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By Chan Luo Er
@ChanLuoErCNA

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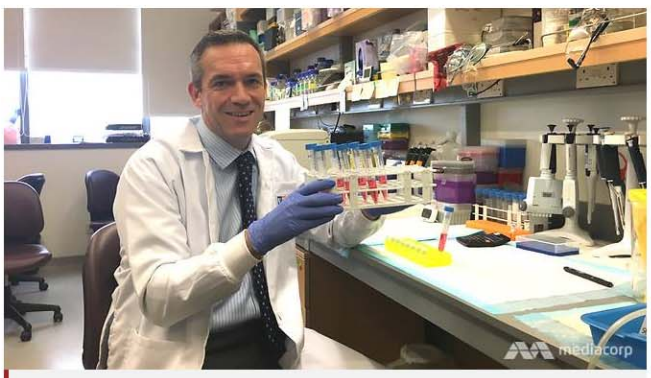
Health

Breakthrough discovery in fibrosis paves way for treatments



Professor Stuart Cook, who led the fibrotic research. (Photo: Chan Luo Er)

SINGAPORE: Singapore scientists have found that a protein, Interleukin 11, or IL11, causes fibrotic disease, which can lead to life-threatening conditions.

The discovery paves the way for more effective treatment against fibrosis, where the body produces excessive connective tissue in response to an injury, causing tissue scarring.

When this happens in vital organs such as the heart, kidney or lungs, it not only damages the organ, but could result in organ failure, leading to death.

"Fibrotic diseases represent a major cause of illness and death around the world. The discovery that IL11 is a critical fibrotic factor represents a breakthrough for the field and for drug development," said Professor Stuart Cook, who led the study. He is the director of the National Heart Research Institute Singapore.

The findings are significant as the medical community has long regarded another protein, Transforming Growth Factor Beta 1, as a major cause of the condition.

While there are drugs that target this protein, they have severe side effects such as infections and even cancer, said Professor Cook.

During the five-year study, Professor Cook and his team of researchers from the Duke-NUS Medical School conducted trials on mice to demonstrate the role of IL11 in fibrosis disease in various organs such as the liver, heart, kidney and eye.

They also worked on more than 80 heart samples from patients who underwent open heart surgery at the National Heart Centre. Researchers said it is the first time such a large human cohort has been studied in this field and proves the validity of their research.

The next step for the team is to develop treatment to target the IL11 protein, in order to prevent, arrest or even reverse fibrosis disease.

"What we would really love to be able to do is to reverse it. So if people have advanced fibrosis, that can be turned back and the organ can become healthy again. There is a precedent that that can work, particularly in the liver," said Prof Cook.

"Currently, more than 225 million people worldwide suffer from heart and kidney failure and there is no treatment to prevent fibrosis. The team is at a stage of developing first-in-class therapies to inhibit IL11 and this offers hope to patients with heart and kidney disease," said Professor Terrance Chua, medical director of the National Heart Centre Singapore.

Singapore has a high rate of kidney failure, with about one new patient every five hours. The number of these patients is set to rise, due to the growing prevalence of diabetes, which is one of the leading causes of kidney failure here.

Researchers said if they can prevent the kidney from progressing to that stage, patients will not have to do dialysis treatment.

The 20-member team, which includes researchers from the United States, the United Kingdom, Germany and Australia, currently have more than five patents pending for their scientific work.

A company, Enleofen Bio, has been founded to take their findings forward by developing drugs to treat fibrosis. It will apply for drug approval by 2019 and aim to start clinical trials by 2020.

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