Novel, Validated Target for Type II Diabetes Drug Inhibitors

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Technology description

Summary

Insulin regulates glucose uptake into fat and muscle cells through glucose transporters (GLUT4) that are translocated from an intracellular membrane storage pool to the plasma membrane. A Type II diabetic either does not produce enough insulin or is resistant to insulin produced by the pancreas. Improperly metabolized glucose and increased serum glucose levels can trigger heart disease, kidney disease, blindness, and limb amputations. Several oral medications can be prescribed to those who have been diagnosed with Type II diabetes and to those who are otherwise insulin resistant. Currently, there are two classes of oral anti-diabetic insulin sensitizers that can be used to treat Type II disease: biguanides (metformin or Glucophage ®) and thiazolidinediones (rosiglitazone or Avandia ®, and pioglitazone or Actos ®). However, there are side effects from these drugs that are especially acute in those whose kidneys or liver are not functioning normally. Also, although Type II diabetics can take oral drugs currently offered, over time, most will need insulin injections to control their disease.

Description

GRK2 is a novel target for insulin sensitizer development. The normal, endogenous function of this gene is to inhibit insulin signaling. Therefore, inhibition of the inhibitor, GRK2, should augment insulin action. This is demonstrated for both siRNA against GRK2 and an anti GRK2 antibody that increases insulin-stimulated insulin-responsive glucose transporter 4 (GLUT4) translocation in 3T3-L1 adipocytes.

Institution

University of California, San Diego

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com