



Non-Natural Peptides for Treating Diabetes

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WARF: P130310US02

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing peptide analogs of GLP-1 with prolonged effects *in vivo*.

Overview

Diabetes mellitus continues to be a chronic public health issue despite the availability of injectable insulin since the 1920s. Finding alternative treatments is the subject of intense research. In recent years, efforts have focused on a potent anti-hyperglycemic hormone called glucagon-like peptide-1 (GLP-1).

GLP-1 is the natural agonist (activator) of a receptor found on the surface of pancreatic beta cells. Activation of this receptor promotes insulin release and survival of the beta cells. Such properties are attractive for treating type 2 diabetes. Unfortunately, GLP-1 is rapidly degraded by peptidase enzymes in the body. In fact, its half-life is less than two minutes.

There is interest in creating synthetic GLP-1 peptide analogs that resist degradation.

The Invention

UW–Madison researchers have developed a new approach for designing GLP-1 receptor agonists that could be used to treat diabetes. The agonists retain GLP-1-like function but have prolonged activity *in vivo*.

The method includes strategically replacing native α -amino acid residues with conformationally constrained β -amino acid residues. The new α/β peptides mimic GLP-1 in terms of interacting with pancreatic beta cells and regulating blood glucose levels. The peptides are less susceptible to enzyme degradation due in part to the multiple β residue replacements.

Applications

- Non-natural peptides for potentially treating diabetes and hyperglycemia

Key Benefits

- Longer half-life *in vivo* than natural GLP-1
- Glucose-lowering effects may compete with drugs currently on the market.

Stage of Development

We the researchers have assessed protease resistance *in vitro*, the effects of the peptide on glucose-dependent insulin secretions in cell culture, and performed a glucose tolerance test in mice.

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Additional Information

For More Information About the Inventors

- [Samuel Gellman](#)

Related Technologies

- [WARF reference number P110240US02 describes a method for treating and preventing diabetes by targeting the EP3 receptor.](#)

Related Intellectual Property

- [View Divisional Patent in PDF format.](#)

Tech Fields

- [Therapeutics & Vaccines : Metabolic disorders](#)

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847

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