Novel Glycated Peptides and Proteins as Biomarkers for Diabetes Control

Published date: Feb. 1, 2012

Technology description

Summary

A primary goal of diabetes therapy is to improve control of blood glucose levels (known as glycemic control) in patients. Prospective studies of both Type 1 and Type 2 diabetes indicate that careful glycemic control significantly reduces the risk of microvascular, neurological, and cardiovascular complications of diabetes.
The current method to monitor glycemic control is by measurement of the relative concentration of glycated red-cell hemoglobin (HbA1C). However, levels of HbA1C, an intracellular protein, reflect glycemic control over a timeframe of several months. They are also susceptible to a variety of perturbing factors such as hematologic disorders, kidney disease, aspirin or penicillin use, or alcohol intake.
This technology describes a family of novel glycated peptide and protein biomarkers for glycemic control, as well as a method to monitor glycemic control in diabetic patients. In contrast to HbA1C, which is an intracellular protein, the glycated proteins described in this invention are found in blood plasma, and might reflect changes in glycemic control more rapidly, and with more sensitivity. A test developed using this technology could be envisioned to supplement or replace current monitoring of glycemic control by HbA1C. Also described are methods for making antibodies and aptamers that bind the described glycated peptides and proteins, and a database listing glycated peptide concentrations in diabetic and control samples.

Application area

Diagnostic tool to monitor glycemic control in diabetic or at-risk individuals
Markers to track development of diabetes complications

Institution

NIH - National Institutes of Health

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