fruits, and vegetables.



The material could extend the shelf-life of fresh fruit by two to three days. Credit: © Nanyang Technological University.

Researchers from Singapore and the US have developed a biodegradable packaging material that can kill microbes harmful to humans.

The sustainable material is created by scientists from Nanyang Technological University (NTU) Singapore and Harvard T.H. Chan School of Public Health, US.

This packaging material is made from a kind of corn protein known as zein, starch and other biopolymers that are then infused with natural antimicrobial compounds such as oil from thyme, and citric acid.

During lab experiments, the fibres, on being exposed to increased humidity or enzymes from harmful bacteria, released small amount of the antimicrobial compounds that in turn kill bacteria such as coli and Listeria, as well as fungi.

The material has the potential to be used for storing food items such as raw meat, fish, fruit, vegetables and ready-to-eat meals because the compounds can fight bacteria growing on the surface of the packaging as well as on the food itself.

The scientists believe the advanced packaging material is expected to extend the shelf-life of fresh fruit by two to three days.

In an experiment, strawberries covered in the sustainable packaging remained fresh for seven days before developing mould as against counterparts that were put in traditional fruit plastic boxes, where the fruit remained fresh only for four days.

This development on the food packaging material is part of the NTU's efforts to promote sustainable food tech solutions and aligned with the NTU 2025 strategic plan.

In November 2020, researchers of the University of Liverpool secured a £965k project to boost sustainability in plastic packaging and provide environmental benefits.