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Method for Glycemic Forecasting

Type I diabetes is an autoimmune disease in which the beta-cells of the body are destroyed thus resulting in a lack of insulin production. This leads to an inability to control blood glucose concentration as insulin facilitates the cellular uptake of glucose. The major difficulty involving the successful treatment of diabetes is the appropriate dosing of insulin such that a normal physiologic glucose concentration is maintained. There are a multitude of factors which influence subsequent glucose concentrations in diabetics including but not limited to: insulin dosage, carbohydrate and nutritional intake, lifestyle (i.e. sleep-wake cycles and sleep quality, exercise, etc.), and emotional states (i.e. stress, depression, contentment, etc.). In order to optimize control in diabetic patients, there needs to be some method for quantifying or predicting future occurrences of dysglycemia (i.e. high and low blood glucose concentration also referred to as hyperglycemia and hypoglycemia, respectively).

The advent of continuous glucose monitoring (CGM) in the field of diabetes technology provides even more insight for the determination of patterns existent in daily glucose fluctuations of diabetic patients. Therefore a neural network for glycemic forecasting has been developed that can be utilized in a semi-closed loop device for guiding therapy in diabetic patients. Usage of such a device may lead to better glycemic control and subsequent avoidance of complications.

The University is seeking companies interested in utilizing this novel neural network based approach for glycemic forecasting. The neural network glucose method has been reduced to practice and test data is available for review.

Applications:

1. Integration with continuous glucose monitoring devices
2. Stand-alone intelligent therapy recommendation model for software or medical devices

Advantages:

1. Provisional Patent Application filed with priority date August 14, 2008
2. Provides sufficient time to adjust therapy to avoid problematic glucose values
3. Reduces health care costs
4. Similar neural network models can also be easily integrated to predict and control insulin/medication
5. Enhances treatment and outcomes by empowering medical personnel
6. Provides a method to gauge the effect of various factors on future glucose concentration
7. Provides a means of gauging predictive success in real-time

This invention is patent pending

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