Research & Services | Modern cell and molecular biology research of diabetes (Yissum)
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Shlomo Sasson, HUJI, School of Pharmacy, Pharmacology

New targets and novel classes of compounds for Type 2 Diabetes

Categories	Life Sciences; Diabetes

Laboratory for Pharmacological Diabetes Research. Institute for Drug Research, Dept. of Pharmacology School of Pharmacy, Faculty of Medicine, the Hebrew University

Research Topics:

- Development of antidiabetic drugs
- Molecular mechanism of macro-vascular complication in diabetes
- Role of lipid peroxidation in the development of diabetes-related complications
- Molecular factors that determine normal and aberrant interactions between insulin producing beta-cells and microcapillary endothelial cell in Islets of Langerhans

Research Capabilities:

- We designed synthesized and patented novel drugs that increase the rate of glucose transport in skeletal muscles by activating AMPK and recruiting the glucose transport-4 (GLUT-4). These compounds reduced blood glucose levels in animal models of diabetes. In parallel, we have developed a new class of unrelated compounds that increase the rate of glucose transport in skeletal muscles and diabetic animals. Another family of compounds under development are activators of the intrinsic activity of GLUT-4 in the plasma membrane of skeletal muscles.
- We have perfected extraction methods and HPLC protocols for the analysis and quantification of 4-hydroxyalkenals in plasma, tissue culture media and cell homogenates.

Advantages

Novel drugs for the treatment of Type-2 diabetes are sought. Therefore, research effort to discover new targets for such drugs and the development of active, safe and orally deliverable such compounds are intensive. We offer such new targets and novel classes of compounds that may meet these criteria.

Research Background

The laboratory is engaged in various aspects of diabetes research and combines modern cell and molecular biology research, the use of animal models of diabetes and design and synthesis of novel molecules with antihyperglycemic potential.

Available Resources

- We have developed a cell-fluorescent-based system to follow and study beta-cell and endothelial cell interactions. This assay is sensitive and can be used for screening of new compounds and drugs and their effects on this complex heterologous cell:cell interactions.
- Resources for pharmaceutical chemistry, cell biology and molecular biology research. Use of animal models of diabetes. Advanced lipid peroxidation research.
- We use various methods to measure glucose transport in cultures skeletal muscle cells, in mouse and rat isolated skeletal muscles.

- We routinely perform kinetic analysis of the glucose transport rate in cultures cells.
- We also employ routine methods to measure the abundance of glucose transporters (GLUTs) in the plasma membrane of skeletal muscle fibbers and other cells.

Contact for more information:

Itzik Goldwaser ✉, VP, Head of Research Collaborations , +972-2-6586685

Yissum Research Development Company of the Hebrew University of Jerusalem
Hi-Tech Park, Edmond J. Safra Campus, Givat-Ram, Jerusalem P.O. Box 39135, Jerusalem 91390
Israel Telephone: 972-2-658-6688, Fax: 972-2-658-6689