

NTU RESEARCHERS DEVELOP PROBES THAT CAN DETECT ACUTE RENAL FAILURE FASTER, HEALTH NEWS & TOP STORIES

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Nanyang Technological University (NTU) researchers have developed imaging probes that illuminate when acute renal failure is detected, which will help detect the condition 11/2 days faster than other real-time molecular formation methods.

The probes, which are injected into the blood, light up due to a chemical reaction when they discover molecular changes caused by acute renal failure.

They have been tested on mice and human trials start next year.

Acute renal failure usually occurs in a few hours or a few days and is most common among patients who are critically ill and need intensive care.

In 201

5, 1619 people in Singapore were diagnosed with renal failure, the main cause of diabetes. [19659002] Current diagnostic platforms are unable to detect early stages, forebod changes that underlie acute renal failure, says Professor Pu Kanyi of NTU School of Chemical and Biomedical Engineering. These platelets include the serum creatinine test, which measures the level of creatinine in the blood and provides an estimate of how well the kidneys are filtering and the blood urea nitrogen sample that measures the



amount of urea nitrogen in the blood. Higher than normal urea nitrogen levels indicate that the kidneys or liver may not work properly.

However, the probes are sufficiently sensitive to track changes in the biological processes triggered by acute renal failure.

For patients who are critically ill, like those in intensive care, every minute is valuable in reversing a condition such as acute renal failure, which can cause the patient's health to deteriorate rapidly, he says.

When tested on mice, probes illuminated 12 hours after the cancer drug cisplatin was given at the level that was destructive to the kidneys – 11/2 days faster than other real-time molecular imaging techniques.

The results were published in the scientific journal Nature Materials in May.

Prof Pu said it is possible to develop the probes for test strips for urine specimens, making it a non-invasive method for detecting acute renal failure.

The probes were found to have high renal clearance – more than 97 percent of the probes injected into mice flowed through the kidneys and excreted as part of the urine. When added to the urine sample and incubated for a few hours, the probes illuminate when exposed to UV light

[The team has filed a Singapore patent for the work]

Their next phase involves working with medical institutions to further refine the probes.

Felicia Choo

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