A Small Molecule that Acts as an Insulin Synergistic for the Treatment of Diabetes

Published date: Oct. 11, 2010

Technology description

Market Summary

Diabetes affects nearly 275 million people worldwide and is often managed by maintaining sufficient levels of circulating insulin using insulin injections. Subcutaneous insulin injection has many drawbacks including tissue irritation, infections at injection sites, inconvenience, and inconsistent delivery rates of insulin. One-third of patients do not adhere to their insulin regimen and approximately 50% of these patients said they would be more likely to follow treatment if discomfort could be relieved. Therefore, an easier and more effective therapy for diabetes is still needed.

Technical Summary

Decreases in pancreatic β-cell function are the major reasons for the diagnosis of all type-1 diabetes and can exacerbate the condition of type-2 diabetes. Dr. Ye has identified a non-peptidyl, small molecule that acts as an insulin synergistic and mimetic. It selectively binds to insulin receptors but not to insulin-like growth factor (IGF) receptors or other tyrosine kinase receptors. This compound sensitizes insulin activity but does not compete with already circulating insulin. In addition, it strongly elevates glucose uptake in adipocytes. Oral administration of this compound to a diabetic mouse model significantly decreased circulating blood glucose levels to 70% of basal levels in an hour and the decrease sustained for four hours.

Application area

Non-peptidyl, small molecule that is synergistic with insulin and selectively activates the insulin receptor.

Advantages

Dramatic hypoglycemic effect in normoglycemic and hyperglycemic mice
Effectiveness occurs in comparable time as insulin and lasts longer than insulin.
Highly selective and sensitive for insulin receptors.
Sensitizes insulin activity and does not compete with insulin.

Institution

Emory University

Inventors

Keqiang Ye
Professor, Department of Pathology & Laboratory Medicine
SOM: Pathology: Admin