

Scientists show type-1 and type-2 diabetes are caused by same underlying mechanism

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Work by scientists at the Universities of Manchester and Auckland suggest that both major forms of diabetes are the result of the same mechanism.

The findings, published today in the *FASEB Journal* (20 August), provide compelling evidence that juvenile-onset or type-1 diabetes and type-2 diabetes are both caused by the formation of toxic clumps of a hormone called amylin.

The results, based on 20 years' work in New Zealand, suggest that type-1 and type-2 diabetes could both be slowed down and potentially reversed by medicines that stop amylin forming these toxic clumps.

Professor Garth Cooper, from The University of Manchester working

with his University of Auckland-based research team, led the study.

As well as producing insulin, cells in the pancreas also produce another hormone called amylin. Insulin and amylin normally work together to regulate the body's response to food intake. If they are no longer produced, then levels of sugar in the blood rise resulting in diabetes and causing damage to organs such as the heart, kidneys, eyes and nerves if [blood sugar levels](#) aren't properly controlled.

However, some of the amylin that is produced can get deposited around cells in the pancreas as toxic clumps, which then, in turn, destroy those cells that produce insulin and amylin. The consequence of this cell death is diabetes.

Research published previously by Professor Cooper suggested that this is the causative mechanism in type-2 diabetes. This new research provides strong evidence that type-1 diabetes results from the same mechanism.

The difference is that the disease starts at an earlier age and progresses more rapidly in type-1 compared to type-2 [diabetes](#) because there is more rapid deposition of toxic amylin clumps in the pancreas.

Professor Cooper's group expects to have potential medicines ready to go into [clinical trials](#) in the next two years and it is anticipated that these will be tested in both type-1 and type-2 diabetic patients. These clinical trials are being planned with research groups in England and Scotland.

More information: "The pathogenic mechanism of diabetes varies with the degree of overexpression and oligomerization of human amylin in the pancreatic islet beta cells" published in *FASEB J - Journal of the Federation of American Societies for Experimental Biology* on Wednesday 20 August 2014.

Provided by University of Manchester

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