2006:93908

AN

2006:93908 BIOSIS

DN

PREV200600097036

TI

Specific inhibition of hormone-sensitive lipase improves lipid profile while reducing plasma glucose.

AU

Claus, Thomas H.; Lowe, Derek B.; Liang, Yin; Salhanick, Arthur I.; Keiper Lubeski, Christine; Yang, Ling; Lemoine, Lynn; Zhu, Jian; Clairmont, Kevin B. [Reprint Author]

CS

Bayer Res Ctr, Dept Metab Disorders Res, 400 Morgan Lane, West Haven, CT 06516 USA
kevin.clairmont.b@bayer.com

SO

Journal of Pharmacology and Experimental Therapeutics, (DEC 2005) Vol. 315, No. 3, pp. 1396-1402. http://www.jpet.org.
CODEN: JPETAB. ISSN: 0022-3565.

DT

Article

LA

English

ED

Entered STN: 1 Feb 2006
Last Updated on STN: 1 Feb 2006

AB

Elevation of plasma free fatty acids has been linked with insulin resistance and diabetes. Inhibition of lipolysis may provide a mechanism to decrease plasma fatty acids, thereby improving insulin sensitivity. Hormone-sensitive lipase (HSL) is a critical enzyme involved in the hormonally regulated release of fatty acids and glycerol from adipocyte lipid stores, and its inhibition may thus improve insulin sensitivity and blood glucose handling in type 2 diabetes. In rat adipocytes, forskolin-activated lipolysis was blocked by in vitro addition of a potent and selective HSL inhibitor or by prior treatment of the animals themselves. Antilipolytic effects also were demonstrated in overnight-fasted mice, rats, and dogs with species-dependent effects on plasma free fatty acid levels but with similar reductions in plasma glycerol being observed in all species. Inhibition of HSL also reduced hyperglycemia in streptozotocin-induced diabetic rats. The data support a connection between adipose tissue lipolysis and plasma glucose levels.

CC

Cytology - Animal 02506
Biochemistry studies - General 10060
Biochemistry studies - Carbohydrates 10068
Enzymes - General and comparative studies: coenzymes 10802
Pathology - Therapy 12512
Metabolism - Metabolic disorders 13020
Blood - Blood and lymph studies 15002
Blood - Blood cell studies 15004
Endocrine - General 17002
Endocrine - Pancreas 17008
Pharmacology - General 22002
Toxicology - General and methods 22501

IT

Major Concepts
Pharmacology; Enzymology (Biochemistry and Molecular Biophysics); Endocrine System (Chemical Coordination and Homeostasis)

IT

Parts, Structures, & Systems of Organisms
plasma: blood and lymphatics

IT

Diseases
insulin resistance syndrome: endocrine disease/pancreas, metabolic disease
Insulin Resistance (MeSH)

IT

Diseases

type 2 diabetes: endocrine disease/pancreas, metabolic disease, drug therapy, chemically-induced
Diabetes Mellitus, Non-Insulin-Dependent (MeSH)

IT

Chemicals & Biochemicals
glucose; glycerol; streptozotocin; hormone-sensitive lipase: inhibition; hormone-sensitive lipase inhibitor: enzyme inhibitor-drug

ORGN

Classifier
Canidae 85765
Super Taxa
Carnivora; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
dog (common): breed-beagle, male
Taxa Notes
Animals, Carnivores, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Vertebrates

ORGN

Classifier
Muridae 86375
Super Taxa
Rodentia; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
Wistar rat (common): male
rat (common): strain-Sprague-Dawley, male
mouse (common): strain-Balb/C, male
3T3-L1 cell line (cell_line): murine adipocyte cells
Taxa Notes
Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals, Rodents, Vertebrates

RN

58367-01-4 (glucose)
56-81-5 (glycerol)
18883-66-4 (streptozotocin)
9001-62-1 (hormone-sensitive lipase)