Ultrasound Stimulation of Insulin Release from Pancreatic Beta Cells

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According to statistics released by the American Diabetes Association about 26 million Americans have diabetes. The staggering numbers tell us why it is so important to establish new methods to treat and manage diabetes. Current therapies for management of diabetes demand significant lifestyle changes. Many patients comply poorly with the pharmacological treatment which involves frequent pricking of finger (for blood glucose measurement) and insulin injections.

GW inventors devised a patient-friendly strategy by using ultrasound waves to stimulate insulin secretion from the patient’s own pancreatic beta cells, thereby eliminating the need for insulin injections for Type 2 diabetics. The ultrasound probe is equipped with controls which ensure the release of optimal amounts of insulin from the pancreas in response to endogenous blood glucose levels. Current validation is at the in vitro stage. The experiments show a promising safety profile post ultrasound exposure. The current design includes an ultrasound probe and controls to alter the frequency and intensity.

The ultrasound probe can be coupled with a minimally invasive glucose monitoring system so that a high blood glucose episode automatically triggers the probe to stimulate the pancreatic beta cells and cause insulin release. The novel approach avoids or lessens the requirement for multiple medications and injections in Type 2 diabetes treatment and promises a significant improvement in quality of life of diabetic patients.

Applications:
• Treat Type 2 Diabetes

Advantages:
• Avoids use of medication
• Patients’s own insulin manages blood glucose levels
• Optimal levels of insulin secretion reduces the risk of hypoglycemia
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