

## Study shows diabetes treatment hope

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Launching a counter-attack on the immune response that causes insulin-dependent diabetes may provide a revolutionary new way of treating the disease, research has shown.

Scientists have found a way to isolate and kill the defective immune system cells that wipe out insulin-producing cells in the pancreas.

Type 1 diabetes is an autoimmune disease in which the body's "insulin factory" - composed of pancreatic islet cells - is gradually destroyed by specialised white blood cells called "killer" T-cells.

Researchers found that treatment with tumour necrosis factor (TNF), an immune system regulating protein, leads to the death of these wayward T-cells while leaving other parts of the immune system unharmed.

In a previous study, diabetic mice given the treatment regenerated healthy islet cells and produced normal levels of insulin. Effectively, the mice were cured. The new research involved T-cells from more than 1,000 patients with type 1 diabetes, other autoimmune disorders, and healthy volunteers.

Scientists found that a synthetic chemical similar to TNF caused "killer" T-cells in diabetics and patients with other autoimmune conditions to self-destruct. However, T-cells from healthy participants were left unharmed.

Further experiments with blood samples from several diabetic patients confirmed that only "killer" T-cells that threatened the pancreas were targeted by the treatment. Others programmed to attack two common viruses were not affected.

An early clinical trial is now under way testing a method of raising TNF levels in diabetic patients.

Dr Denise Faustman, from Massachusetts General Hospital in Boston, said: "Our studies in mice showed that we could selectively kill the defective autoimmune cells that were destroying insulin-producing islets. These results show that the same selective destruction can occur in human cells and connect what we saw in our animal studies with the protocol we are pursuing in our Phase I clinical trial".

About 300,000 people in the UK suffer from type 1 diabetes. Far more are afflicted with type 2 diabetes, a quite different disease linked to lifestyle. The research is reported in the journal Proceedings of the National Academy of Sciences.

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