

Lighting the way to bug-free food

NUS team finds blue LEDs alone in fridges can kill bacteria that cause food poisoning

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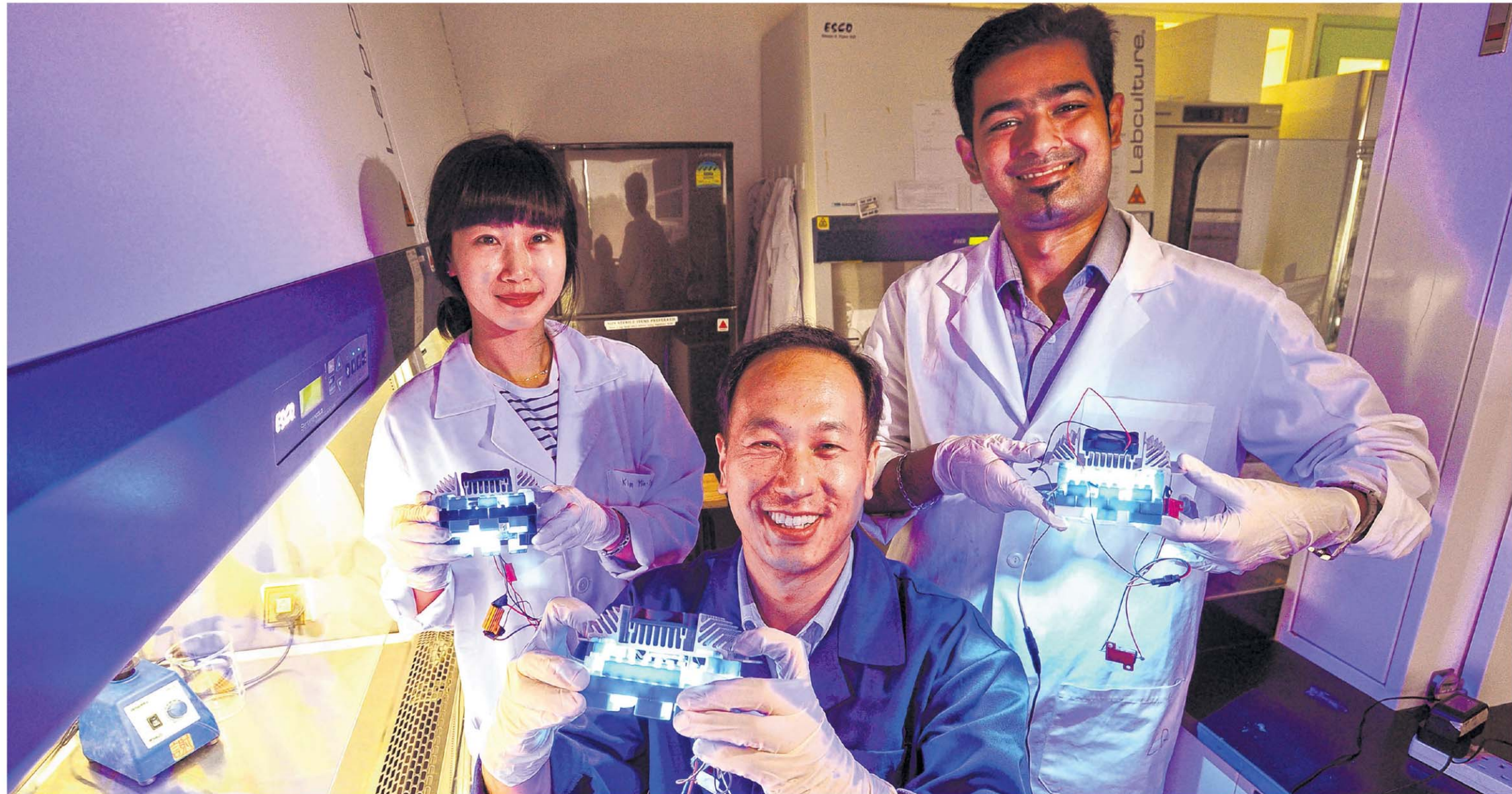
Scientists here have seen the light – blue light emitting diodes (LEDs) in refrigerators could keep food poisoning at bay, they have found.

National University of Singapore (NUS) researchers discovered that the lights alone, known for being energy savers, are major bug busters capable of killing bacteria that cause food poisoning, including the especially nasty salmonella and *E. coli*.

The LEDs proved particularly effective in cold temperatures and mildly acidic conditions, so the scientists believe they could lead to a chemical-free way of storing fruit and other products.

Exposure to blue LED lights starts off a process within the bacterial cells which causes them to die off as their light-sensitive compounds absorb the light, explained Assistant Professor Yuk Hyun Gyun of the food science and technology programme at the NUS Faculty of Science, who led the study.

Unlike previous studies, Dr Yuk, 40, said his team's work is the first to show blue LEDs alone can eliminate the bacteria without the need to add chemicals like photosensitisers – light-absorbing compounds that help to kill bacteria – or pre-



Dr Yuk Hyun Gyun (centre), with PhD students Kim Min Jeong, 28, and Vinayak Ghate, 26, showing the LED light boxes in their laboratory. PHOTO: LIM YAOHUI FOR THE STRAITS TIMES

servatives. “This could meet the increasing demand for natural or minimally processed foods without relying on chemicals,” he added.

During the latest study, his team tested bacterial suspensions of three bacteria – including pathogenic *Escherichia coli*, or *E. coli*, and *Salmonella typhimurium* – under

blue LEDs. Food poisoning is caused by eating or drinking products that are contaminated with bacteria, viral or parasitic agents, and the contamination can occur when the food is being processed, stored or prepared.

It is a frequent cause of diarrhoea and vomiting in the community: In

Singapore last month, for instance, several athletes were hit by suspected food poisoning during the SEA Games.

Dr Ritu Bhalla, senior manager at Republic Polytechnic's School of Applied Science, said that while the study is promising, more work needs to be done to show the effec-

tiveness of devices that could use blue LEDs for killing bacteria.

“We still need to validate whether the lights would be able to kill off all the bacteria in food products, owing to the diversity of bacterial strains and texture of food products,” she said.

“Storing food properly still re-

mains one of the most important steps to prevent food poisoning. I hope people don't neglect that.”

Dr Yuk will be testing the effect of blue LEDs on salmonella, specifically on papayas and mangoes, which are slightly acidic.

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