



CASE STUDY

New drugs to help fight the diabetes pandemic

280 Australians develop diabetes every day. That's one person every 5 minutes.

In Australia, diabetes is among the leading causes of illness, disability, amputations and death. It causes long-term damage to young and old, and costs the economy billions every year. Approximately one third of the estimated 1.7 million Australians with the disease are unaware that they have it. Although diabetes has often been considered a disease of western society, in India more than 100 million people will suffer from diabetes by 2030. **Diabetes is preventable, but once established it has no cure.**

The most common form of diabetes is type 2, a progressive condition in which high blood sugar occurs because the body becomes resistant to the effects of insulin or loses its ability to produce enough insulin. Current therapies for type 2 diabetes are not targeted, which means that treatment can have limited effectiveness and cause unwanted side effects.

Australia-India Strategic Research Fund

Scientists are only just beginning to understand the role inflammation may play in the development of chronic diseases such as diabetes. It is thought that inflammation of the pancreas caused by the immune system may lead to insulin resistance and ultimately type 2 diabetes. With support from the Australia-India Strategic Research Fund, Professor Matthew Cooper and his team at The University of Queensland's Institute for Molecular Bioscience are working with the Indian Institute of Chemical Technology to identify potential new anti-inflammatory therapies for type 2 diabetes. Together they have been synthesising new molecules that can block a key driver of immune cell inflammation, called the 'inflammasome'. Inflammasomes are protein complexes in our immune system that trigger the release of molecules that exacerbate inflammation, leading to deposits of toxic 'amyloid' (protein fragments) in the pancreas, having damaging effects. **The two teams are working on a series of early stage molecules which can potentially stop this inflammatory process** in immune cells.

They also hope to test the effect of 'tracer' molecules in type 2 diabetes models to see if they can halt the death of insulin-producing cells and ultimately stop the progression of diabetes. Their aim is to develop a suite of these 'tracer' molecules which could be used to visualise inflammation in the body in real time and to better identify the effect of inflammation in the pancreas.

Find out more

For more information on the Australia-India Strategic Research Fund, visit www.science.gov.au/aisrf

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