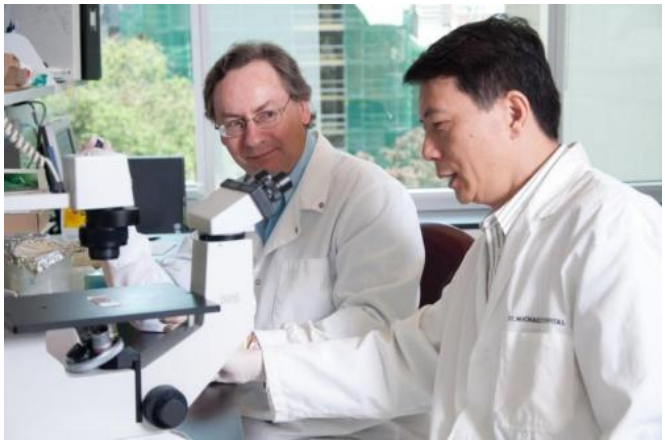
Novel type 1 diabetes treatment shown to work on human beta cells transplanted into mice

25 November 2014



A chemical produced in the pancreas that prevented and even reversed Type 1 diabetes in mice had the same effect on human beta cells transplanted into mice, according to a paper in the Dec. issue of *Diabetes* by Dr. Gerald Prud'homme (left) and Qinghua Wang (right) of the Keenan Research Centre for Biomedical Sciences of St. Michael's Hospital in Toronto. Credit: St. Michael's Hospital

A chemical produced in the pancreas that prevented and even reversed Type 1 diabetes in mice had the same effect on human beta cells transplanted into mice, new research has found.

GABA, or gamma-aminobutryic acid, is an amino acid produced by the same beta cells that make and secrete insulin.

Drs. Gerald Prud'homme and Qinghua Wang of the Keenan Research Centre for Biomedical Sciences of St. Michael's Hospital published a paper in 2011 showing for the first time that GABA injections not only prevented Type 1 diabetes in mice, but even reversed the disease.

A new paper published (Nov. 29) in the December issue of *Diabetes* shows GABA does the same thing in mice who have been injected with human pancreatic cells.

Type 1 diabetes, formerly known as juvenile diabetes, is characterized by the immune system's destruction of the beta cells in the pancreas. As a result, the body makes little or no insulin. The only conventional treatment for Type 1 diabetes is insulin injection, but insulin is not a cure as it does not prevent or reverse the loss of beta cells.

Drs. Prud'homme and Wang also found that GABA vastly improved the survival rate of pancreatic cells when they were being transplanted into mice. About 70 per cent of pancreatic cells die between the time the organ is harvested and transplanted. The researchers said their finding could lead to future research specifically related to pancreatic transplants.

GABA has been known for decades to be a key neurotransmitter in the brain, a chemical that nerve cells use to communicate with each other, but its role in the pancreas was unknown until the 2011 paper by Drs. Prud'homme and Wang.

GABA and related therapies would have to be tested in human clinical trials, a process that could take several years, the researchers said, noting that many treatments that work in mice do not always translate into effective human therapies.

Provided by St. Michael's Hospital