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NTU Singapore's new 'superbug killer' offers new hope in fight against antibiotic resistance crisis

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(From left) Professor Mary Chan, Dr Adeline Yong and Associate Professor Kimberly Kline, the team from the Nanyang Technological University that developed a synthetic peptide. — Picture courtesy of Nanyang Technological University/TODAY

SINGAPORE, Aug 6 — A team of scientists from Nanyang Technological University (NTU) have developed a substance that can kill superbugs, or bacteria that have grown resistant to standard drugs.

This synthetic peptide, as it is known, could spell hope for the estimated 700,000 people worldwide who die each year from diseases caused by these drug-resistant superbugs, a problem that the World Health Organization believes is “one of the greatest threats we face as a global community”.

Although bacteria grow resistant to drugs naturally over time, many experts have blamed the overuse of antibiotics for the accelerating drug resistance around the world.

Scientists have found that this could be accelerated by the coronavirus pandemic, as Covid-19 patients are often given antibiotics, sometimes unnecessarily, to prevent any secondary bacterial infections from getting worse.

Professor Mary Chan, who co-led the team of NTU scientists, said in a statement on Thursday (Aug 6). "Developing new drugs alone is no longer sufficient to fight difficult-to-treat bacterial infections, as bacteria continue to evolve and outsmart antibiotics."

The scientists are hoping that the peptide, which damages bacteria cell membranes, could be used together with traditional antibiotics in the future to tackle certain antibiotic-resistant infections.

When the NTU team tested their peptide CSM5-K5 against several types of drug-resistant bacteria, including a lethal strain of E Coli, they found that it killed more than 99 per cent of the bacteria after four hours.

They achieved similar success when they tried it on infected mice wounds, killing 90 per cent of the growing bacteria.

The research was funded by NTU, the National Research Foundation, the Ministry of Health and the Ministry of Education.

Their next step will be to explore using the peptide with antibiotics to treat rare diseases and for wound dressing.

"While efforts are focussed on dealing with the Covid-19 pandemic, we should also remember that antibiotic resistance continues to be a growing problem," Prof Chan said.

In Singapore, government officials launched a National Strategic Action Plan on Antimicrobial Resistance in 2017, which aimed to cut the unnecessary use of antibiotics here.

Dr Lam Pin Min, who was then the Senior Minister of State for Health, had said that action had to be taken to prevent a "post-antibiotic era" where humans die from simple infections. — TODAY