

Screening Methods to Identify New Drugs for Atherosclerosis and Type II Diabetes

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BACKGROUND

One class of drugs developed to treat diabetes is the thiazolidinediones, which include rosiglitazone (Avandia®), troglitazone (Rezulin®), and pioglitazone (ACTOS®). These insulin-sensitizing drugs have been shown to lower blood glucose levels in target tissues (muscle and fat) by modulating PPAR-g, a nuclear receptor involved in fat cell development and glucose homeostasis. Activators of PPAR-g have been shown to suppress the expression of inflammatory genes that play a role in impaired insulin signaling. However, thiazolidinediones have also been shown to exhibit serious side effects, including edema, anemia, and liver injury.

TECHNOLOGY DESCRIPTION

Researchers from UC San Diego have patented a new method that identifies a novel molecular mechanism by which ligands regulate the transcriptional activities of nuclear receptors. This mechanism provides the basis for screening assays to identify novel ligands that repress inflammation by regulating nuclear receptor proteins like PPAR-g. Such compounds would potentially represent improvements over existing drugs used to treat type II diabetes which exhibit significant side effects.

APPLICATIONS

In 2012, 29.1 million Americans have diabetes (9.3% of population, up from 7% in 2002). In 2010, 79 million Americans age 20 and older had pre-diabetes. In 2012 this number grew to 86 million. According to the American Diabetes Association the total economic cost of diabetes back in 2002 was estimated at \$132 billion. In 2013 this total grew to \$245 billion.

FEATURES/BENEFITS

- ▶ Potential increase in efficacy due to increased specificity
- ▶ Potential reduction in side effects

STATE OF DEVELOPMENT

This patented technology is available for licensing in the US.

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OTHER INFORMATION

KEYWORDS

diabetes, atherosclerosis,
inflammation, nuclear receptors,
insulin resistance, PPAR

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Disease: Cardiovascular and Circulatory System

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