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New NTU kit offers diabetics quick test for inflammation



Nanyang Technological University's (NTU) professor of metabolic disease Bernhard Boehm, who is also the scientific director of the Singapore Phenome Centre at the university.

Photo: The Straits Times

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A new kit developed by scientists from Nanyang Technological University (NTU) will allow doctors to find out in minutes if diabetic patients are suffering from internal inflammation.

It contains a chip which extracts white blood cells from a patient's blood sample, and an analyser which doctors can use to observe the cells' movement and function, and conclude whether the patient has inflammation.



Current procedures require patients to wait several hours for the results, which are obtained from a full vial of blood. The new test kit needs only a drop to test if a patient is suffering from inflammation.



In conventional procedures, blood cells need to be physically separated for analysing, which is time-consuming and laborious, while the new test kit does this automatically. The locally manufactured test kit is also affordable as it costs less than a dollar to produce.

Inflammation is caused by abnormal immune cell activation, something more commonly found in those with Type 2 diabetes.

Dr Hou Han Wei, a senior research fellow from NTU's Lee Kong Chian School of Medicine, invented the new chip.

"By designing very tiny channels on our chip, we are able to physically separate the various blood cells by size into the different outlets, like a coin-sorting machine," he explained.

Diabetes affects more than 11 per cent of adults here aged 18 to 69, but the incidence is higher among those over 70.

Type 2 diabetes is the most common and is usually treated with lifestyle changes, medication and insulin.

White blood cells form a significant part of the body's immune system, and a key type known as neutrophils is the first line of defence whenever infection or inflammation strikes.

"Analysing these separated neutrophils could help indicate how bad an inflammation is and if there is an increased risk of infection for diabetic patients," said Dr Hou.

"If diabetic patients can be grouped based on their inflammation status in addition to glucose level, doctors can better choose the treatment best suited for their patients."

Professor Bernhard Boehm, scientific director of the Metabolic Disease Research Programme at NTU's medical school and one of the lead scientists of the project, said: " (The new test kit) will lead the way to improvements in patient care, enabling chronic disease self-management and finally a healthier society."

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