

Singapore develops oral-anti-diabetic drug

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Singapore has completed phase I clinical trial of an oral-anti-diabetic drug developed by NUS Medicine, SCRI and NUHS

Singapore: Singapore has completed phase I clinical trial of an oral-anti-diabetic drug developed by Department of Pharmacology of the NUS Yong Loo Lin School of medicine (NUS Medicine) together with Singapore Clinical Research Institute and National University Health System (NUHS).

In normal individuals, insulin that is released from the pancreas after a meal binds to insulin-sensitive cells and activates insulin pathway. This insulin pathway is connected to a glucose transporter, and when activated by insulin the pathway brings the glucose transporter from the inside of the cell to its surface. At the surface, the glucose transporter is then able to transport glucose from the blood into the cell for energy usage or storage.

In diabetes, this pathway is faulty and becomes resistant to insulin (i.e. the cell develops insulin resistance or does not respond to insulin). There are switches in the insulin pathway connecting insulin to the glucose transporter that malfunction in diabetes. The result is that insulin loses its ability to initiate uptake of glucose into the cell.

DAA-I rectifies all the four switches found to be malfunctioning in diabetes, said Associate Professor Sim Meng Kwoon, retired faculty member of the Department of Pharmacology at NUS Medicine and one of the lead investigators who carried out the study.

"Chronic inflammation in diabetes damages the endothelial lining of blood vessels, leading to vascular and organ damage, e.g. cardiovascular diseases, damage of retina leading to blindness, damage of the nephrons leading to kidney failure, damage of nerves leading to neuropathy. Thus, the importance of reducing chronic inflammation in diabetic individual is critical," he added.