Data Sheet (Cat.No.TMPY-04813)

TargetMol

ACAT2 Protein, Rat, Recombinant (His)

General Information

Synonyms: acetyl-CoA acetyltransferase 2

Protein Construction: A DNA sequence encoding the rat Acat2 (NP_001006996.1) (Met1-Gly397) was expressed with a polyhistidine tag at the N-terminus. Predicted N terminal: Met

Species: Rat

Expression Host: E. coli

Accession: A6KP31

Molecular Weight: 43.3 kDa (predicted)

QC Testing

Biological Activity: Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.

Purity: > 95 % as determined by SDS-PAGE.

Endotoxin: Please contact us for more information.

Formulation: Supplied as sterile PBS, 20% glycerol, pH 7.4.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store the product under sterile conditions at -20°C to -80°C. Samples are stable for up to 12 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

Proteins are shipped with blue ice.

Protein Background

Acyl-coenzyme A: cholesterol acyltransferase (ACAT) is an intracellular enzyme that produces cholesteryl esters in various tissues. In mammals, two ACAT genes (ACAT1 and ACAT2) have been identified. Together, these two enzymes are involved in storing cholesteryl esters as lipid droplets, in macrophage foam-cell formation, in absorbing dietary cholesterol, and in supplying cholesteryl esters as part of the core lipid for lipoprotein synthesis and assembly. The key difference in tissue distribution of ACAT1 and ACAT2 between humans, mice and monkeys is that, in adult human liver (including hepatocytes and bile duct cells), the major enzyme is ACAT1, rather than ACAT2. There is compelling evidence implicating a role for ACAT1 in macrophage foam-cell formation, and for ACAT2 in intestinal cholesterol absorption.Ubiquitin linkage to cysteine is an unconventional modification

targeting protein for degradation. However, the physiological regulation of cysteine ubiquitylation is still mysterious. Here we found that ACAT2, a cellular enzyme converting cholesterol and fatty acid to cholesteryl esters, was ubiquitylated on Cys277 for degradation when the lipid level was low. gp78-Insigs catalysed Lys48-linked polyubiquitylation on this Cys277. A high concentration of cholesterol and fatty acid, however, induced cellular reactive oxygen species (ROS) that oxidized Cys277, resulting in ACAT2 stabilization and subsequently elevated cholesteryl esters. Furthermore, ACAT2 knockout mice were more susceptible to high-fat diet-associated insulin resistance. By contrast, expression of a constitutively stable form of ACAT2 (C277A) resulted in higher insulin sensitivity. ACAT2 is an appealing target for therapy to reduce coronary heart disease.

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