Unique drug combination may hold the key to reversing Type I diabetes

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Promising results from a study that tested a new approach for reversing Type 1 diabetes are being presented this week at the American Diabetes Association's 68th Annual Scientific Session in San Francisco.

The study tested the combination of Lisofylline (LSF), a drug that is being developed to halt immune damage to insulin producing cells, and Islet Neogenesis Associated Protein peptide (INGAP), a drug based on a naturally occurring protein produced by the pancreas. (ADA abstract number: 1620-P Unique Drug Combination for Reversal of Type 1 Diabetes, by Tersey, Carter, Kropf, Rosenberg, Nadler, available online at scientificsessions.diabetes.org)

The study was conducted at the University of Virginia by a team of scientists led by Jerry L. Nadler, M.D. Currently Director of Endocrinology and Metabolism at the University of Virginia, Nadler will join the faculty at Eastern Virginia Medical School (EVMS) in July as chair of the Department of Internal Medicine and head of the EVMS Strelitz Diabetes Center.

INGAP was discovered in 1997 at the EVMS Strelitz Diabetes Center by Aaron I. Vinik, M.D., Ph.D., Professor of Internal Medicine and the Strelitz Center's Director of Research.

Diabetes is caused by the body's inability to produce or process insulin, a hormone that cells need to convert food into energy. Uncontrolled diabetes causes serious complications throughout the body, including

cardiovascular disease, blindness, kidney failure, and nerve disease. Type 1 diabetes is an autoimmune disease, caused when the body's own immune system mistakenly attacks and destroys the insulin-producing cells of the pancreas. This damage was once thought to be irreversible, however, new evidence suggests that the pancreas has an innate ability to repair and regenerate the insulin-producing cells. In Type 1 diabetes, however, the pancreas' ability to self-repair cannot keep pace against the autoimmune response that is causing the diabetes.

In this study, diabetic mice were either given a placebo (saline) or treated with LSF, INGAP peptide, or LSF and INGAP together. The remission rate was most striking when mice were first treated with LSF in an effort to dampen the autoimmune system and then treated with the combination of LSF and INGAP peptide. This novel therapy resulted in a remission of diabetes in 70% of the mice after all treatments were withdrawn, including animals with very high blood glucose levels prior to treatment. Mice treated with INGAP peptide alone or INGAP peptide/LSF combinations averaged markedly higher levels of serum insulin after treatment than saline treated controls and were similar to non-diabetic mice. It was only when the combination of LSF and INGAP was used that a reversal of hyperglycemia was observed.

"These are very encouraging results," Nadler said. "Since both LSF and INGAP are already known to be safe, we should soon be able to begin testing the combination of LSF and INGAP in the clinic as a potential therapy for Type 1 diabetes in people soon."

Nadler was recruited to EVMS as part of a strategic initiative to expand the medical school's research capabilities in four areas where the state's eastern region has specific health needs and EVMS has existing research strengths, including: diabetes, cardiovascular disease, women's health/infant development, and cancer.

"Our ultimate goal is to improve the health of individuals by discovering novel approaches to the kinds of diseases that take a serious toll on the quality of life in our community and around the world," said Gerald J. Pepe, Ph.D., Dean and Provost of Eastern Virginia Medical School. "Dr. Nadler's work with LSF and INGAP is exactly the kind of innovative new therapy that we want to bring to fruition. Imagine the impact it would have to be able to reverse diabetes."

Source: Eastern Virginia Medical School