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Bridging Knowledge and the Economy

DIABETES: A NOVEL THERAPEUTIC AND DIAGNOSTIC TARGET

Reference: VAL-686 CHUM

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Background

Diabetes is a metabolic disorder in which the pancreatic islets fail to produce sufficient insulin to prevent blood glucose from rising beyond a normal range. Type 1 diabetes is an autoimmune disease where insufficient insulin production is caused by the destruction of islets by T cells. Type 2 diabetes results from a reduced insulin sensitivity. Recent research has revealed that adipose and other tissues release harmful inflammatory cytokines, which are detrimental to islets functions and survival.

Technology

Dr Jiangping Wu from the Centre Hospitalier de l'Université de Montréal has found a specific kinase localised in pancreatic islets. Its overexpression is accompanied by islet apoptosis, inducing diabetes in mouse model.

Results

- Release of inflammatory cytokines in-vitro ex-vivo induces the kinase mRNA
- Isolated islets when exposed to free fatty acids (FFA) induces the kinase mRNA
- Knockdown of the kinase by siRNA protects insulinoma cells from cytokine and FFA triggered apoptosis
- Overexpression in transgenic islets aggravate cytokine and FFA triggered apoptosis
- The overexpression of this kinase leads to increased Type 1 and Type 2 diabetes risks in mouse models
- When the kinase is overexpressed in islets, they become easier to die in an inflammatory environment or with FFA stimulation

Applications

- Diagnostic of Type 1 and Type 2 diabetes
- Inhibitory molecules of this kinase could act as a therapeutic agent for the two forms of diabetes

Competitive Advantages

This kinase possesses the following attractive characteristics:

- It is involved in both types of diabetes
- Its blockage leads to a preservation of β-cells in islets, thus promoting their survival, and therefore being a therapeutic target for diabetes
- Type 2 diabetes could be diagnosed at a early stage before subtantial numbers of islets undergo apoptosis.
- High demand for effective diabetes treatments

Business Opportunity

Univalor is seeking a commercial partner to continue the development of this target under a licence agreement.

Patent Status

Patent pending in US (Q2/2008)

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